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PHASE 1: DESK TOP STUDY REPORT

MCCARTHY & STONE (RETIREMENT LIFESTYLES) LIMITED

PROPOSED SHELTERED ACCOMMODATION

BARNSELY METROPOLITAN BOROUGH COUNCIL OFFICES

BARNESLAI CLOSE

BARNSELY

SOUTH YORKSHIRE

S70 2HS

Project No: 17-401

Prepared By:

Alexander Middleton

A handwritten signature in black ink, appearing to read 'Alex Middleton'.

Date:

29/05/2017

Approved By:

Kevin Moir

A handwritten signature in black ink, appearing to read 'Kevin Moir'.

Date:

29/05/2017

The information and/or advice contained in this Phase 1: Desk Top Study Report is based solely on, and is limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) unless otherwise stated. This Report has been prepared in order to collate information relating to the physical, environmental and industrial setting of the site, and to highlight, where possible, the likely problems that might be encountered when considering the future development of this site for the proposed end use. All comments, opinions, diagrams, cross sections and/or sketches contained within the report, and/or any configuration of the findings is conjectural and given for guidance only and confirmation of the anticipated ground conditions should be considered before development proceeds. Agreement for the use or copying of this report by any Third Party must be obtained in writing from Arc Environmental Limited (ARC). If a change in the proposed land use is envisaged, then a reassessment of the site should be carried out.

Report Type:- Phase 1: Desk Top Study Report.

Project:- 17-401 – Barnsley Metropolitan Borough Council Offices, Barneslai Close, Barnsley, South Yorkshire, S70 2HS.

Prepared For:- McCarthy & Stone (Retirement Lifestyles) Limited.

Appendix III Envirocheck Report.
Appendix IV Preliminary Conceptual Site Model (CSM).



The contractor shall check all dimensions on site before commencement of any work. No dimensions to be scaled off this drawing.

Project Title:
Proposed Sheltered Accommodation
Barnsley Metropolitan Borough Council Offices
Berneslai Close, Barnsley, South Yorks, S70 2HS

Scale of A3:	Date:	Drawn by:	Approved by:
NTS @ A3	30.05.17	P.O.	A.M.

Jobb Kart:	Org. namn	Rev:
17-401		



APPENDIX IV

Conceptual Site Model (CSM)

EXECUTIVE SUMMARY

Instruction to commence with this Phase 1: Desk Top Study Report was received from McCarthy & Stone (Retirement Lifestyles) Limited.

Site Geology

Following an assessment of available published BGS geological maps the site is not shown to be underlain by significant thicknesses of made ground / fill materials. However, made ground is anticipated beneath the site linked to former development activities, including potential ash deposits localised to the north western corner associated with a former tennis court. Potentially deep deposits of made ground may surround southern and eastern portions of the site associated with identified basement features.

The published BGS geological maps and data reviewed indicates that the site is in an area absent of drift deposits (i.e. thin drift or shallow rockhead). The absence of drift deposits corroborates with nearby BGS borehole data

The site is underlain by the Kent Thick Sandstone, forming part of the Lower Coal Measures which typically comprise cyclical alternations of sandstone, mudstone, siltstone and sandstone. In accordance with published BGS maps and borehole records, the Kent Thin coal seam outcrops to the south west of the site, and dips to the north east, beneath the site area. When considering borehole data records an intact coal seam, c.0.40m thick, and the regional dip of the coal seam is 4°, it is calculated that at least c.15m of competent sandstone strata overlies the Kent Thin coal seam. As such, if workings were present within the Kent Thin seam, there is sufficient rock cover protection to prevent issues that arise from shallow coal mining activities. Therefore, no further precautionary measures or intrusive investigation works is deemed necessary.

Site History

The historical Ordnance Survey maps, the Landmark Envirocheck Report and other environmental information revealed the site was developed from as early as c.1855 comprising residential properties, private gardens and hospital grounds. Several phases of development of Beckett Hospital are recorded across the site between c.1906 and c.1981, at which point the structures are repurposed as the local district council office buildings.

Foundations

Based on the comments above, there is felt to be a LOW – MODERATE risk posed to future foundations. Conventional shallow foundations are suitable for the majority of the site area, but locally deeper foundations (i.e. trench fill) may be required at the location of existing basements.

Contamination

Considering the recorded site history, in accordance with published OS maps, and taking into consideration the proposed development, the following potential contamination issues have been identified for this site.

- Areas of made ground associated with former site activities. These deposits are potentially deep when considering the presence of basement features.
- Potentially deep made ground beneath the site represent a plausible ground gas risk to the site, though this is considered to be low.

The potential risk to the end users (Human Health) and Controlled Waters, associated with this development, is considered to be **LOW**.



Additional Information

EXECUTIVE SUMMARY

Radon gas protective measures are not required for this site, in accordance with the BGS, National Geoscience Information Service and the BRE Digest, BR211 (2015) Radon: Guidance on protective measures for new buildings.

In accordance with the Environment & Landmark Report, the site lies within a Zone 1 Flood Risk Area.

Phase 2 site investigation is recommended and a cost estimate for these works in the order of £6,500 - £7,000 + VAT. It should be noted that additional works will be required following demolition due to a large portion of the site being covered by structures.



Yorkshire

Published 1889 - 1892

Source map scale - 1:500

The 1:500 scale Ordnance Survey mapping was introduced in 1855 as a replacement for the 1:528 scale and to complement the 1:2500 scale that had been implemented in 1853. By 1885, the 1:500 scale covered most towns over a population of about 4000 at the time of survey, although very few towns were mapped more than once at this scale, and none have been since 1910. The 1:500 scale gives particular emphasis to such features as lamp posts, man holes, arched passages and minor building projections. Also often featured are relations between frontiers, interior ground floor layouts of public buildings, and in earlier plans, the functions of the various parts of larger industrial premises are also indicated. Content of the plans does vary however, from one town to the next in terms of, for example, the completeness of railway tracks and the coverage of public buildings.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



Order Details

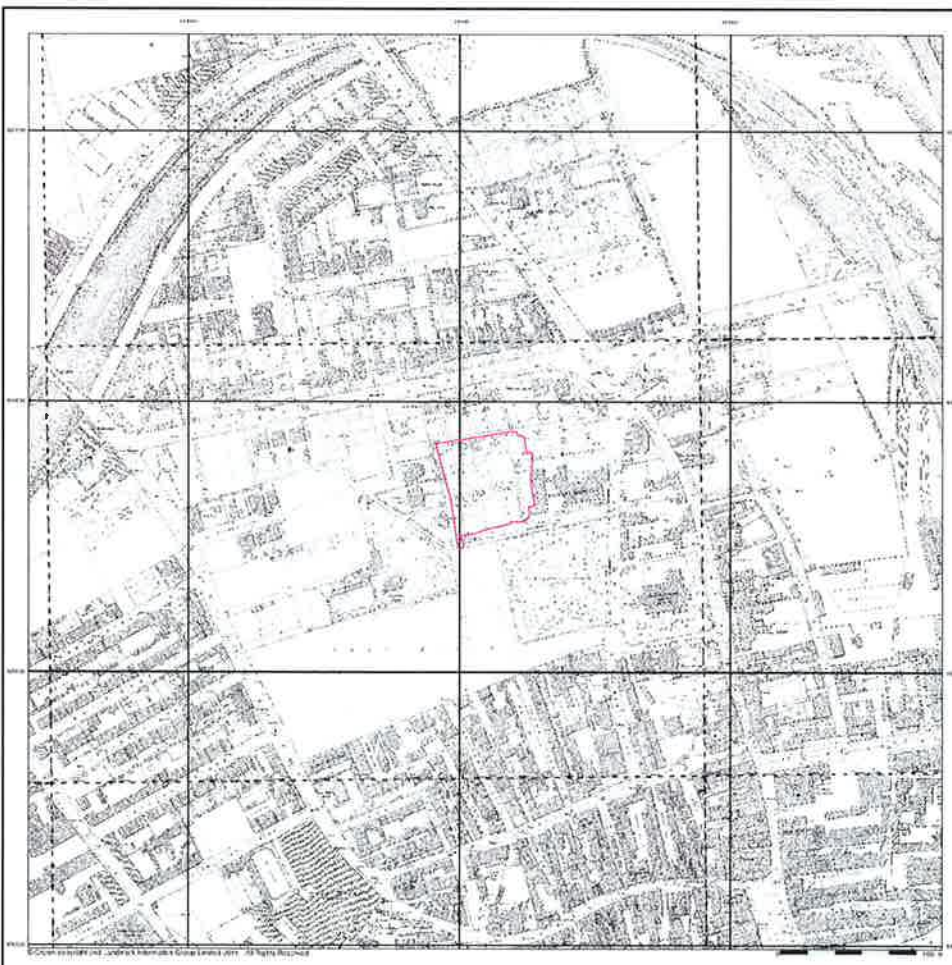
Order Number: 123757883_1_1
Customer Ref: 17-401 am
National Grid Reference: 434220, 406740
Slice: A
Site Area (Ha): 0.43
Search Buffer (m): 0

Site Details

Barnsley Metropolitan Borough Council, Berneslai Close,
Barnsley, S70 2HS



01454 444 000
01454 444 001
www.landmark.co.uk



1.0 Introduction

Arc Environmental Ltd. have been instructed by McCarthy & Stone (Retirement Lifestyles) Limited, to undertake a Phase 1: Desk Top Study Report for the Barnsley Metropolitan Borough Council buildings, Barnsley, South Yorkshire, S70 2HS. Proposed development details include the demolition of current structures and redevelopment of the site as sheltered accommodation with communal garden areas.

The primary objectives of this report are to assess the geological and potential ground contamination conditions on and beneath the surface and a Preliminary Conceptual Site Model (CSM) has been developed to define the scope and extent of any further investigation works deemed necessary, prior to commencing with any future redevelopment works. A site walkover (reconnaissance survey) was completed as part of this report with site photographs included within Appendix I, and all relevant observations noted in Section 2.1 below.

2.0 Physical Setting

2.1 Site Details / Reconnaissance Survey:-

Table 2.1

Site Name & Address:	Barnsley Metropolitan Borough Council, Bemslä Close, Barnsley, South Yorkshire, S70 2HS
National Grid Reference:	434220, 406740 (representative of the central part of the site.)
Description of Location:	The site is located within a residential setting towards Barnsley Town Centre, South Yorkshire.
Site Boundaries:	N, E & W = Residential Properties, S = Bemslä Close.
Site Shape & Development Details:	The site is irregular in shape, occupying an approximate area of c.0.43 Hectares (Ha) and proposed development details include the construction of sheltered accommodation with areas for car parking and communal soft landscaping.
General Topography:	Topographically a generalised fall in slope is observed from the west (c.126m AOD) to the east (c.123m AOD).
Site surfacing	The site surfacing mainly consists of hard standing (i.e. concrete & tarmac/adam) with decorative grass borders along the southern and eastern boundaries.
Above Ground Structures:	The District Council Office buildings are noted on the central, southern and eastern portions of the site.
Sub-surface Structures & Services:	When taking into account the historical site usage, buried services are likely beneath the site. Appropriate service plans should be procured prior to any future investigation works. Based on provided floor plans and outward evidence of the office buildings, a basement feature is anticipated beneath office buildings on the southern and eastern boundaries of the site.
Additional Comments:	The basement structure appears to comprise ventilation ducts beneath the more modern building on the south of the site and storage / boiler rooms beneath the 'older' building on the east of the site.

3.0 Environmental Setting

3.1 Site Geology:-

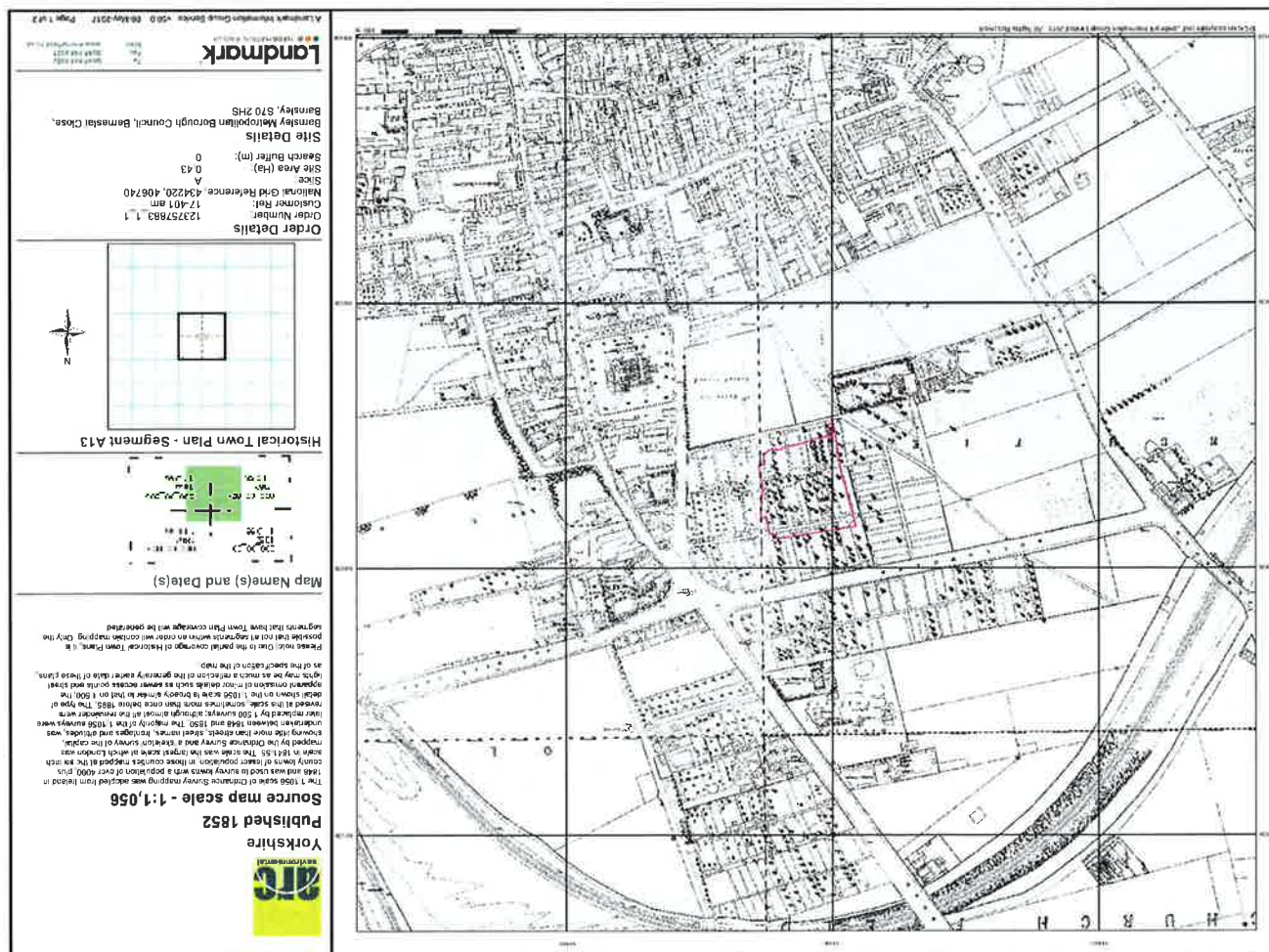
The geological and mining assessment for this site has been based on geological plans published by the British Geological Survey (BGS) & Coal Authority (CA). The following documents have been reviewed as part of this study:-

- BGS Sheet 87 – Barnsley, Solid & Drift Edition, 1:50,000.
- BGS boreholes SE30NW41/A, located c.290m east and SE30NW259, located c.310m south.
- Coal Authority Non-Residential Mining Report – Ref 51001454667001.

Report Type:- Phase 1: Desk Top Study Report.

Report type:- Phase 1: Desk Top Study Report.

Project:- 17401 - Ballyseely Metropolitan Borough Council Offices,
Prepared For:- McCarthy & Stone (Retirement Lifestyles) Limited.





3.0 Environmental Setting (Cont'd)

3.1 Site Geology (Cont'd):

3.1.1 Made Ground:-

In accordance with published BGS maps, significant thicknesses of made ground are not recorded on site. However, made ground is expected across the site area associated with several phases of development activities between c.1855 to c.1921. Current floor plans and observations during the site walkover record a basement level beneath the District Council Office buildings along the southern and eastern boundaries of the site, thus, deep made ground materials may locally surround these features. Additionally, OS plans record a tennis court on the north west of the site between c.1961 to c.1970, ash like materials may have been utilised in the past for drainage of the tennis court and therefore may be encountered beneath this portion of the site.

3.1.2 Drift Deposits:-

Published geological maps produced by the BGS indicates the site is within an area where drift deposits are absent (i.e. thin drift or rockhead close to the surface). This corroborates BGS borehole data taken from a similar geological setting to the site where initial deposits are recorded as weathered sandstone.

3.1.3 Solid Geology:-

Bedrock deposits below the site are shown to consist the Kent Thick Sandstone (KT) forming part of the Pennine Lower Coal Measures (PLCM) which typically comprise cyclical alternations of sandstone, mudstone, siltstone and coal seams. In accordance with BGS borehole data taken from a similar geological setting to the site, weathered sandstone is recorded to a depth of c.2.65m, succeeded by solid sandstone to a depth of c.15.50m, underlain by mudrocks to a depth of at least c.26.10m.

3.2 Coal Mining Risk Assessment:-

To aid in this coal mining risk assessment, a Non-Residential Coal Authority Mining Report was obtained for this site from the Coal Authority (ref: 51001454667001), a copy of which is attached in Appendix II. From information included within the Coal Mining Report, the proposed development is within a surface area that could be affected by past underground mining in one seam at a depth of c.100m, last worked in c.1834. In addition, the site is not recorded within a High Risk Development Area (HRDA).

The Kent Thin (KN) coal seam outcrops to the south west of the site and locally dips to the north east, beneath the site area. BGS borehole data, taken to the south of the site, closer to outcrop, records a c.0.40m thick intrac coal seam at a depth of c.7.80m. This seam stratigraphically underlies a massive sandstone unit (KT Sandstone) and is therefore assessed as the KN coal seam. When considering the seam dips by 4° to the north east, and based on the outcrop and site levels, it is calculated that at least c.15m of competent sandstone overlies the KN seam. Furthermore, BGS borehole data suggests that the KN seam is impersistent in the local area.

In consideration of the comments above, if workings are present beneath the site within the aforementioned coal seam, based on the estimated depth and anticipated thickness of the KN seam, it is felt that there will be sufficient competent rock cover to prevent issues that arise from shallow coal mining activities. As such, no further precautionary measures or intrusive investigation works are deemed necessary.



[illegible]

3.0 Environmental Setting (Cont'd)

3.3 Site Hydrogeology:-

Table 3.1

STRATA	Aquifer / Soil Leachability EA Classification	Comments
Groundwater Vulnerability:	Soils of High Leaching Potential (U)	Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere.
Drift Geology:	Not Classified	This site is recorded within an area absent of drift deposits.
Solid Geology:	Secondary A Aquifer	These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

- The site is not located on or within c.750m of a Source Protection Zone (SPZ).
- There are no groundwater abstraction points recorded within c.750m of the site.

3.4 Site Hydrology:-

Table 3.2

<u>SURFACE WATER FEATURE</u>	<u>Location</u>	<u>Comments</u>
GQA Classified River	None recorded within c.250m.	-
Unclassified Watercourse(s), Canals, Ponds & Lakes Flooding	None recorded within c.250m.	-
	The site does not fall within the designated Flood Zone II & III.	The site lies within a Zone I flood risk area, i.e. very low risk, and is land that the EA has assessed as having a less than 1 in 1,000 annual probability (<0.1%) of flooding from rivers or the sea.
Surface Water Flooding (EA)	The published maps indicate that a small portion of the site, correlating to an area of hard standing (car park) is at a low risk from surface water flooding.	The Environment Agency have published maps which show the risk of surface water flooding, in addition to maps showing the risk of flooding from rivers and the sea, and reservoirs. Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. However, flooding events, although considered a low risk may still occur.
Groundwater Flooding at Surface (BGS)	The site falls within an area with potential for groundwater flooding to occur	Information obtained from Landmark have published maps indicating the potential for groundwater flooding at surface, proposed by the British Geological Survey (BGS). This information is based on areas which may be potentially influenced by geological factors.
RAINFALL	Measurements (mm)	Comments
Annual	834.60	
Precipitation, January	83.40	
Precipitation, July	56.00	
Based on 'station average' records from Sheffield Cld, dated from 1981-2010.		



3.0 Environmental Setting (Cont'd)

3.5 Radon Assessment:-

The site lies in a low probability radon area, as less than 1% of homes are above the action level in accordance with the BGS, National Geoscience Information Service and their assessment suggests that no radon protection measures are necessary for the site. This corresponds with the BRE Digest, BR211 (2015) Radon: Guidance on protective measures for new buildings, the site is situated within a clear grid square (1km), and therefore no radon protective measures are required for the site.

3.6 Site Ecology:-

Table 3.3

FEATURES	Location	Comments
Local Nature Reserves	None recorded within c.250m.	-
Areas of Adopted Green Belt	None recorded within c.250m.	-
Special Protection Areas	None recorded within c.250m.	-
Nitrate Vulnerable Zone	On site	The site is recorded as a Nitrate Vulnerable Zone. These are areas of land that drain into the nitrate polluted waters, or water which could become polluted by nitrates.
Other	None recorded within c.250m.	-

There was no evidence to suggest the site is affected by the presence of invasive weed species (i.e. Japanese Knotweed, Giant Hogweed or Himalayan Balsam) during the site reconnaissance survey, although a habitat survey was not completed as part of this assessment. Site awareness during future construction works should be made with respect to potential invasive weed species.

3.7 Estimated Soil Chemistry:-

Data provided by the BGS in relation to estimated soil chemistry for several key metals and metalloid elements are summarised in Table 3.4 below.

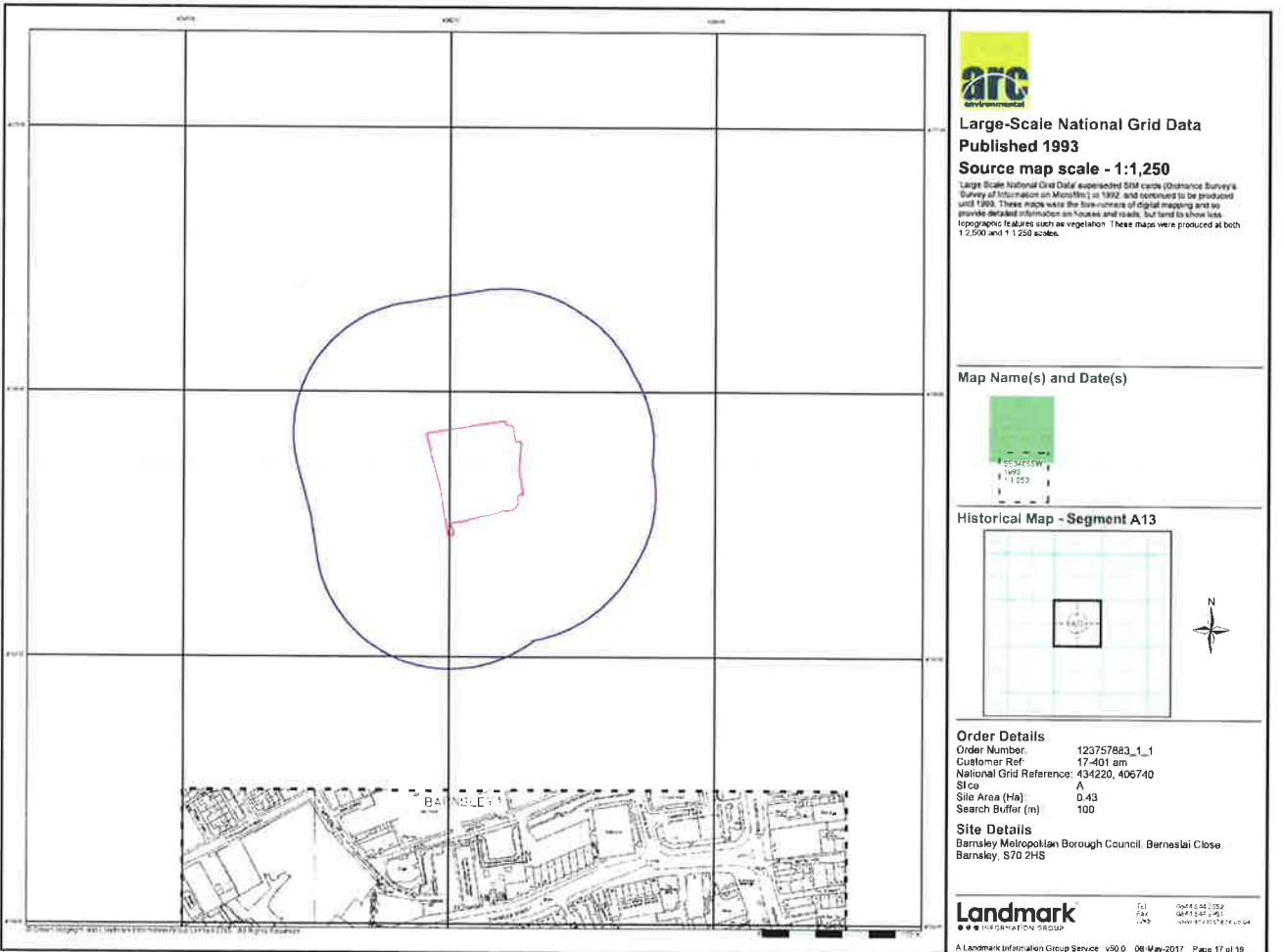
Table 3.4

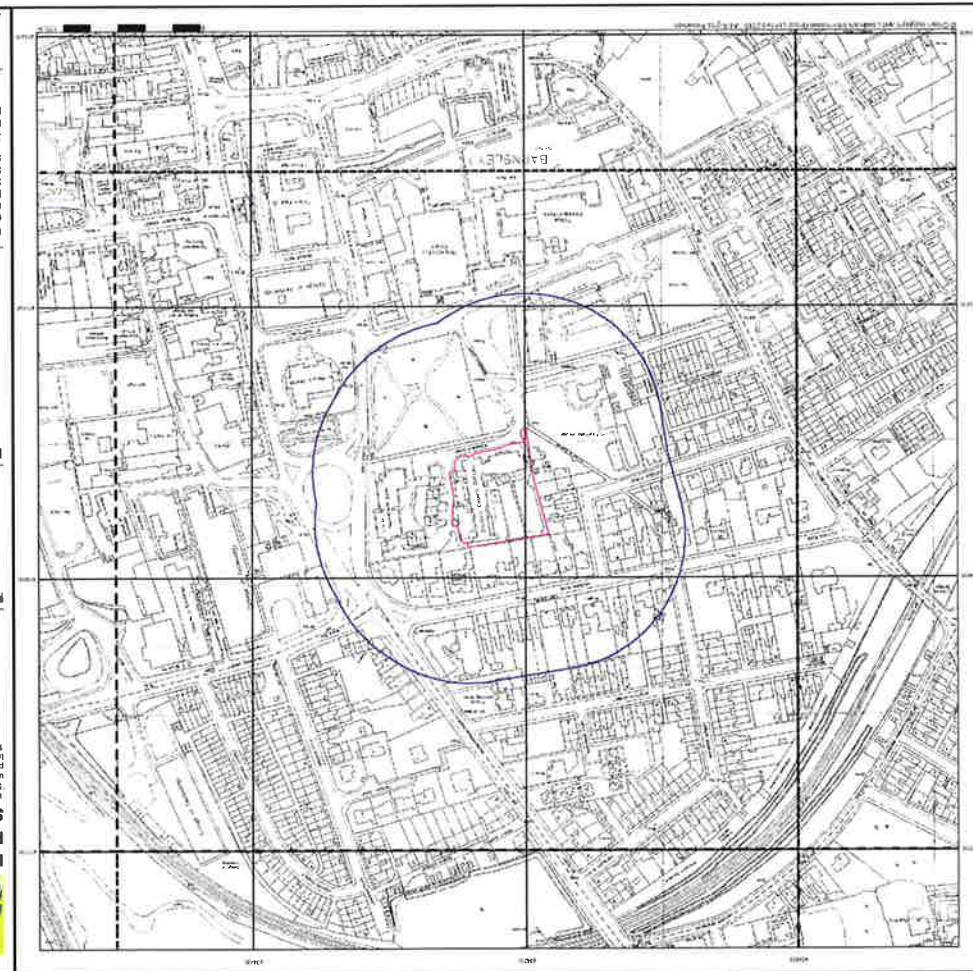
Element	Location	Estimated Soil Concentrations (mg/kg)
Arsenic	On site	15 - 25
Cadmium	On site	<1.8
Chromium (total)	On site	60-90
Lead	On site	100 - 200
Nickel	On site	15-30

4.0 Industrial Setting

4.1 Site History:-

Copies of old survey plans covering the site area & adjacent land are included in Appendix III and a summary of the site history based on these plans is provided in Table 4.1 on the following page.







4.0 Industrial Setting (Cont'd)

4.3 Statutory Requirements / Authorisations:-

Table 4.2

TYPE	Location	Comments
Pollution Prevention and Controls	None recorded within c.250m.	
Registered Radioactive Substances	None recorded within c.250m.	~
Prosecutions Relating to Authorised Processes	None recorded within c.250m.	~
Enforcement and Prohibition Notices	None recorded within c.250m.	~
Planning Hazardous Substances Consents / Enforcements	None recorded within c.250m.	~
COMAH/NIHHS Sites	None recorded within c.250m.	~
Contemporary Trade Entries	None recorded within c.250m.	5 no. active and 8 no. inactive contemporary trade entries are recorded within c.250m of the site. These entries are from a mixture of commercial services which are outlined within the Envirocheck Datasheet, attached in Appendix II.
Fuel Station Entries	None recorded within c.250m.	~

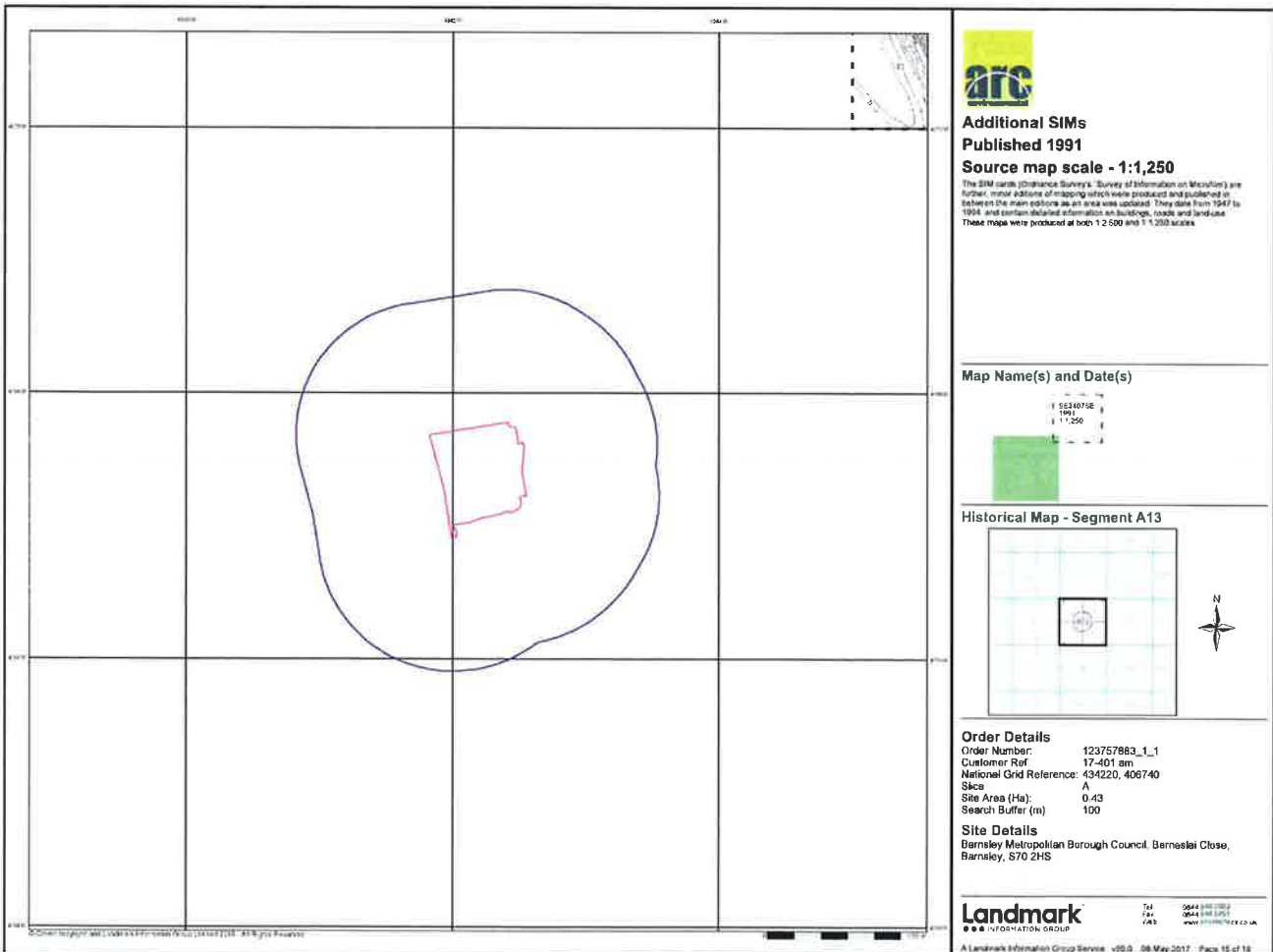
4.4 Pollution Incidents and Discharge Consents:-

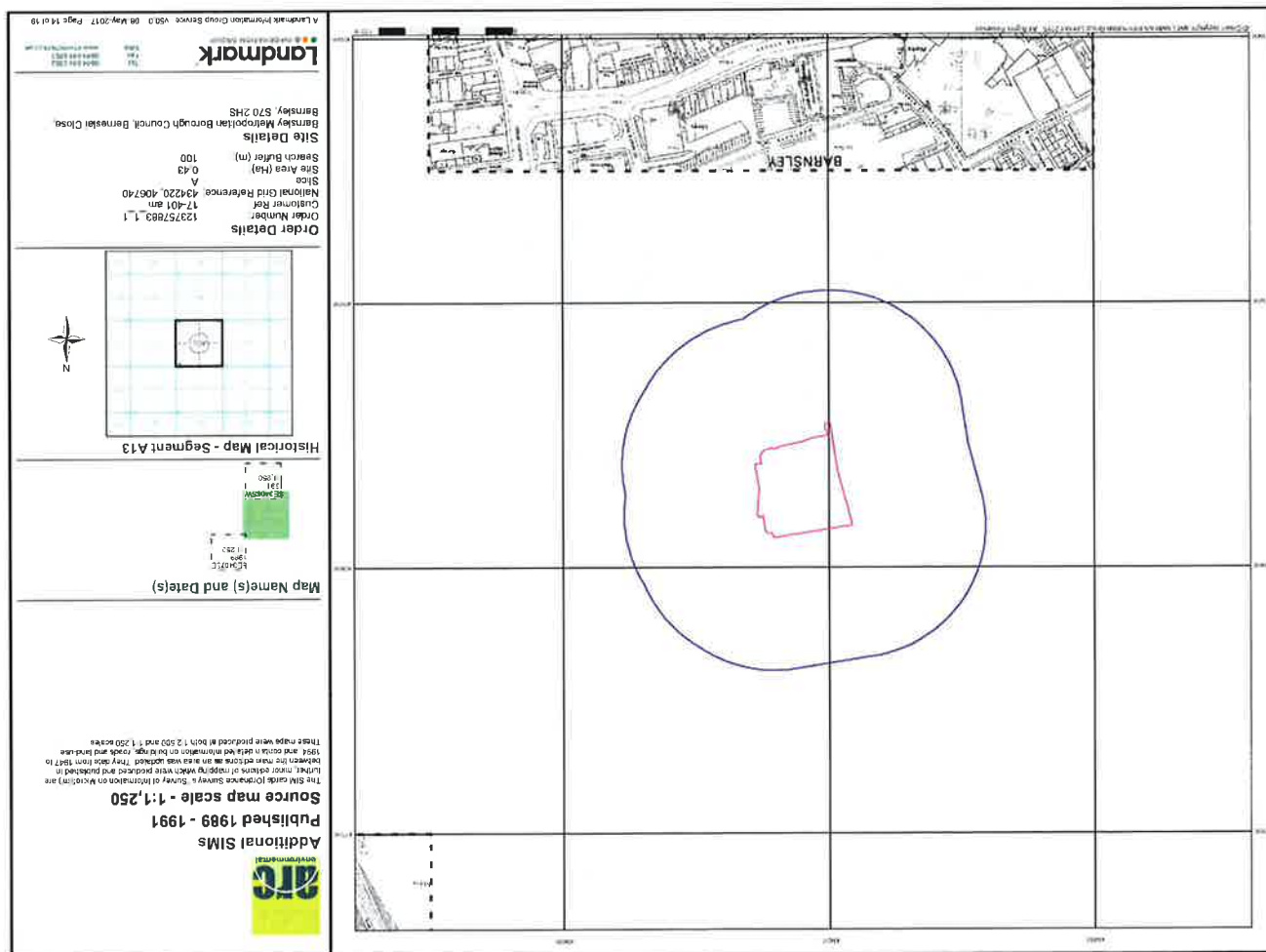
Table 4.3

TYPE	Location	Comments
Discharge Consents	None recorded within c.250m.	~
Water Industry Act Referrals	None recorded within c.250m.	~
Prosecutions Relating to Controlled Waters	None recorded within c.250m.	~
Pollution Incidents to Controlled Waters	None recorded within c.250m.	~
Substantiated Pollution Incident Register	None recorded within c.250m.	~

5.0 Preliminary Conceptual Site Model (CSM)

The Conceptual Site Model (CSM) is one of the primary planning tools that can be used to support the decision making process of managing contaminated land and groundwater on any given site, and allows a better understanding of what needs to be done to achieve risk management, and from this appropriate remediation techniques, if required for those risk management goals can be chosen. This can be done by undertaking a *source-pathway-receptor* analysis of the site. The anticipated *sources*, *pathways* and *receptors* for this site are summarised in Table 5.1 on the following page.





5.0 Preliminary Conceptual Site Model (CSM) (Cont'd)

Table 5.1

Sources (S)		Pathways (P)		Receptors (R)	
S1	Made ground, associated with former development activities and potentially deep made ground linked to identified basement structures	P1	Ingestion.	R1	Human health (End users and construction workforce)
		P2	Inhalation of indoor / outdoor air.		
		P3	Dermal contact.	R2	Potential groundwater within the underlying Solid Geology designated as a Secondary A Aquifer.
S2	Potential ground has production / migration associated with potentially deep made ground.	P4	Migration through existing services.	R3	Building materials*.
		P5	Direct contact with building materials.	R4	Adjacent sites.
		P6	Surface run off and leachate Migration.	R5	Flora and fauna*.

= Not included in the Human Health & Controlled Waters Risk Assessment

A graphical representation of the CSM has been produced for this site and can be seen attached in Appendix IV, which also sets out the critical pollutant linkages of concern for this particular site, with regard to contamination as above.

5.1 Geotechnical Considerations:-

The following potential geotechnical issues and hazards have been identified for this site, and these issues should be considered before future development of the site is to take place;

- Actual depth, origin, variability and condition of made ground on site.
- Geotechnical parameters of the solid geological deposits beneath the site.
- The presence of current basement structures.
- When considering the site is recorded within an area absent of drift deposits, suitable rock breaking plant equipment may be required if shallow competent rock is encountered.
- Control of surface water drainage.
- The presence of buried services which may underlie the site area.

In order to determine the geotechnical considerations above with more certainty, it is recommended that a program of intrusive works with associated testing are carried out on this site, to aid in assessing the extent of any potential issues prior to commencing with the proposed redevelopment works. Upon completion of these works, detailed foundation proposals for future structures can then be prepared.

The information reviewed indicates that the site can be considered as being located within a **LOW-MODERATE** geotechnical risk setting based on the proposed development.

5.2 Sources of Contamination and Probable Contaminants:-

The historical Ordnance Survey maps, the Landmark Envirocheck Report and other environmental information revealed the site was developed from as early as c.1855 comprising residential properties, private gardens and hospital grounds. Several phases of development of Beckett Hospital are recorded across the site between c.1906 and c.1981, at which point the structures are repurposed as the local district council office buildings.



5.0 Preliminary Conceptual Site Model (CSM) (Cont'd)

5.2 Sources of Contamination and Probable Contaminants (Cont'd):

Based on the previous information, made ground is anticipated beneath the site associated with several phases of development, when taking into account historical OS plans, the north western corner of the site may be underlain by ash like deposits associated with a former tennis court. When considering the presence of a basement feature beneath the southern and eastern portions of the site, this may also reflect an area of deep made ground associated with their construction, which at this stage is felt to represent a potential source of ground gas production / migration.

Taking into account the above, potential on-site contaminative issue has been identified for this site, as listed below:-

- Made ground is anticipated beneath the site area associated with several phases of development activities, these deposits are potentially deep, associated with identified basement structures. Based on OS plans, elevated levels of contaminants may be present beneath the north western corner of the site where ashy materials may have been utilised for drainage purposes for the former tennis court. It would be considered prudent to allow for basic contamination testing on made ground materials to assess their risk to Human Health & Controlled Waters, as identified below.
- The site is felt to be at risk from potential ground gas production / migration associated with potentially deep made ground materials.

In consideration of the comments above and, it would be considered prudent to test samples of the made ground materials for a range of contaminants, typically comprising the range of analytes given below.

Soils – Human Health:

Typically comprising: Arsenic, Cadmium, Chromium (total, III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide & Total Organic Carbon (TOC). In addition, contamination testing for Polycyclic Aromatic Hydrocarbons (PAH's) and Total Petroleum Hydrocarbons (TPH's) and asbestos screening should be undertaken.

During future development if any deleterious materials or malodours are encountered (i.e. unforeseen contamination) then an assessment of these materials should be undertaken.

The information reviewed indicates that the site can be considered as being located within a **LOW** ground contamination risk setting for Human Health.

Groundwater / Leachate – Controlled Waters:

The following issues have been taken into consideration when assessing the risks towards groundwater / controlled waters;

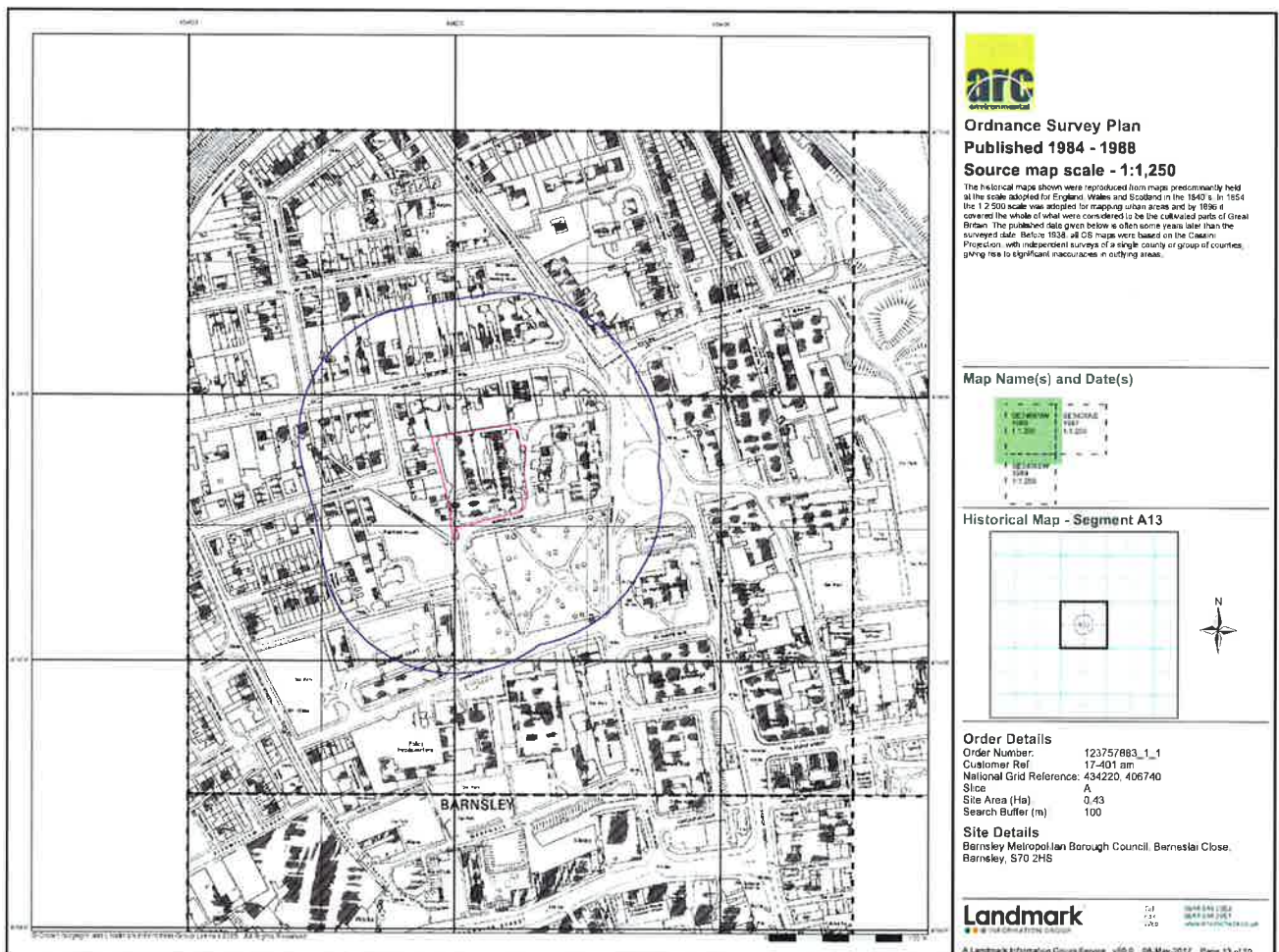
- The site is not located on or within c.750m of a Source Protection Zone (SPZ).
- There are no Water Abstractions recorded within c.750m from the site boundaries.
- The solid geological deposits beneath the site have been classified as a Secondary A Aquifer.

The information reviewed indicates that the site can be considered as being located within a **LOW** ground contamination risk setting for Controlled Waters.

Report Type: Phase 1: Desk Top Study Report.

Project: 17-401 – Barnsley Metropolitan Borough Council Offices, Barnsley Close, Barnsley, South Yorkshire, S70 2HS.
Prepared For: McCarthy & Stone (Retirement Lifestyles) Limited.

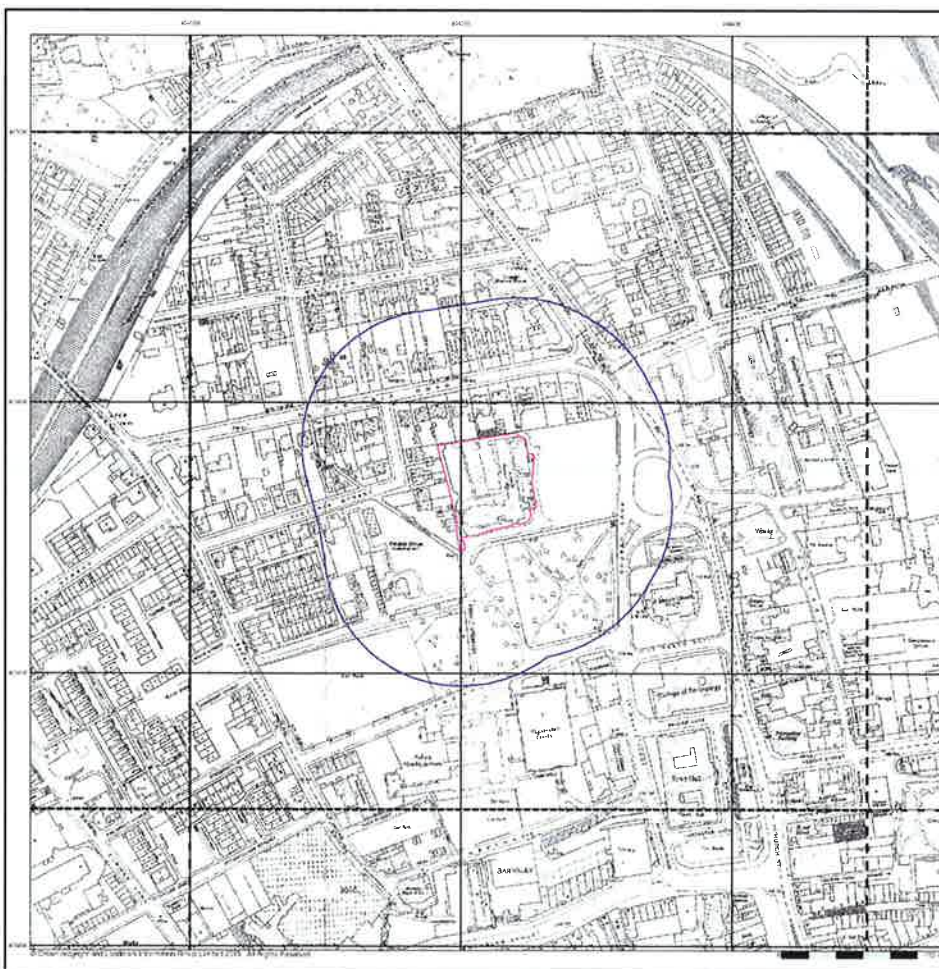
Page 12 of 14





GENERAL REFERENCES

- British Geological Survey: Maps, Reports, Memoirs, etc.
 - BGS Sheet 87 – Barnsley, Solid & Drift Edition, 1:50,000.
 - BGS boreholes SE30NW41/A, located c.290m south and SE30NW259, located c.310m east.
 - Coal Authority Non-Residential Mining Report – Ref 51001454667001.
- DoE, DEFRA & EA - Contaminated Land Reports.
 - CLR 1: A framework for assessing the impact of contaminated land on groundwater and surface water. Report by Aspinwall & Co. Volumes 1 & 2. DoE, 1994.
 - CLR 2: Guidance on preliminary site inspection of contaminated land. Report by Applied Environmental Research Centre Ltd. Volume 1. DoE, 1994.
 - CLR 3: Documentary research on industrial sites. Report by RPS Group plc. DoE, 1994.
 - CLR 4: Sampling strategies for contaminated land. Report by The Centre for Research into the Built Environment, The Nottingham Trent University. DoE, 1994.
 - CLR 5: Information systems for land contamination. Report by Meta Genetics Ltd. DoE, 1994.
 - CLR 6: Prioritisation & categorisation procedure for sites which may be contaminated. Report by M J Carter Associates. DoE, 1995.
 - CLR11: Model Procedures for the Management of Land Contamination. DEFRA/EA, 2004.
 - Science Report Final SC050021/SR2: Human Health Toxicological Assessment of Contaminants in Soils, 2009.
 - Science Report Final SC50021/SR3: Updated Technical Background to the CLEA Model, 2009.
 - Science Report SC050021/SR4: CLEA software (version 1.06) handbook, 2009.
 - BS10175:2011+A1:2013: Investigation of Potentially Contaminated Sites – Code of Practice.
 - BS8576:2013: Guidance on Investigations for Ground Gas, Permanent Gases and Volatile Organic Compounds (VOCs).
 - BS5930:2015: Code of Practice for Site Investigations.
 - BRE Digest BR211 (2015): Radon: Guidance on Protective Measures for New Buildings.
 - Guidance for the Safe Development of Housing on Land Affected by Contamination, R&D66, 2008 (NHBC, EA, CIEH).
 - Methane and Associated Hazards to Construction - CIRIA Reports 149,150,151 & 152.
 - Assessing Risks Posed by Hazardous Ground Gases to Buildings, CIRIA C665, 2007.
 - BS8485: 2015: Code of Practice for the Characterization and Remediation from Ground Gas in Affected Developments.
 - CIRIA Report C624 'Development and flood risk – guidance for the construction industry' and Planning Policy Statement 25 (PPS25).
 - CIRIA Report C733 'Asbestos in Soil and Made Ground: a guide to understanding and managing risks'.



Additional SIMs

Published 1977 - 1991

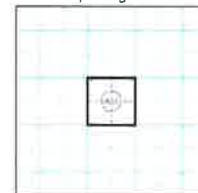
Source map scale - 1:1,250

The SIM cards (Distance 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 1991 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

Order Number: 123757893_1_1
Customer Ref: 17401 am
National Grid Reference: 434220, 406740
Site: A
Site Area (Ha): 0.43
Search Buffer (m): 100

Site Details

Barnsley Metropolitan Borough Council, Barnsley Close,
Barnsley, S70 2HS



A Landmark Information Group Service. v50.0 08 May 2017 Page 11 of 12

Landmark
 ●●● INFORMATION GROUP
 Landmark Information Group Service v5.0 © 06-May-2017 Page 19 of 18

Site Details
 Derbyshire Metropolitan Borough Council, Barnsley Chase,
 Barnsley, S70 2HS

Order Details
 Order Number: 12357883.1
 Customer Ref: 17-001
 National Grid Reference: A43220, 406740
 Scale: 0.43
 Search Buffer (m): 100

Map Name(s) and Date(s)

Source map scale - 1:1,250

Published 1975

Information

Supply of Unpublished Survey

©1975 map by Ordnance Survey. Information was produced before 1975 and 1977, however the material was all published. There were more of a week-to-week basis as they received updates of the data. These maps were unpublished, and they do not represent a current map. They were produced at 1:1,250 and 1:250 scale.

APPENDIX I

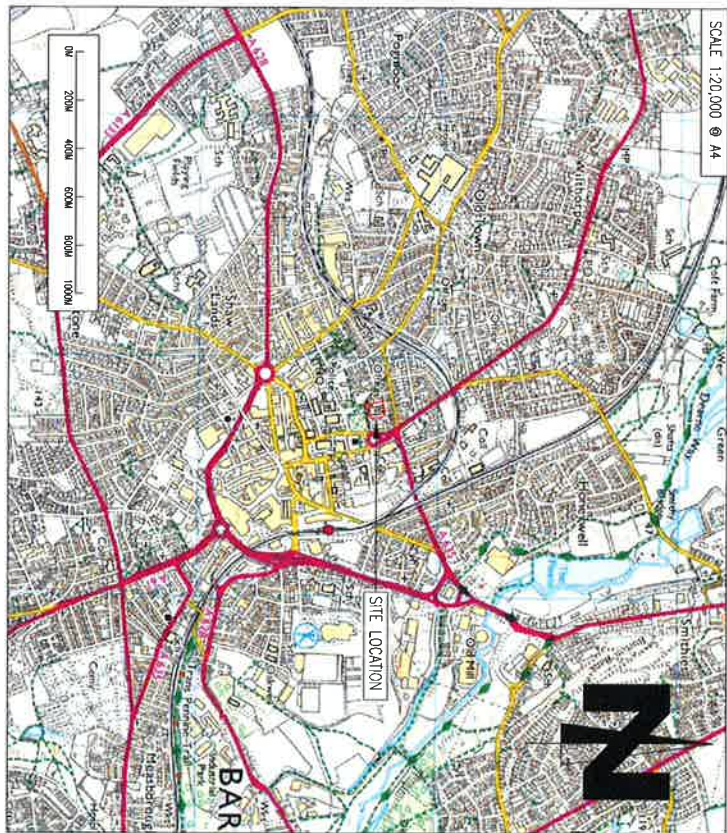
Location Plan

Aerial Photograph

Existing Site Layout Plan

Proposed Site Layout

Site Observations - Photographic Record Sheets



Client: **MCCARTHY & STONE
(RETIREMENT LIFESTYLES) LTD**

Project Title: **Proposed Sheltered Accommodation
Barnsley Metropolitan Borough
Council Offices, Barnsley Close**

Job Reference: **17-401** Drawing Number: **17-401** Revision:

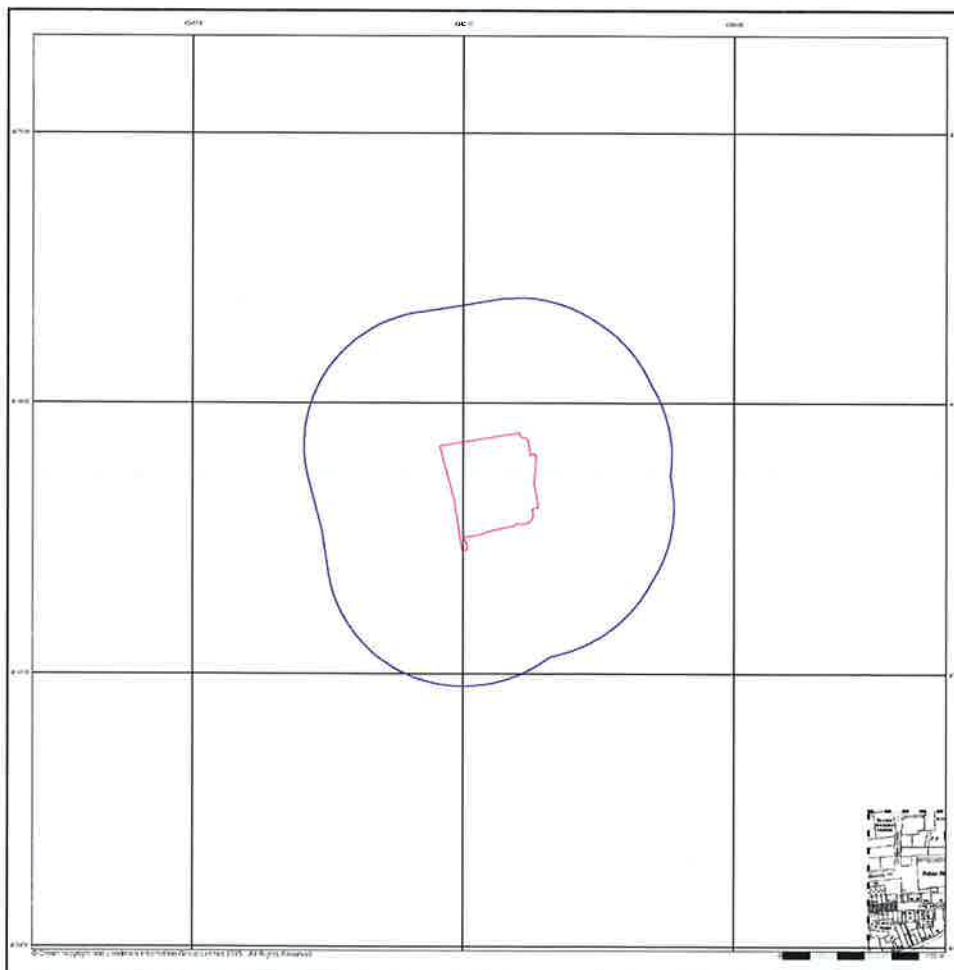
Drawn by: **P.D.** Date: **30.05.17** Scale of Map: **As Shown**

Checked by: **AM** Approved by: **AM**

The copyright and title of this drawing are reserved to the client of the drawing.
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ARC ENVIRONMENTAL LTD

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Unit 1 Elliot Court
St. John's Road
Meadowfield
Durnham
Tel: (0191) 378 6380
Fax: (0191) 378 0454
e-mail: admin@arc-environmental.com
web: www.arc-environmental.com



Supply of Unpublished Survey Information

Published 1975

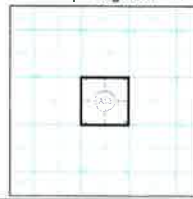
Source map scale - 1:1,250

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a work-in-progress plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

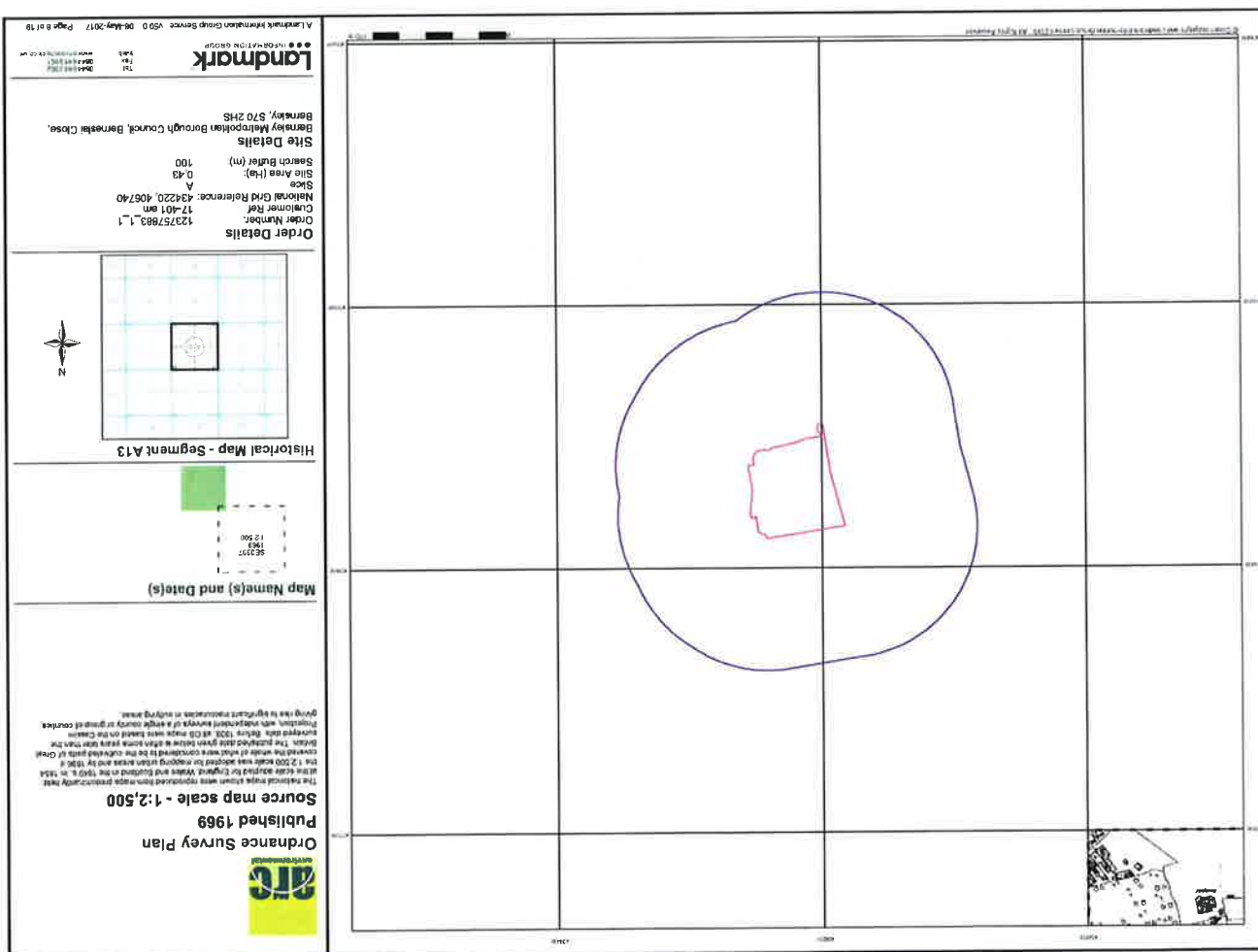
Order Number: 123757883_1_1
Customer Ref: 17-401 am
National Grid Reference: 434220, 406740
Site Area (Ha): 0.43
Search Buffer (m): 100

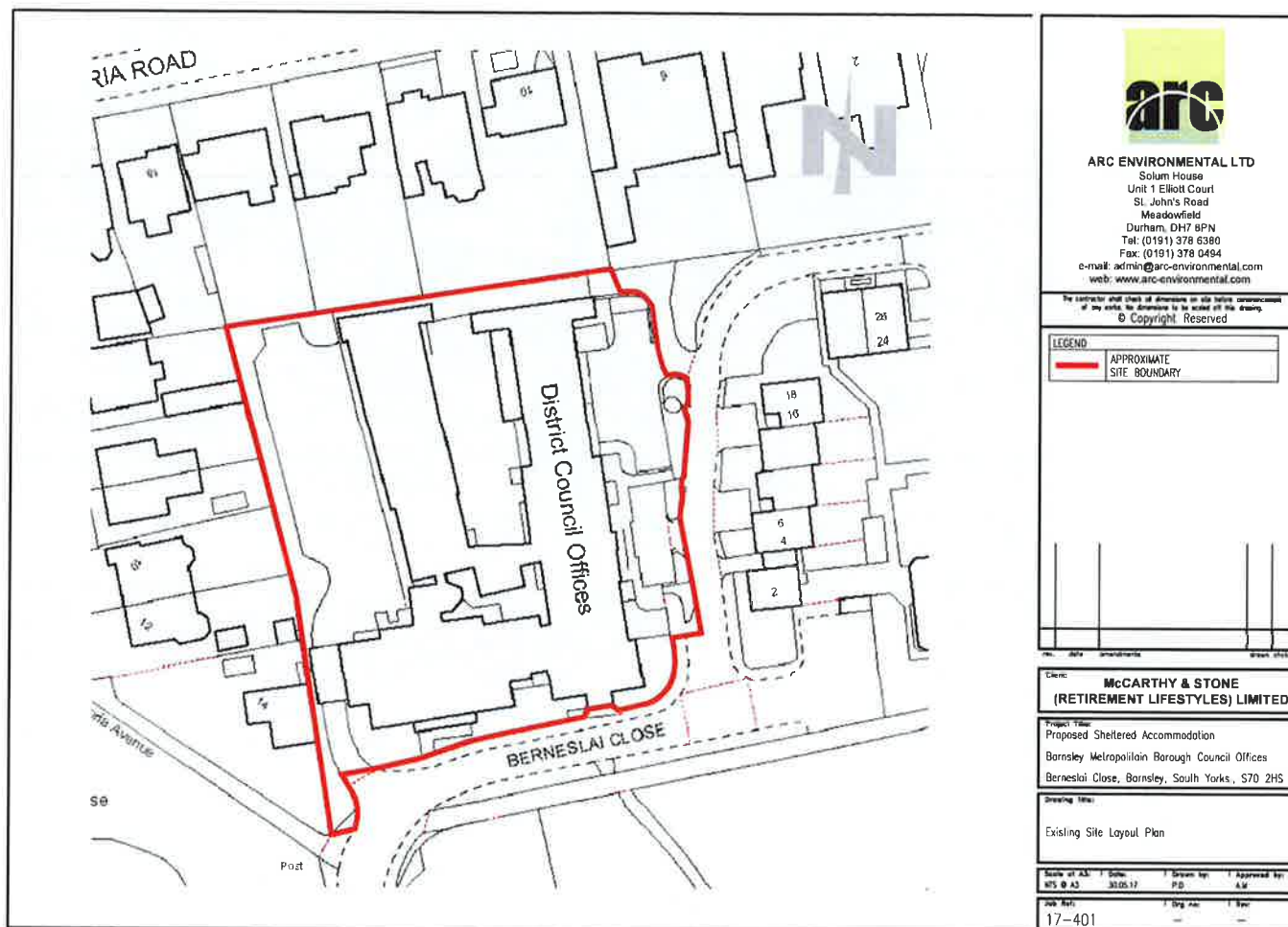
Site Details

Barnsley Metropolitan Borough Council, Barnsley Close,
Barnsley, S70 2HS

Landmark
THE INFORMATION GROUP

2nd
Floor
1st





arc environmental

Ordnance Survey Plan
Published 1968 - 1989
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly sold at the scale adopted for England, Wales and Scotland in the 1950's. In 1984 the 1:2,500 scale was adopted for mapping urban areas and by 1990 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 Cassin Projection, with individual sheets covering a single county or group of counties, giving rise to significant inaccuracies in adjoining areas.

Map Name(s) and Date(s)

Historical Map - Segment A13

Order Details
 Order Number: 123757683_1_1
 Customer Ref: 17-401 am
 National Grid Reference: 434220, 406740
 Size: A
 Site Area (Ha): 0.43
 Search Buffer (m): 100

Site Details
 Barnsley Metropolitan Borough Council, Berneslai Close,
 Barnsley, S70 2HS

Landmark
 INFORMATION GROUP

1st: 06/04/2017
 2nd: 06/04/2017
 3rd: 06/04/2017

A Landmark Information Group Service - 1500 - 08-May-2017 Page 7 of 16



ARC ENVIRONMENTAL LTD

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Fax: (0191) 378 0454
e-mail: admin@arc-environmental.com
web: www.arc-environmental.com

The contractor shall take all steps to ensure the safe commencement of any work, the dimensions to be stated on this drawing.
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SITE INFORMATION

- THE SITE IS LOCATED WITHIN A RESIDENTIAL SETTING TOWARDS SOUTHWEST TOWN CENTRE, SOUTH YORKSHIRE.
- N.E. & S.W. - RESIDENTIAL PROPERTIES, S - BARNESLEY CLOSE. THE SITE IS BOUNDARY IN SHOPS, OCCUPYING AN APPROXIMATE AREA OF 0.43 HECTARES (10) AND PROPOSED DEVELOPMENT DETAILS INCLUDE THE CONSTRUCTION OF SHELTERED ACCOMMODATION WITH ACCESS FOR CAR PARKING AND COMBUSTIBLE WASTE LANDSCAPING.
- THE SITE SURROUNDING AREA CONSISTS OF WARE SHEDS, A CONCRETE & TARMACING WITH OCCASIONAL GRASS BORDERS ALONG THE SOUTHERN AND EASTERN BOUNDARIES.
- THE DISTRICT COUNCIL OFFICE BUILDINGS ARE NOTED ON THE CENTRAL, SOUTHERN AND EASTERN PERIMETERS OF THE SITE.
- WHEN WORKING INTO EXISTING THE VERTICAL SITE USAGE, BURIED SERVICES ARE LIKELY BEHIND THE SITE.
- APPROPRIATE SERVICE RECORDS SHOULD BE PROCURED PRIOR TO ANY FURTHER INVESTIGATION WORKS.
- BASED ON PROVIDED FLUOR PLANS AND OUTWARD EVIDENCE OF THE OFFICE BUILDINGS, A RESIDENTIAL BUILDING IS NOTED ON THE SOUTH OF THE SITE.
- THE EXISTING STRUCTURE APPEARS TO COMPARE VENTILATION DUCTS BEHIND THE MORE MODERN BUILDING ON THE SOUTH OF THE SITE AND STORMAGE / SOLAR ROOMS BEHIND THE VILLAGE BUILDING ON THE EAST OF THE SITE.

no.	date	description	drawn	checked

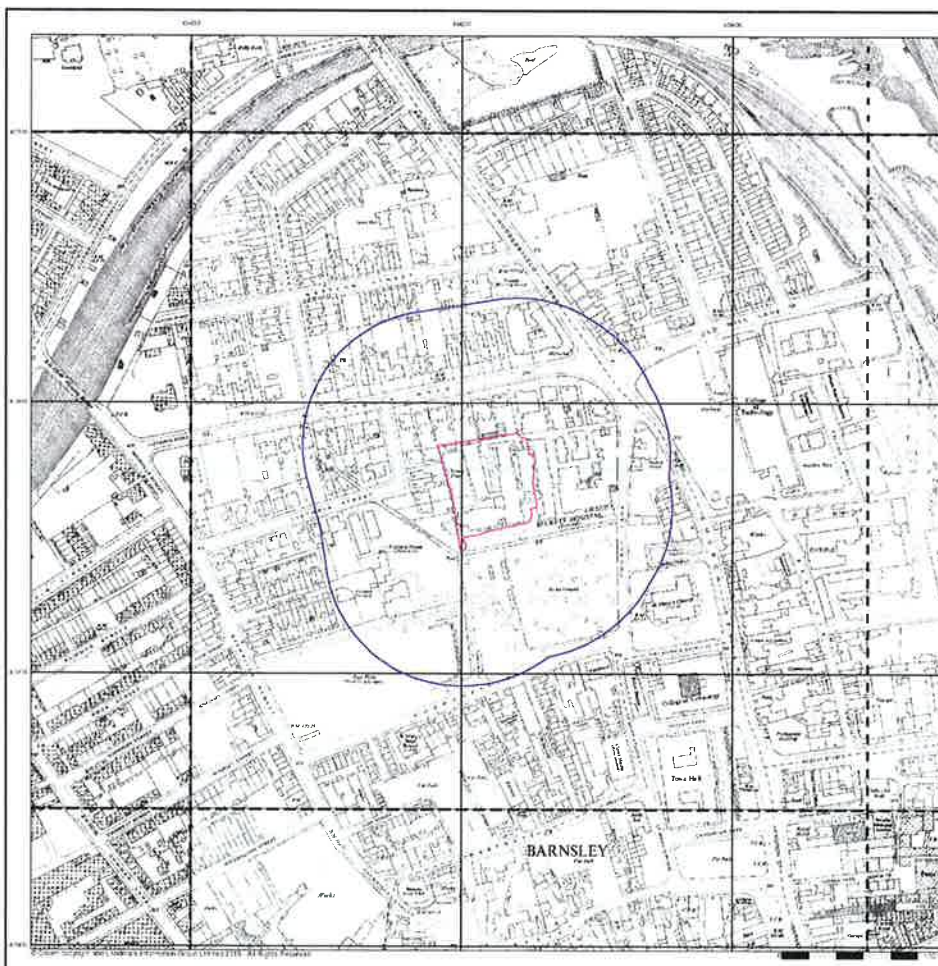
Client: **MCCARTHY & STONE**
(RETIREMENT LIFESTYLES) LIMITED

Project Title: Proposed Sheltered Accommodation
Barnsley Metropolitan Borough Council Offices
Barnesley Close, Barnsley, South Yorks., S70 2HS

Drawing Title: Site Photographic Record Sheet (2)

Scale of A3	Scale	Drawn by	Approved by
MTS 043	30.05.17	P.D.	A.M.

Job Ref	1. Site	1. Date
17-401		



Ordnance Survey Plan Published 1959 - 1961 Source map scale - 1:1,250

The national maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1950s. In 1954 the 1:2,500 scale was adopted for mapping urban areas and by 1956 it covered the whole of what was considered to be the sub-divided parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1959, 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 adjoining areas.

Map Name(s) and Date(s)

OS Grid Reference	Scale	Date
17-401	1:1,250	1959
17-401	1:2,500	1959
17-401	1:2,500	1959
17-401	1:2,500	1959
17-401	1:2,500	1959
17-401	1:2,500	1959

Historical Map - Segment A13



Order Details
Order Number: 123757883_1_1
Customer Ref: 17-401 am
National Grid Reference: 434220, 406740
Slice: A
Site Area (Ha): 0.43
Search Buffer (m): 100

Site Details
Barnsley Metropolitan Borough Council, Barnesley Close,
Barnsley, S70 2HS



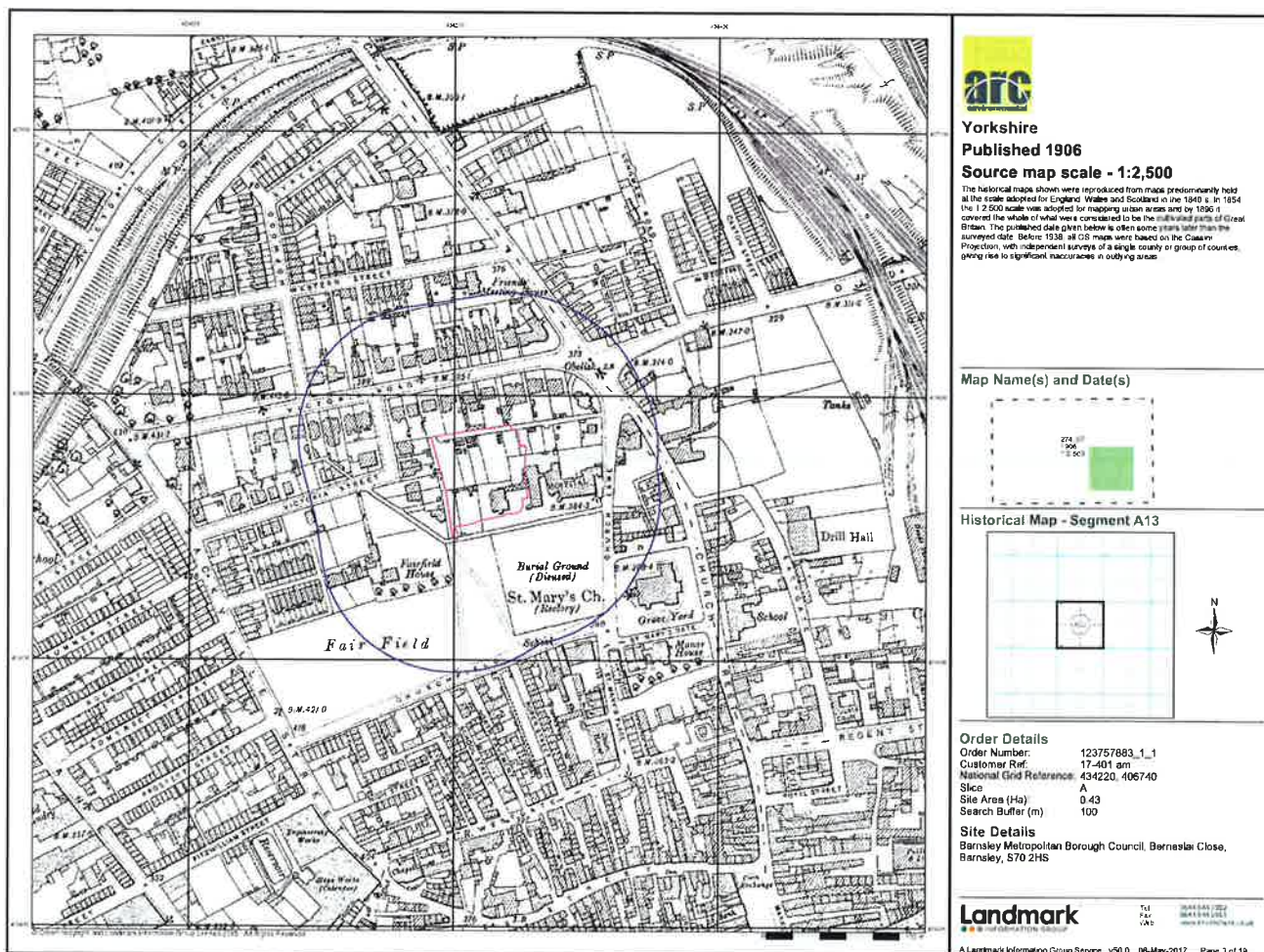


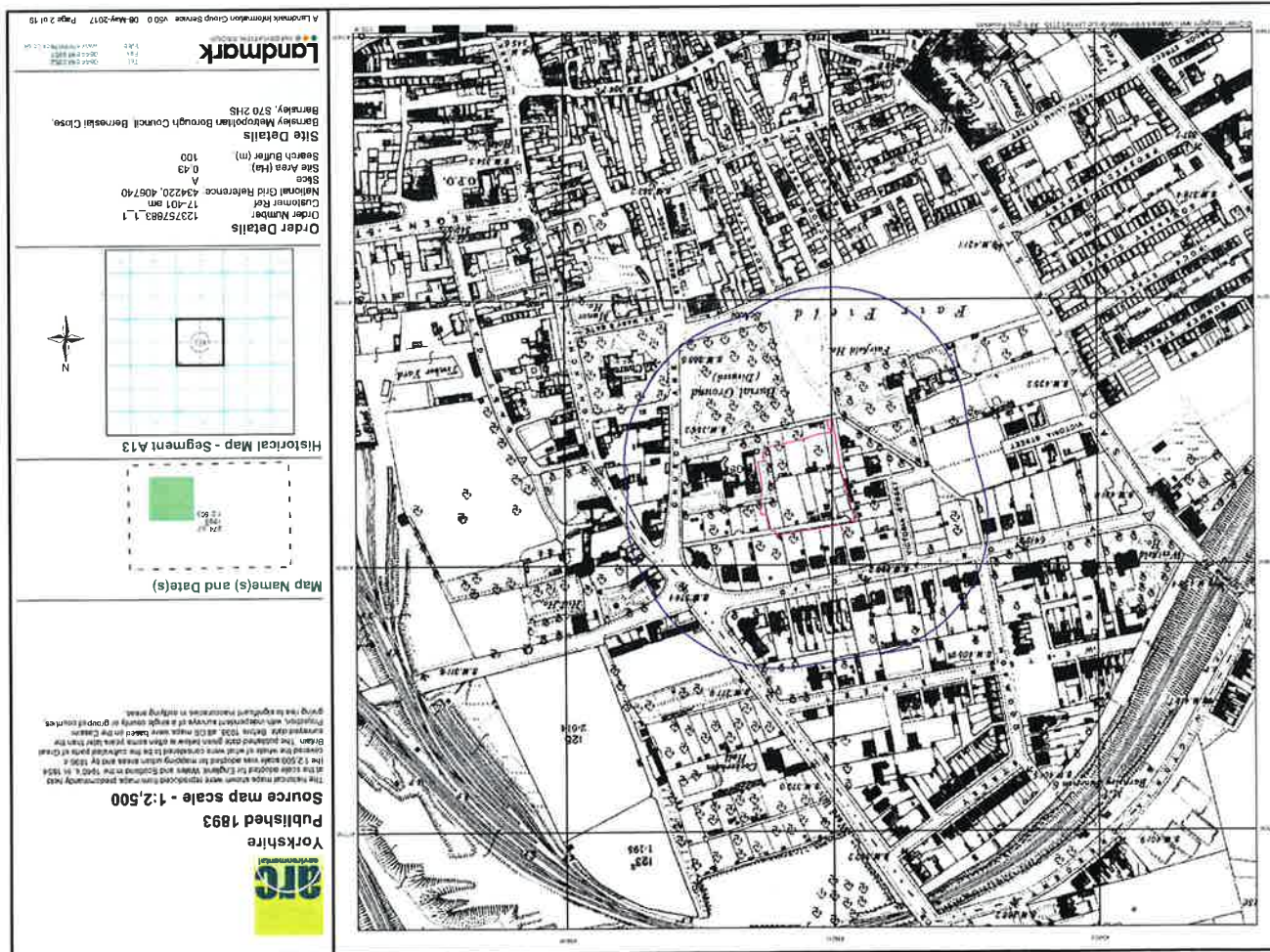
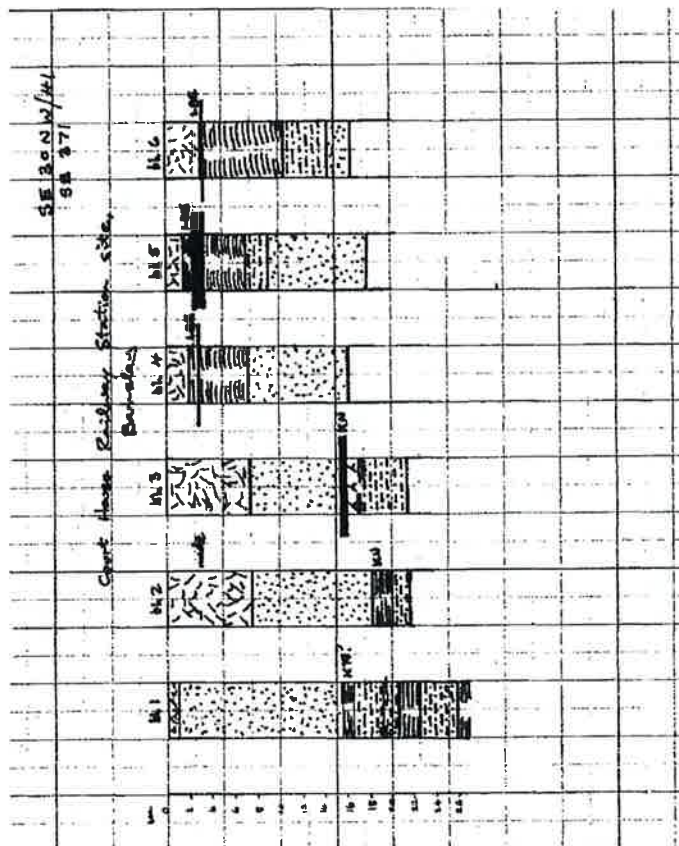
APPENDIX II

BGS Boreholes

Non-residential Coal Authority Report

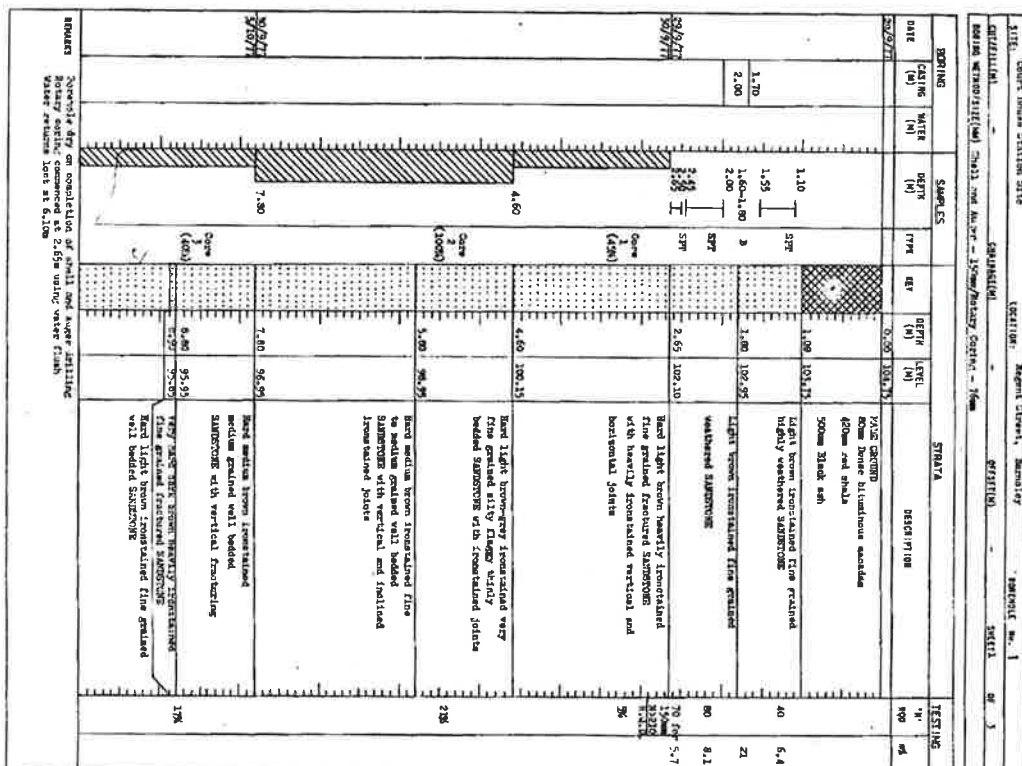
Report Type:- Phase 1 Desk Top Study Report
Project:-
Prepared For:-





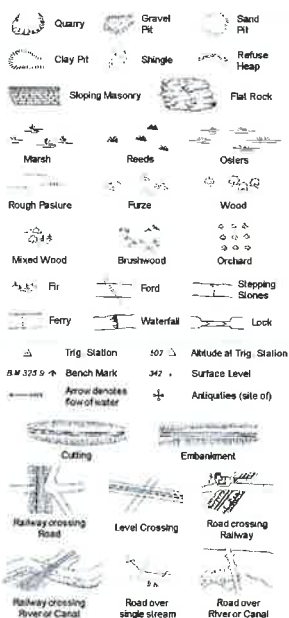
BOREHOLE RECORD

SI 30 NW 41 A FORM 40



Historical Mapping Legends

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



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



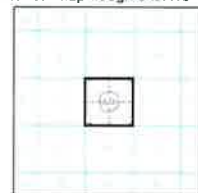
Large-Scale National Grid Data 1:2,500 and 1:1250



Historical Mapping & Photography included:

Mapset Type	Scale	Date	Pr.
Yorubas	1:3,600	1923	1
Yorubas	1:2,500	1926	1
Yorubas	1:2,500	1931	1
Ordinance Survey Plan	1:1,250	1938-1961	1
Ordinance Survey Plan	1:2,500	1962-1963	2
Ordinance Survey Plan	1:1,250	1968-1989	2
Ordinance Survey Plan	1:2,500	1990	2
Supply of Unpublished Survey Information	1:2,500	1975	1
Supply of Unpublished Survey Information	1:1,250	1975	10
Additional S.M.s	1:2,500	1927-1991	1
Additional S.M.s	1:1,250	1992-1993	1
Additional S.M.s	1:1,250	1994-1995	1
Additional S.M.s	1:2,500	1998-1999	2
Additional S.M.s	1:1,250	1999	10
Large Scale National Grid Data	1:1,250	1993	10
Large Scale National Grid Data	1:1,250	1993	10
Large Scale National Grid Data	1:1,250	1993	10
Historical Aerial Photography	1:2,500	1990	10

Historical Map - Segment A13



Order Details

Order Number:	123757883_1_1
Customer Ref:	17-401 am
National Grid Reference:	434220, 406740
Size	A
Site Area (Ha)	0.43
Search Buffer (m)	100

Site Details
Barnsley Metropolitan Borough Council, B
Barnsley, S70 2HS

Landmark
●●● INFORMATION GROUP

Tel 0644 844 1052
Fax 0644 844 5951
Web www.landmark.co.uk

A Landmark Information Group Service +550 06-May-2017 Page 1 of 10

BGS ID: 83902 : BGS Reference: SE30NW41/A
 British National Grid (27700) : 434508,406662

Report an issue with this borehole



NATURAL ENVIRONMENT RESEARCH COUNCIL

<< < Prev Page 3 of 4 ▾ Next > >>

FORM 407

SE 30 NW 41 A

SOUTH YORKSHIRE COUNTY COUNCIL
 DEPARTMENT OF ENGINEERING
 ENGINEERING SERVICES LABORATORY

BOREHOLE RECORD

SITE: Court House Station 214				LOCATION: Regent Street, Barnsley		BOREHOLE No. 1		SHEET 2 of 3	
DEPTH (m) = 0.000000				CORRELATION = 0.000000		DEPTH (m) = 0.000000		SHEET 2 of 3	
BATHYMETRY (m) = 0.000000				Shell and layer = 15mm/10mm/10mm		DEPTH (m) = 0.000000		SHEET 2 of 3	
BORING		SAMPLES		STRATA		TESTING			
DATE	DEPTH (m)	TYPE	DEPTH (m)	LEVEL (m)	DESCRIPTION	'm'	SP		
	11.65	CORE (540)	11.65	35.10	Hard light brown ironstone fine grained well bedded SANDSTONE	286			
					Hard medium brown ironstone fine to medium grained well bedded fractured SANDSTONE with vertical and horizontal ironstone joints				
	13.80	CORE (485)	13.80	30.95	Hard medium brown-grey ironstone medium grained well bedded	226			
					Hard medium grey medium grained fractured SANDSTONE				
	15.70	CORE (1000)	15.70	25.50	Hard dark grey silty medium bedded fractured MUDSTONE with traces of plant fossils	06			
					Hard light grey SILTSTONE				
					Hard medium grey MUDSTONE				
	17.00	CORE (1000)	17.00	21.20	Hard light grey thickly bedded SILTSTONE with ironstone bedding planes	786			
					Hard medium grey silty fractured MUDSTONE				
					Hard medium grey medium bedded SILTSTONE				
	20.00		20.00	16.75	Hard ironstone vertical fractures				



British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 83902 : BGS Reference: SE30NW41/A
British National Grid (27700) : 434508,406662
Report an issue with this borehole

<< < Prev Page 4 of 4 ▾ Next > >>

BOREHOLE RECORD

SE 30 NW / 41 A FORM 407
SOUTH YORKSHIRE COUNTY COUNCIL
DEPARTMENT OF ENGINEERING
ENGINEERING SERVICES LABORATORY

SITE		LOCATION		BOREHOLE No.	
Court House Station Site		Regent Street, Barnsley		SE 30 NW / 41 A	
CERTIFICATION		SHALL and deeper - 150m/Barley Gearing - 70m		DEPTH 3	
BORING		SAMPLES		STRATA	
DATE	CAUSE	DEPTH (m)	TYPE	DEPTH (m)	DESCRIPTION
5/10/77	WATER	20.00	ECF	20.00	Bed medium grey silty sandstone with horizontal vertical fracture
5/10/77	WATER	22.05	ECF	22.05	Bed medium grey silt bedded fine-grained silty sandstone
5/10/77	WATER	24.00	ECF	24.00	Bed medium grey silt bedded fine-grained silty sandstone
5/10/77	WATER	26.10	ECF	26.10	Bed of Borehole
TESTING		TESTING		TESTING	



10k Raster Mapping

Published 2006

Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landranger which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, trees 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 (region, county, unitary authority, district, civil parish and constituency).

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

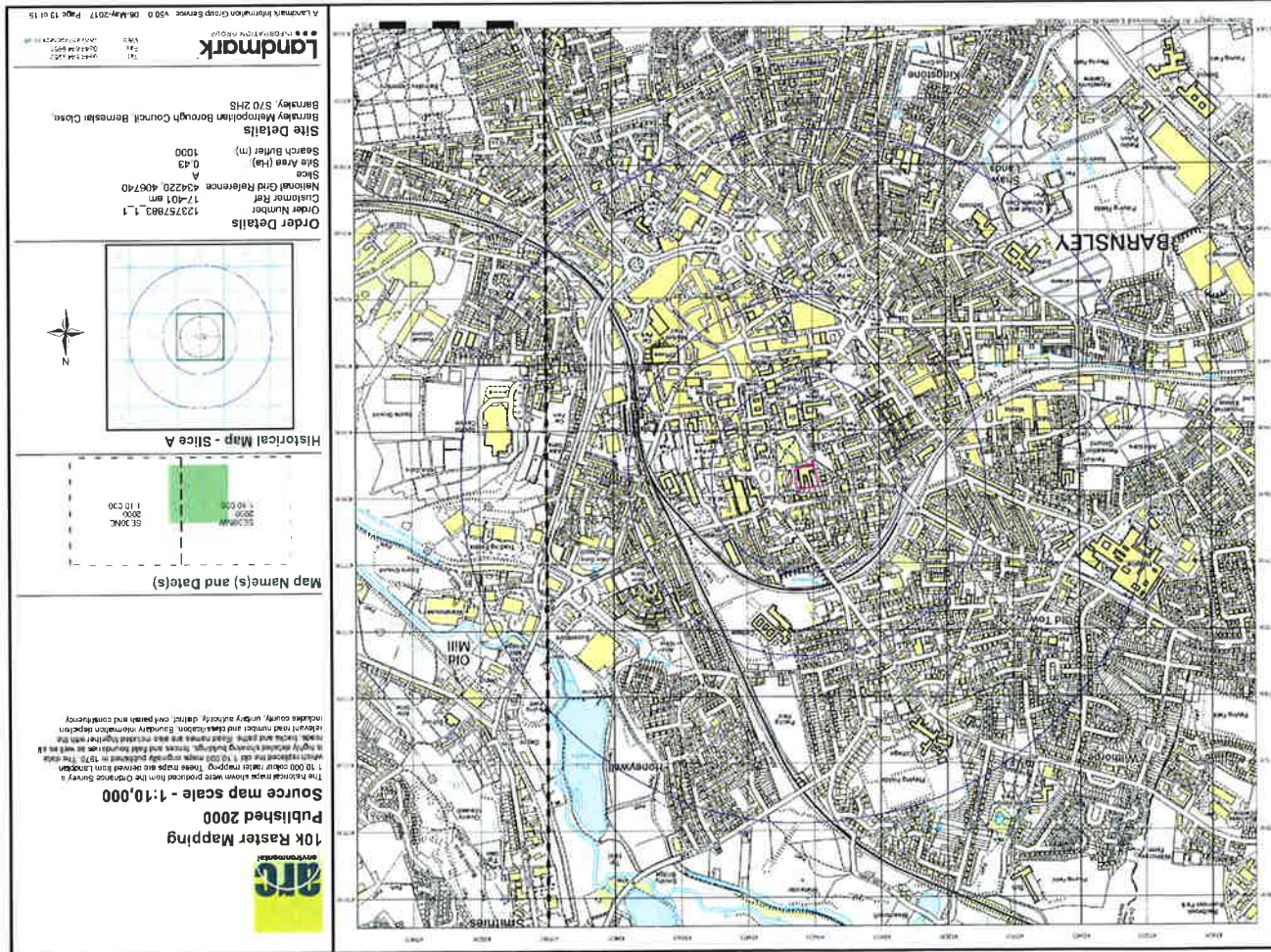
Order Number 123757863_1.1
Customer Ref 17-401 am
National Grid Reference 434220, 406740
Site A
Site Area (Ha) 0.43
Search Buffer (m) 1000

Site Details

Barnsley Metropolitan Borough Council, Barnsley Close, Barnsley, S70 2HS

Landmark
Information Group

A Landmark Information Group Service - v5.0.0 08 May 2017 Page 14 of 15



Norwest Holst Soil Engineering Ltd.

Contract No. F4314

Location: Stables, St Barnabas

Client: Richard Hennigway

Method of Boring: Rotary

Diameter of Borehole: 100mm

BOREHOLE LOG

Sheet 1 of 2

Chainage

SE 30 NW 259

Ground Level

Date 21.9.75/24.9.79

Borehole No. 1

Description of Strata	Legend	Depth Below Ground (m)	O.D. Level (m)	Casing Depth at Sampling (m)	Sampling and Coring	Wet R.O.D. %	Daily Progress
MAVEGRUND		0.30					
Strong light brown closely jointed lightly weathered fine grained SANDSTONE					1.50	25%	
					4.00	60%	
					100%	100%	
					5.50	80%	
					8.50	90%	
					8.50	35%	
COAL		7.80					
Very weak to moderately strong grey highly fractured sandstone with thin partings of shale		8.20					
Strong brown fine to medium grained closely jointed slightly weathered SANDSTONE		9.25					

Remarks (Observations of Ground Water etc.)

Air flush used

Complete air return throughout drilling

Water strike at 8.5m Standing level 7.75m

Type of Sample

S.P.T. ☒ Undisturbed

C.P.T. ☒ Vane

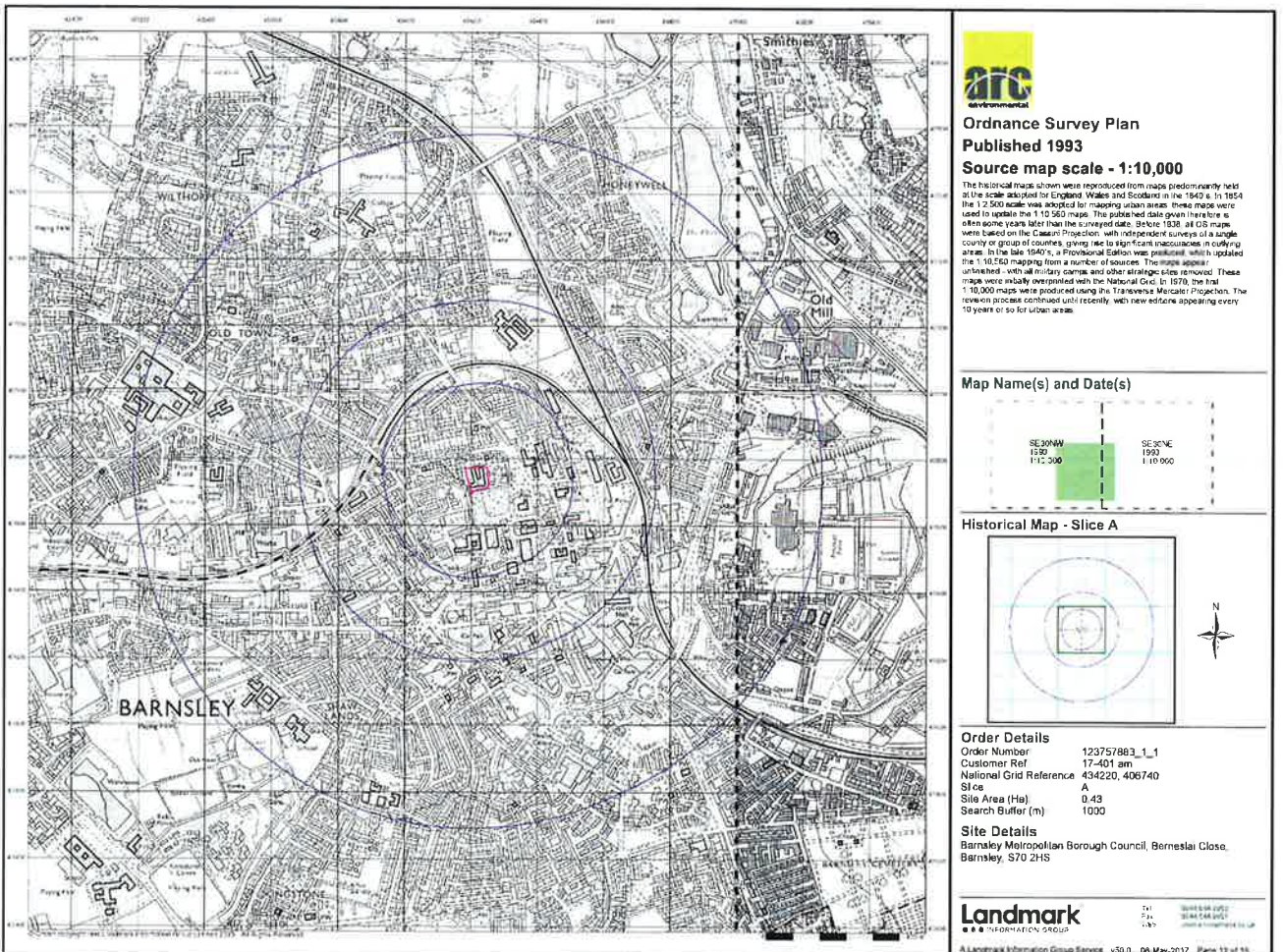
Jar ☒

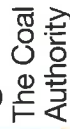
Bulk ☒

Piezometer ☒

Norwest Holst Soil Engineering Ltd.						Borehole No.
F4314						1
Contract No. 10099772						
Location: Barnsley						
Client: Norwest Holst						
Method of Borehole: Rotary						
Diameter of Borehole: 100mm						
Sheet 2 of 2						
Chaining: 24.8.78						
Ground Level: m A.O.D.						
Description of Strata	Legend	Depth Below Level (m)	O.D. Level (m)	Chaining Depth at Coring	Sampling and Coring	%/ Daily Progress
Strong brown fine to medium grained closely jointed slightly weathered SANDSTONE		11.25		10.25	20%	
Moderately strong grey generally highly fractured slightly weathered shaley SILTSTONE		13.70		13.00	100%	
Moderately strong grey highly fractured slightly weathered MUDSTONE		15.25		15.25	24.5%	

Type of Sample	Remarks (Observations of Ground Water etc.)
S.P.T. Undisturbed	
Id. C.P.T. X Vane	
Jar	
Water	
Bulk	





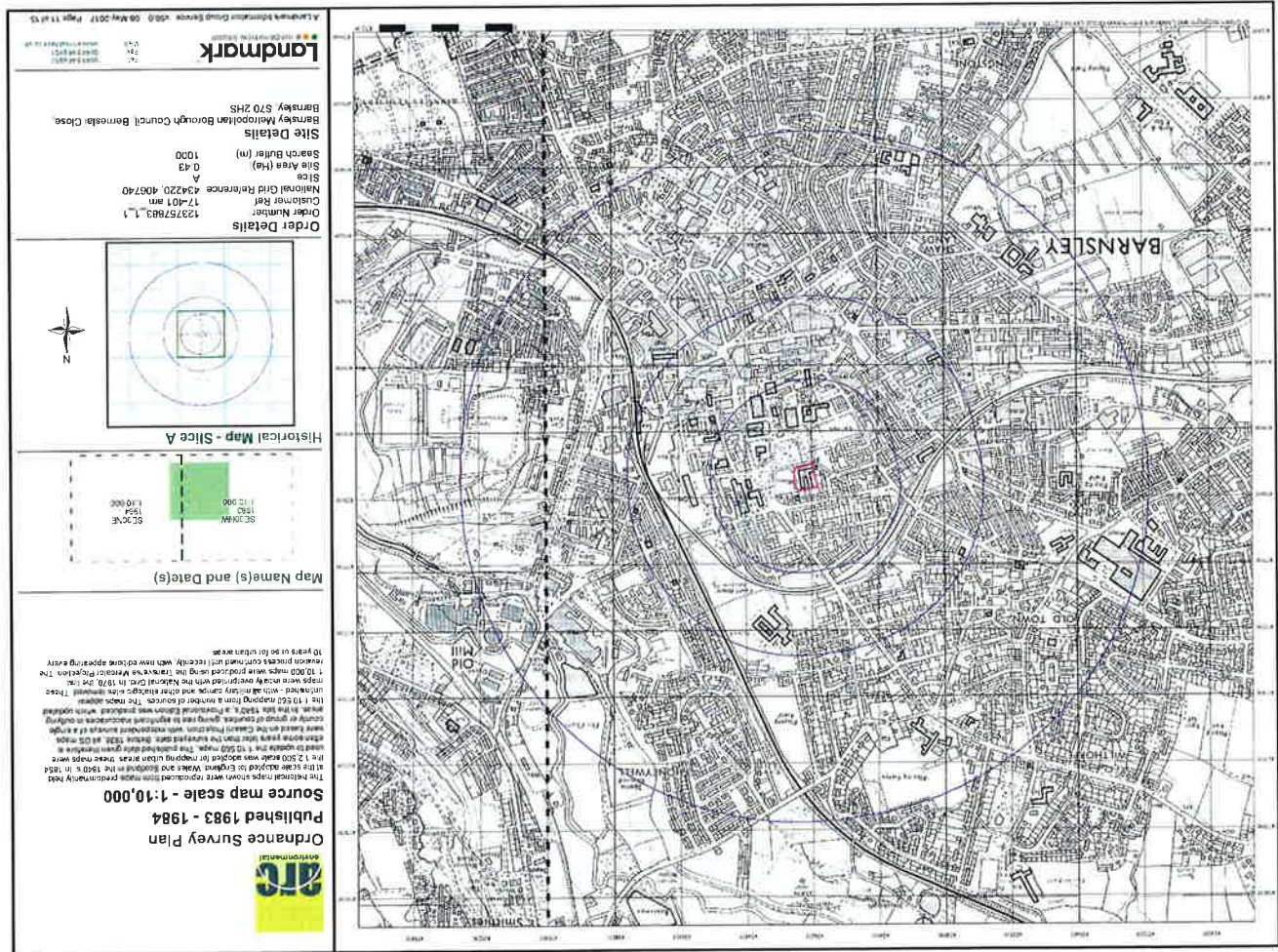
A close-up, high-angle shot of a person's hands typing on a laptop keyboard. The laptop screen displays a map application with a highlighted route. The person is wearing a light-colored, patterned sweater. The background is blurred, showing a wooden table and a framed picture.



CON29M
Non-Residential
Mining Report

BARNESLEY METROPOLITAN BOROUGH
COUNCIL
BERNESLAI CLOSE BARNESLEY
SOUTH YORKSHIRE

Date of enquiry:	08 May 2017
Date enquiry received:	08 May 2017
Issue date:	08 May 2017
Our reference:	51001454667001
Your reference:	123757883_21



CON29M Non-Residential Mining Report

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

Client name

LANDMARK INFORMATION GROUP LIMITED

Enquiry address

BARNSELY METROPOLITAN BOROUGH COUNCIL,
BERNESLAI CLOSE, BARNSELY, SOUTH YORKSHIRE

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

/company/the-coal-authority

/the-coal-authority

/coalauthority

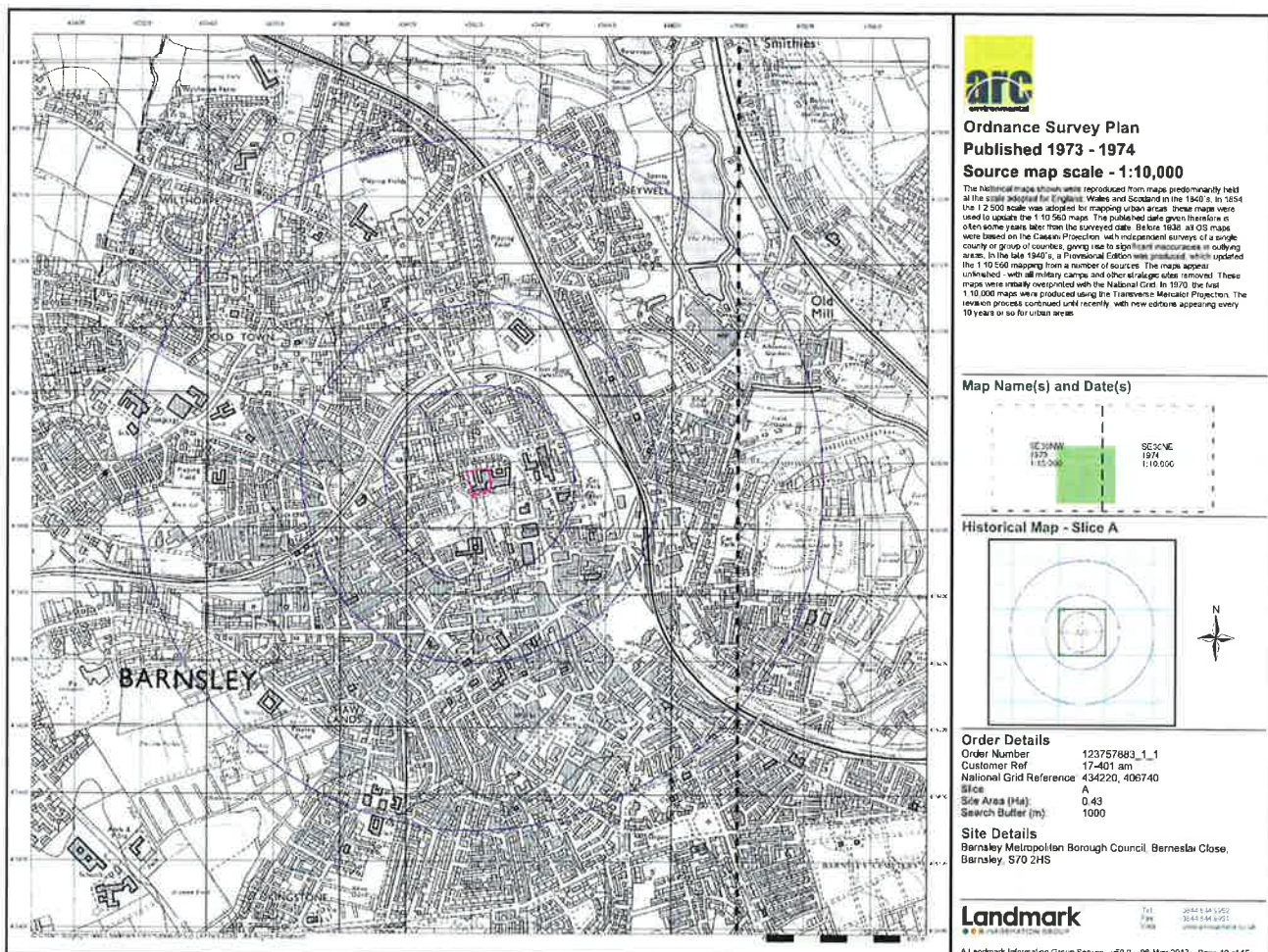


Map data

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reserved.

Ordnance Survey Licence number: 100020315

Approximate position of property

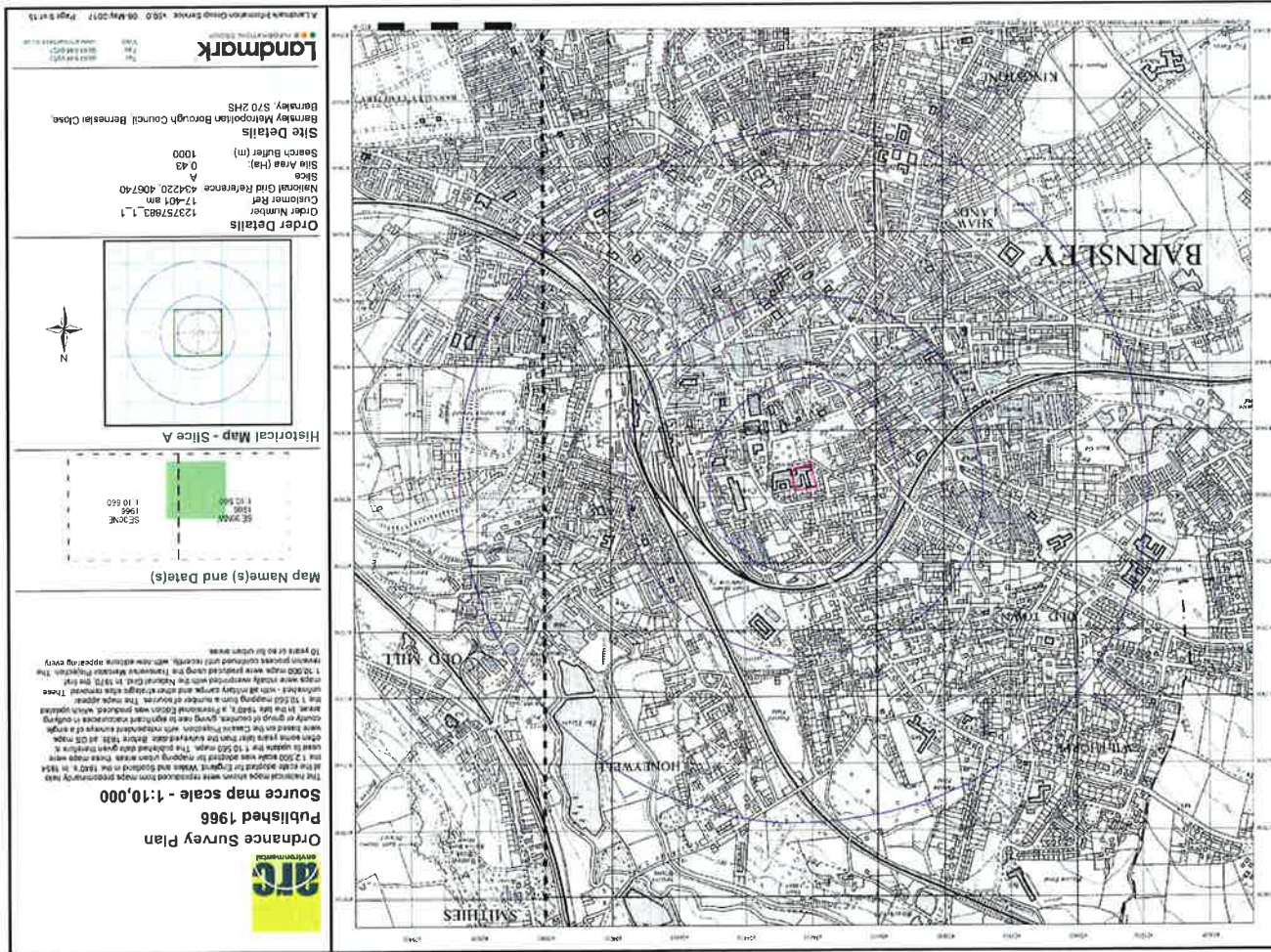


Summary

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	No
5	Coal mining geology	No
6	Past opencast coal mining	No
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	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No
15	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.



Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 1 seam of coal at 100m depth, and last worked in 1834.

Any movement in the ground due to coal mining activity should have stopped.

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 plans to grant a licence to remove coal using 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.

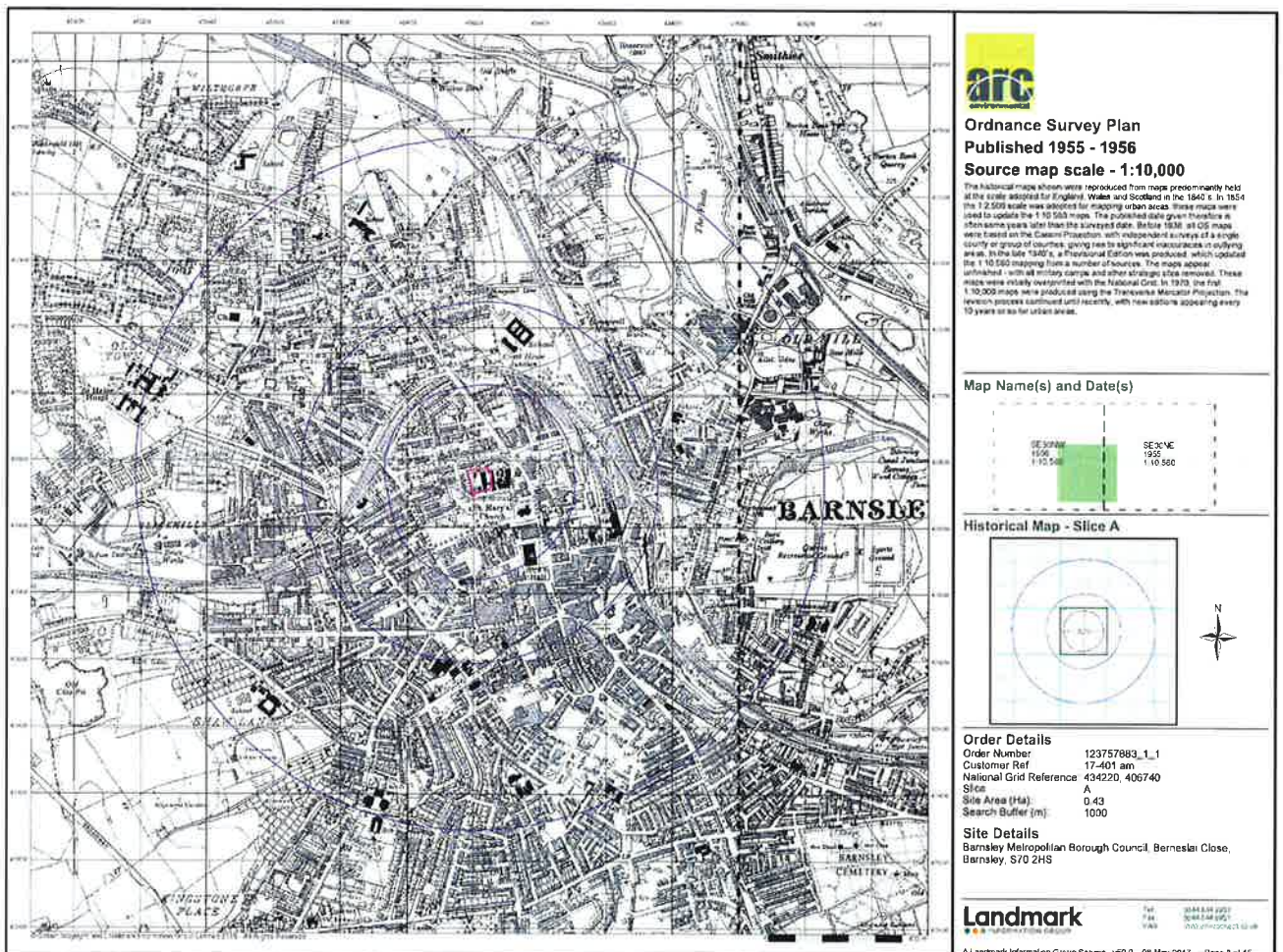
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

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

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.



The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

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

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.

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

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

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

12. Withdrawal of support
The property is not in an area where a notice to withdraw support has been given.

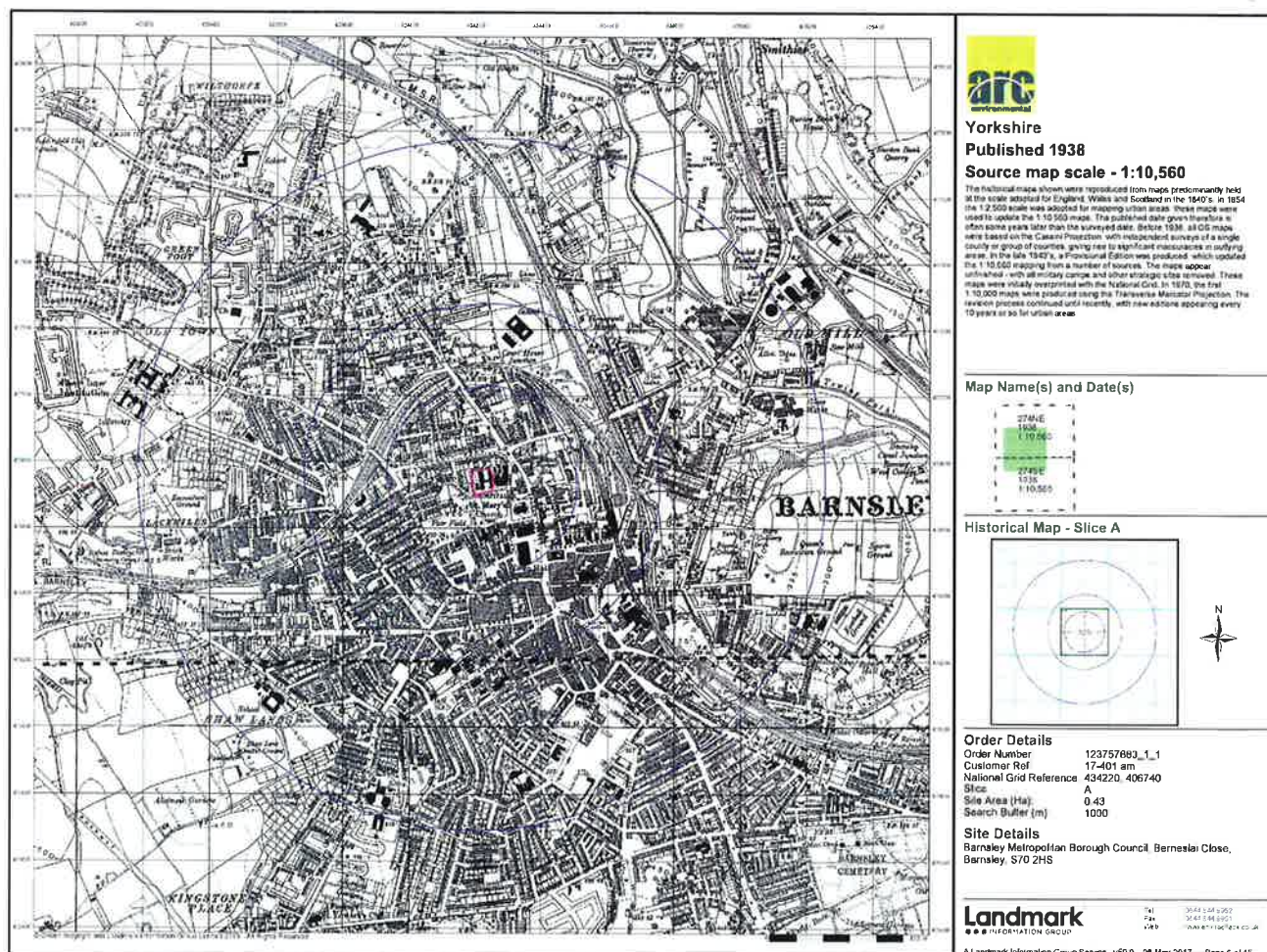
The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13. Working facilities over 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.

15. Information from the Cheshire Brine Subsidence Compensation Board
The property lies outside the Cheshire Brine Compensation District.



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If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



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/thecoalauthority
/coalauthority

