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GEO-ENVIRONMENTAL ASSESSMENT REPORT

LIVIN HOUSING LIMITED / GUS ROBINSON DEVELOPMENTS LIMITED

PROPOSED RESIDENTIAL DEVELOPMENT

DOMESTIC GARAGES OFF BRUCE ROAD

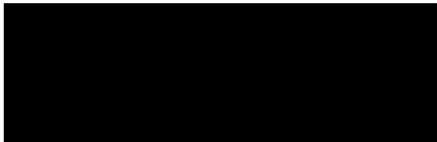
NEWTON AYCLIFFE

DL5 7AE

Project No: 17-631(F)

Prepared By:

John Ditchburn

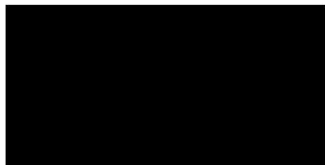


Date:

06/11/17

Approved By:

Kevin Moir



Date:

06/11/17

The information and/or advice contained in this Geo-Environmental Assessment 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 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.

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1.0 Introduction

November 2017

As requested by Portland Consulting Engineers Limited on behalf of Livin Housing Limited / Gus Robinson Developments Limited, Ground Investigation works have been carried out at domestic 'lock-up' garages located off Bruce Road within the town of Newton Aycliffe, County Durham, where it is proposed to construct a pair of semi-detached bungalows with private gardens and off-street parking in the near future.

A site reconnaissance (walkover) survey was undertaken as part of this report which involved an inspection of the site and its vicinity. Site photographs were taken during the survey and these can be seen attached in Appendix I.

Intrusive investigation works comprised 3 no. dynamic sampling boreholes, BH1 to BH3 and 2 no. concrete cores / manually excavated trial pits and the positions of the investigation locations can be seen on the Borehole Location Plan, a copy of which is included in Appendix II. It should be noted that this plan is for orientating purposes only, as the positions shown are approximate, and the scale is non-standard.

2.0 Site Details

Table 1.0

N = north, S = south, E = east, W = west

Site Name & Address:	Land off Bruce Road, Newton Aycliffe, DL5 7AE.
OS Grid Reference:	427410, 524800
Description of Location	The site is located within a residential area which includes areas of public open space. Blocks of terraced brick built flat roofed lock-up garages are present on site along with areas of hardstanding.
Site boundaries:	N, E, W & S = Residential properties

3.0 Scope of Works

Table 2.0

Client:	Livin Housing Limited.
Main Contractor:	Gus Robinson Developments Limited.
Project type:	The development will comprise 2 no. semi-detached bungalows with private gardens and off-street parking.
Site Location plan:	See Appendix I.
Layout plan (existing):	See Appendix I.
Layout plan (proposed):	See Appendix I.
Intrusive Investigation Works:	3 no. windowless sampling boreholes, BH1 to BH3 & 2 no. concrete cores / manually excavated trial pits.
Laboratory Testing:	Geotechnical & Ground Contamination.
CLEA Classification:	<i>Residential with home grown produce.</i>
Reporting:	Factual & Interpretative.
Site Observations:	The lock-up garages were in disrepair with damaged doors, felt missing or damaged roofs and localised cracking on some mortar joints. Some 'fly tipping' was evident which comprised domestic waste – See site Photographs in Appendix I.

The information contained in this report is limited to the area of the site, as indicated on the Existing Site Plan shown in Appendix I, and to those areas accessible during the ground investigation. The depths of strata on the record sheets are recorded from current ground levels.

No topographical survey or other works were requested or undertaken and therefore when considering the full scope of the development any features and / or issues not specifically mentioned in this report cannot be assumed to have been covered.

4.0 Site Setting (Desk Based Study)

4.1 Recent Site History: -

Copies of old survey plans covering this site area and adjacent land are included in Appendix I, and the relevant details from these are summarised below.

The c.1859 OS plan shows the site and surrounding areas to be undeveloped agricultural fields. A field drainage channel is recorded c.40m to the northeast. The site is developed with domestic lock-up garages and surrounding areas with housing from c.1954 to c.1963 which has generally remained unchanged until present day.

4.2 Site Geology: -

The geological assessment for this site has been based on records produced by the British Geological Survey (BGS). The following documents have been reviewed as part of this study: -

Stockton, England and Wales Sheet 33, Solid and Drift Editions, 1: 50,000 Series
Sheet NZ22SE 1:10,000 Series
Geology of Britain Viewer
ArcGIS Digital Mapping
BGS Borehole data

4.2.1 Made Ground

Geological maps do not record any made ground on site and when considering the lack of previous development, no significant made ground is anticipated.

4.2.1 Superficial Deposits

The superficial geology underlying the site is shown to comprise Glacial Till which typically comprises sandy gravelly clay with boulders and sand lenses.

4.2.3 Solid Geology

The solid geology underlying the site is shown to comprise the Ford Formation (Dolostone) deposited during the Period of the Earth's history known as the Permian. The solid geological deposits are anticipated to be at c.>15m depth.

4.3 Coal Mining Risk Assessment: -

In accordance with the Coal Authority the site is shown to lie out with a coal mining reporting area and based on the geological setting the site is not deemed to be at risk from past shallow coal mining activities.

4.4 Hazardous Ground Gas Risk Assessment: -

When considering the risk of ground gas affecting the development there are no potential sources (e.g. active or historical landfill sites, areas of deep fill, shallow coal workings, etc.) within a plausible distance from the site (See Section 4.8). Similarly, the site is not in an area affected by radon gas.

4.0 Site Setting (Desk Based Study) (Cont'd)

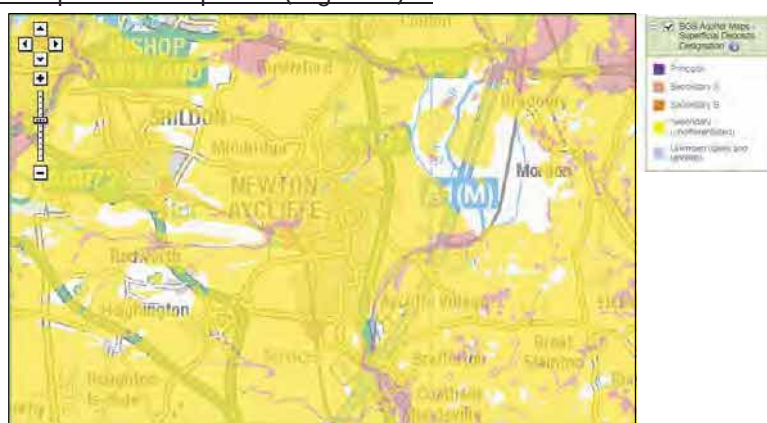
4.5 Hydrogeology: -

4.5.1 Source Protection Zones (Figure 1): -



The site lies within a Zone 3 (Total Catchment) source protection zone in relation to groundwater abstraction. These zones show the risk of contamination from any activities that might cause pollution in the area. The maps show three main zones (inner, outer and total catchment).

4.5.2 Aquifer Map –Superficial Deposits (Figure 2): -



The superficial deposits represent a Secondary (undifferentiated*) Aquifer. (* = a geological unit previously designated as both a minor and non-aquifer in different locations due to the variable characteristics of the soil type).

4.5.3 Aquifer Map –Bedrock (Figure 3): -



4.0 Site Setting (Desk Based Study) (Cont'd)

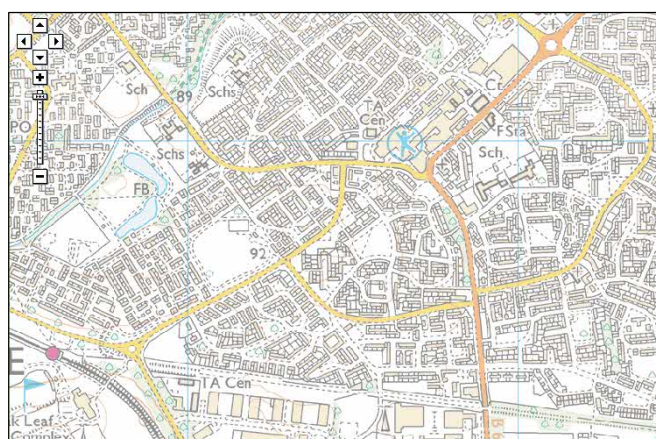
4.5 Hydrogeology (Cont'd): -

4.5.3 Aquifer Map –Bedrock (Figure 3) (Cont'd): -

The bedrock deposits represent a Principal Aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

4.6 Hydrology: -

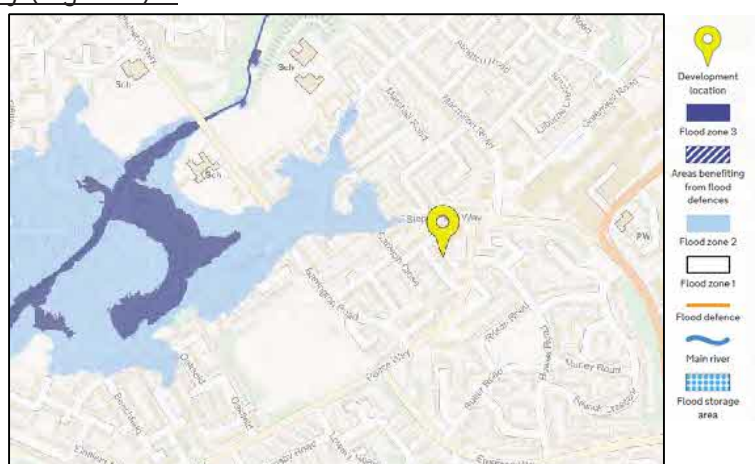
4.6.1 OS Map –Surface Water Features (Figure 4): -



A pond is recorded c.450m west of the site area (see figure 4 above).

4.7 Flooding: -

4.7.1 Flood Probability (Figure 5): -

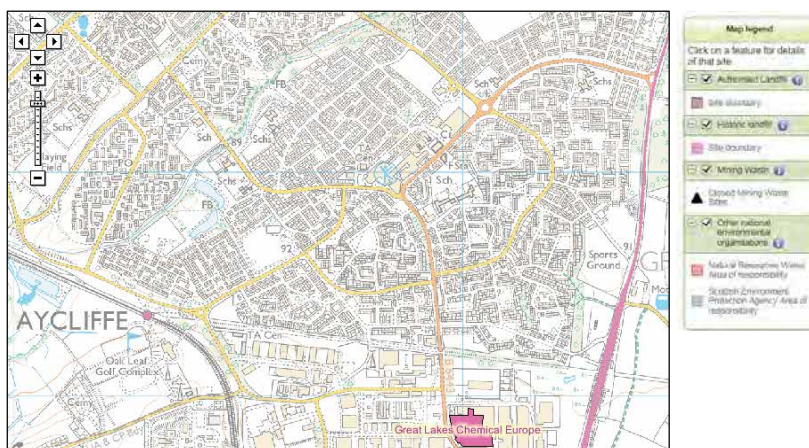


In accordance with to the EA website (Represented by Figure 5 above) the site is not considered to be at risk from flooding. The LA and EA may hold additional information relating to this site with respect to periodic flooding, standing water or poor drainage problems.

4.0 Site Setting (Desk Based Study) (Cont'd)

4.8 Landfill & Waste: -

4.8.1 Authorised Landfill, Historic Landfill & Closed Mining Waste Sites (Figure 6): -



4.8.2 Artificial Ground (Figure 7): -



The following information relating to landfill and waste has been obtained from the Environment Agency (Figure 6), BGS Geo-Index (Figure 7) and the walkover survey completed;

There are no Historical Landfill Sites, Authorised Landfill Sites or areas of artificial ground recorded within c.250m from the site.

When considering the lack of historical development and the anticipated ground conditions, it is felt that the ground conditions would not pose a risk as a source of on-site hazardous ground gas / vapour generation.

There is no risk of mine gas rise as there are no shallow coal workings.

Following a review of OS historical plans and when considering there are no potential sources of ground gas and vapour production on this site, no ground gas/vapour monitoring is required.

5.0 Investigation Rationale

This ground investigation has been designed to provide information on the general ground and groundwater conditions around the proposed development area and potential areas of geotechnical concern. The rationale behind the location of each exploratory hole is summarised in Table 5.1 below.

Table 5.1

Potential issue	Exploratory hole
Geotechnical considerations	BH1 to BH3
General contamination assessment	BH1 to BH3
Investigation of potentially deleterious sub-base materials below the garage floor slabs	Core 1 & Core 2

6.0 Ground Conditions

For an accurate description of the ground conditions encountered at each investigation position, reference should be made to the borehole record sheets in Appendix II.

6.1 Soil Profile: -

At the borehole positions made ground was recorded to depths of between c.0.50m to c.0.60m and comprised mixed surfacing (tarmac and concrete) overlying sandy clay with occasional brick fragments and ash, clinker and slag. BH2 was terminated at shallow depth due to encountering a concrete obstruction.

The underlying natural drift deposits (Glacial Till) comprised initially soft to firm (low strength) silty very sandy clay (BH1) to c.1.10m, then stiff (high strength) sandy gravelly clay with some cobbles recorded to a depth of at least c.4.00m bcgl.

6.2 Garage Floor Sub-Base Assessment: -

From the concrete coring carried out within the existing garages, no evidence of red shale was noted with clayey demolition rubble, ash and slag recorded. The thickness of the concrete floor slab was c.0.10m to c.0.13m with no membrane or steel reinforcement evident.

6.3 Groundwater: -

All the borehole positions remained dry both during and on completion of the fieldworks.

7.0 Insitu Testing

7.1 Insitu Hand Shear Vane Tests: -

Insitu hand shear vane tests were carried out using an insitu hand vane tester on the fine soils encountered across the site. The insitu hand vane tester takes direct readings of shear strength. Three vane sizes allow for the direct determination of undrained shear strength of extremely low to high strength clays.

The peak vane value is determined by a calibrated scale ring built into the head assembly. The cross handle/dial is used both to push the vane to the desired test depth and apply the shearing torque. The results are summarised in Table 7.1 below and can also be found adjacent to the appropriate sample level, on the graphic borehole record sheets in Appendix II.

Table 7.1

Type of Strata	Range of Shear Strength Values (kN/m ²)	Result Details
Made ground –sandy clay	46	Firm
Silty very sandy CLAY	36	Low strength deposits

Sandy gravelly CLAY	90 to >120	High strength deposits
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8.0 Laboratory Testing

Geotechnical and ground contamination screening was undertaken by Professional Soils Limited of Doncaster and Chemtech Environmental Limited of Stanley, Co. Durham (UKAS & MCERTS accredited).

8.1 Determination of pH & SO₄: -

Representative samples of the made ground and natural strata were tested to determine their pH value and Soluble Sulphate (SO₄) levels. The results are shown in Table 8.1 below and are also contained in the Chemtech Analytical Reports no. 67266 a copy of which can be seen in Appendix IV.

Table 8.1

ACEC = Aggressive Chemical Environment for Concrete site classification

Position	Depth (m)	pH	SO ₄ (mg/l)	Design SO ₄ Class	ACEC Class
BH1	0.10-0.30	8.9	1,137	DS-1	AC-2
BH1	1.00-2.00	8.6	401	DS-1	AC-1
BH3	0.10-0.30	9.3	1,215	DS-2	AC-2
BH3	0.50-1.00	9.6	366	DS-1	AC-1

From these results, the samples tested range in pH from 8.6 to 9.6 and the amount of Soluble Sulphate present falls both outside and within the negligible range (<500mg/l). Therefore, in accordance with BRE Special Digest 1: 2005 (3rd Edition), the site should be given a classification of Class DS-2. When considering the nature of the materials tested and assuming mobile groundwater, the overall assessment of the Aggressive Chemical Environment for Concrete (ACEC) for the site overall, is AC-2.

8.2 Determination of Liquid & Plastic Limits: -

Representative samples of the fine soil (clays) recovered from the site were tested to determine their liquid and plastic limits, so that these materials could be classified. The results are summarised in Table 8.2 below and are also contained in the PSL Analytical Report (ref no.: PSL17/4512), a copy of which is contained in Appendix III.

Table 8.2 M/C = Moisture Content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index, CL = Clay Low, CI = Clay Intermediate, CH = Clay High.

Position	Depth (m)	M/C (%)	LL	PL	PI	Class	% Passing 425 m Sieve
BH1	0.60-1.00	21	41	21	20	CL	81
BH1	2.00-3.00	11	33	16	17	CL	80
BH3	1.00-2.00	21	48	23	25	CI	97
BH3	3.00-4.00	14	30	15	15	CL	89

From these results, when plotted on the plasticity chart the samples tested fall within the low and intermediate plasticity ranges. From the resulting plasticity indices, these clays display a low and moderate volume change (shrinkage or swelling) potential, when considering the amount passing the 425 m sieve. When comparing the moisture content to the plastic limits the moisture contents for the clays were recorded as being below their plastic limits i.e. the soils appear desiccated / over-consolidated and are in a semi-plastic state.

Therefore, some of the clay soils are likely to undergo changes in volume, if large changes in their natural moisture content were to occur due to seasonal variations or the like and if new foundations are to be based within these materials, it is recommended that they are taken down to a minimum depth of 0.90m below finished ground levels.

An increase in this minimum depth may be required to reach competent ground and if the proposed development is within proximity to existing, envisaged or recently removed vegetation, then an increase in the minimum foundation depth may also be required to avoid the effects of future shrinkage and swelling of these materials. Reference should be made to BS5837: 2012, "Trees in Relation to Design, Demolition and Construction".

8.0 Laboratory Testing (Cont'd)

8.3 Ground Contamination Risk Assessment: -

Representative samples of the made ground were passed onto Chemtech Environmental of Stanley, Co. Durham, so that contamination screening could be carried out. The catalogue of testing results can be found in the Chemtech Analytical Report (ref no. 67266) attached, with the following analysis carried out:

2 no. soil samples screened for Arsenic, Cadmium, Chromium III, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide, presence of Asbestos, Speciated Polycyclic Aromatic Hydrocarbons (PAH's) –based on the current USEPA 16 PAH's and Speciated Total Petroleum Hydrocarbons (TPH's) –Split into 8 no. Carbon Bands.

These results have been used to carry out a Quantitative Human Health Risk Assessment by comparing maximum concentrations to current assessment criteria (i.e. Critical Concentration (C_c)).

Table 8.3

Analyte	Critical Conc. (C_c) mg/kg	No. of Samples Screened	Max. Conc. (C_M) recorded mg/kg	Has C_M exceeded C_c	No. of Samples $>C_c$
Arsenic	37 ⁽¹⁾	2	3.7	NO	0
Cadmium	11 ⁽¹⁾	2	<0.2	NO	0
Chromium III	910 ⁽¹⁾	2	27	NO	0
Chromium VI	6 ⁽¹⁾	2	<1	NO	0
Copper	2400 ⁽¹⁾	2	20	NO	0
Lead	200 ⁽²⁾	2	44	NO	0
Mercury	40 ⁽¹⁾	2	<0.5	NO	0
Nickel	130 ⁽¹⁾	2	7.3	NO	0
Selenium	250 ⁽¹⁾	2	5.8	NO	0
Zinc	3700 ⁽¹⁾	2	47	NO	0
Cyanide	34 ⁽⁴⁾	2	<1	NO	0
Asbestos	Presence	2	NAD	NO	0
Acenaphthene	210 ⁽¹⁾	2	<0.01	NO	0
Acenaphthylene	170 ⁽¹⁾	2	<0.01	NO	0
Anthracene	2400 ⁽¹⁾	2	0.09	NO	0
Benzo(a)anthracene	7.2 ⁽¹⁾	2	0.03	NO	0
Benzo(a)pyrene	2.2 ⁽¹⁾	2	<0.02	NO	0
Benzo(b)fluoranthene	2.6 ⁽¹⁾	2	<0.02	NO	0
Benzo(ghi)perylene	320 ⁽¹⁾	2	<0.02	NO	0
Benzo(k)fluoranthene	77 ⁽¹⁾	2	<0.02	NO	0
Chrysene	15 ⁽¹⁾	2	0.02	NO	0
Dibenz(ah)anthracene	0.24 ⁽¹⁾	2	<0.02	NO	0
Fluoranthene	280 ⁽¹⁾	2	0.07	NO	0
Fluorene	170 ⁽¹⁾	2	<0.01	NO	0
Indeno(123cd)pyrene	27 ⁽¹⁾	2	<0.02	NO	0
Naphthalene	2.3 ⁽¹⁾	2	<0.01	NO	0
Phenanthrene	95 ⁽¹⁾	2	0.05	NO	0
Pyrene	620 ⁽¹⁾	2	0.07	NO	0
VPH (>C5-C7)	42 ^{(1)*}	2	<0.1	NO	0
VPH (>C7-C8)	100 ^{(1)*}	2	<0.1	NO	0
VPH (>C8-C10)	27 ^{(1)*}	2	0.1	NO	0
EPH (>C10-C12)	74 ^{(1)*}	2	<4	NO	0
EPH (>C12-C16)	140 ^{(1)*}	2	4	NO	0
EPH (>C16-C21)	260 ^{(1)*}	2	17	NO	0
EPH (>C21-C35)	1100 ^{(1)*}	2	1051	NO	0
EPH (>EC35-EC44)	1100 ^{(1)*}	2	241	NO	0

⁽¹⁾ = LQM C4SL (Residential with home grown produce –1% SOM), ⁽²⁾ = C4SL, ⁽³⁾ = CL:AIRE GAC, ⁽⁴⁾ = Atkins ATRISK⁵⁰ SL SSV, * = most sensitive LQM C4SL aliphatic / aromatic fraction adopted. NAD = No Asbestos Detected.

8.0 Laboratory Testing (Cont'd)

8.3 Ground Contamination Risk Assessment (Cont'd): -

The results are presented in Table 8.3 on the previous page and the findings are summarised below.

None of the maximum concentration (C_M) values for the generic analytes, speciated PAHs and speciated TPH's exceed their chosen critical concentration (C_C) values for this site.

No asbestos fibres have been identified.

Based on these results the made ground can remain on site in a residential setting without representing a risk to the end users.

9.0 Conclusions & Recommendations

9.1 Ground Conditions: -

At the borehole positions made ground was recorded to depths of between c.0.50m to c.0.60m and comprised mixed surfacing (tarmac and concrete) overlying sandy clay with occasional brick fragments and ash, clinker and slag. BH2 was terminated at shallow depth due to encountering a concrete obstruction.

The underlying natural drift deposits (Glacial Till) comprised initially soft to firm (low strength) silty very sandy clay (BH1) to c.1.10m from current ground levels, then stiff (high strength) sandy gravelly clay with some cobbles, recorded to a depth of at least c.4.00m bcgl.

9.2 Foundation Options: -

When considering the ground conditions identified and the nature of the proposed development it is felt that conventional strip footings should be acceptable for the proposed development, with foundations taken down through the made ground, soft to firm silty very sandy clay and based wholly within the stiff sandy gravelly clays at depths of c.0.90m to c.1.10m, where a maximum allowable bearing pressure of 175kN/m² is available.

An increase in this minimum depth may be required to reach competent ground and if the proposed development is within proximity to existing, envisaged or recently removed vegetation, then an increase in the minimum foundation depth may also be required to avoid the effects of future shrinkage and swelling of these materials. Reference should be made to BS5837: 2012, "Trees in Relation to Design, Demolition and Construction".

When considering the risk to building materials, it is recommended that a concrete design class of DS-2 and ACEC class of AC-2 is used for all foundations and buried concrete.

9.3 Groundwater: -

All the exploratory positions remained dry during the fieldworks and as such shallow water ingress is unlikely to be problematic with regards to future excavations. Nonetheless, it would be prudent to allow for the introduction of adequate temporary groundwater control measures to take care of any surface water ingresses and pockets of trapped surface drainage particularly during the wetter periods of the year.

9.4 Hazardous Ground Gas Risk Assessment: -

There are no plausible sources of hazardous gas within c.250m of the site and the site is not in an area affected by naturally occurring radon gas. Therefore, no gas protection measures are required for the proposed development.

9.0 Conclusions & Recommendations (Cont'd)

9.5 Ground Contamination: -

From the results of the historical review other than the current use as domestic garages there were no obvious sources of ground contamination on or immediately adjacent site.

Following the results of the contamination screening the made ground materials are suitable for continued use in a residential setting.

Recourse to the relevant utility suppliers should be made for their advice / comments regarding any service material precautions necessary.

When considering the risks to the construction workforce, adequate PPE will be required to provide protection against the levels of contaminants recorded during these investigation works. Similarly, the results can also be used by the Main Contractor / Project Coordinator, when devising an adequate Site Health & Safety Plan, in accordance with current CDM Regulations.

9.6 General Comments: -

If during future development works, any excavated materials are to be discarded and removed from this site as a waste to landfill, these materials will need to be classified in accordance with the 'Guidance on the Classification and Assessment of Waste (1st Edition 2015) –Technical Guidance WM3'. The attached contamination screening results can be used to aid with the off-site disposal classification. Where possible, removal of materials from site as a 'waste' should be kept to a minimum and ideally excavated materials should all be reused on site.

However, if excavated materials must be discarded it should be noted that additional analysis and screening may be required once each specific waste stream has been identified and the volume of material to be disposed of has been calculated, since the amount of screening required, including any pre-disposal WAC screening (if required), will be dependent upon the final volume of material to be disposed of.

Adequate lateral trench support will be required for excavations, to prevent trench wall collapse or over excavations, as well as to create a safe working environment below a depth of 1.20m, and any excavations on this site should remain open for as short a period as possible, since some of these materials may be susceptible to deterioration, if left open to the natural elements for any significant period.

It is also recommended for any new developments, adequate surface drainage should be designed and installed by a competent contractor, to prevent surface water 'ponding' or collection, during and post construction, particularly where the existing surface drainage system is disrupted or damaged.

In addition, for deeper excavations, drainage, service runs or the like that may pass close to or beneath any existing or proposed new foundations, these should be undertaken with care and completed prior to the preparation of any new foundations, so as not to allow any loose or granular material to move or 'flow', thus causing settlement to occur to any new or adjacent old foundation based at a higher level.

An "observational technique" can be applied to the design and construction of this site, and where ground conditions seem to vary from that indicated from the conceptual ground model derived from works to date, then advice from a suitably qualified Engineering Geologist/Geotechnical Engineer should be sought.

END OF REPORT

GENERAL REFERENCES

- Stockton, England and Wales Sheet 33, Solid and Drift Editions, 1: 50,000 Series
Sheet NZ22SE 1:10,000 Series
Geology of Britain Viewer.
ArcGIS Digital Mapping.
[http:// apps.environment-agency.gov.uk/ wiyby](http://apps.environment-agency.gov.uk/wiyby)
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BS8576:2013: Guidance on investigations for ground gas –Permanent gases and Volatile Organic Compounds.
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LQM/CIEH Suitable 4 Use Levels (S4UL's).

APPENDIX I

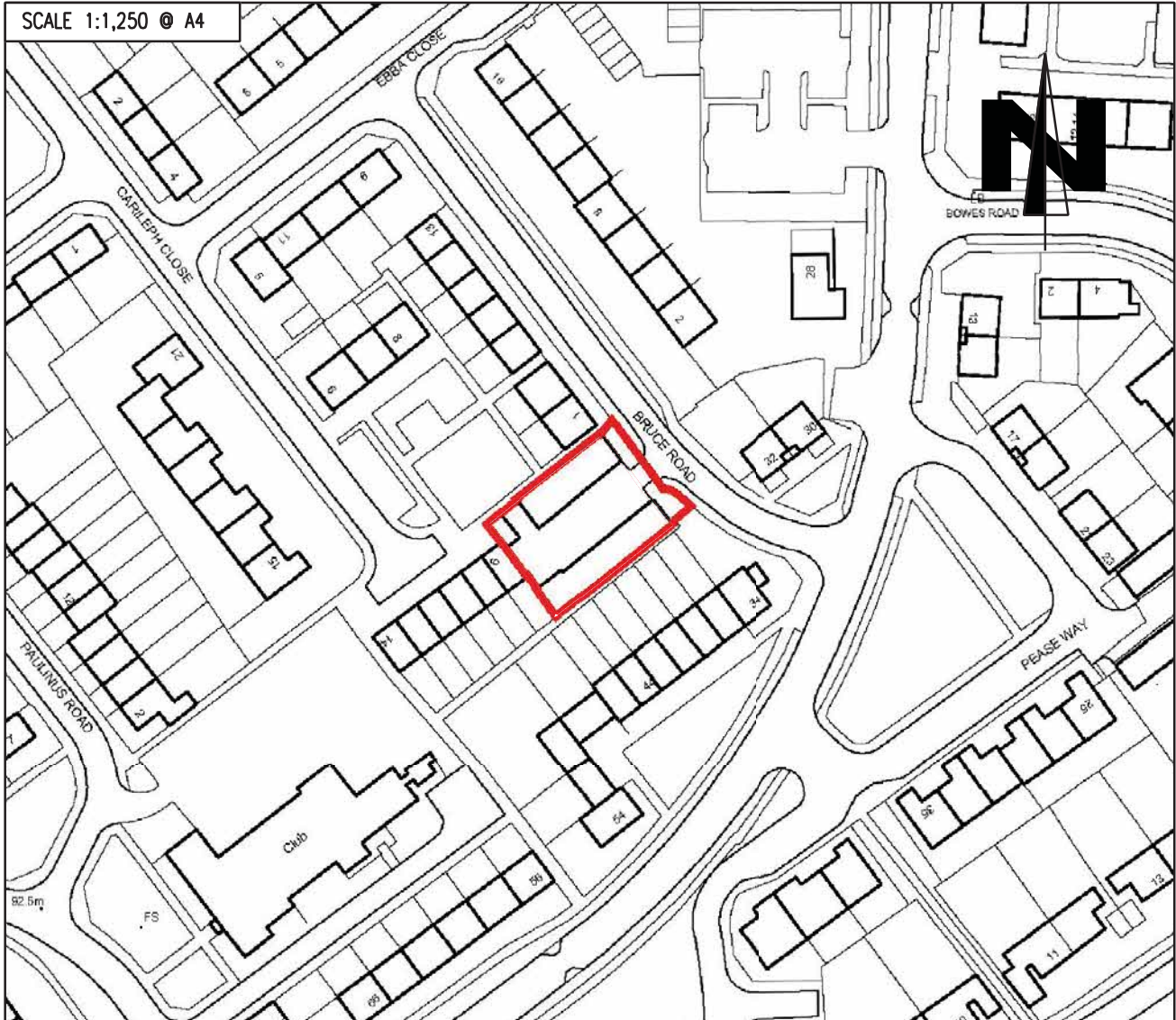
Location Plan

Aerial Photograph

Existing Site Layout Plan

Proposed Development Plan

Photographic Record Sheet



Client:
LIVIN HOUSING LTD

Project Title:
Proposed Residential Development
Land at Bruce Road
Newton Aycliffe

Drawing Title:
Location Plan

Job Reference:
17-631(F)

Drawing Number:
-

Revision:
-

Drawn by:
P.D

Date:
12.09.17

Scale at A4:
As Shown

Checked by:
J.P.D

Approved by:
J.P.D

The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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rev.	date	amendments	drawn	chckd

ARC ENVIRONMENTAL LTD
 Solum House
 Unit 1 Elliott Court
 St. John's Road
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 DH7 8PN
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LEGEND



APPROXIMATE SITE BOUNDARY

rev.	date	amendments	Drawn checked

Client:

LIVIN HOUSING LTD

Project Title:

**Proposed Residential Development
Land at Bruce Road
Newton Aycliffe**

Drawing Title:

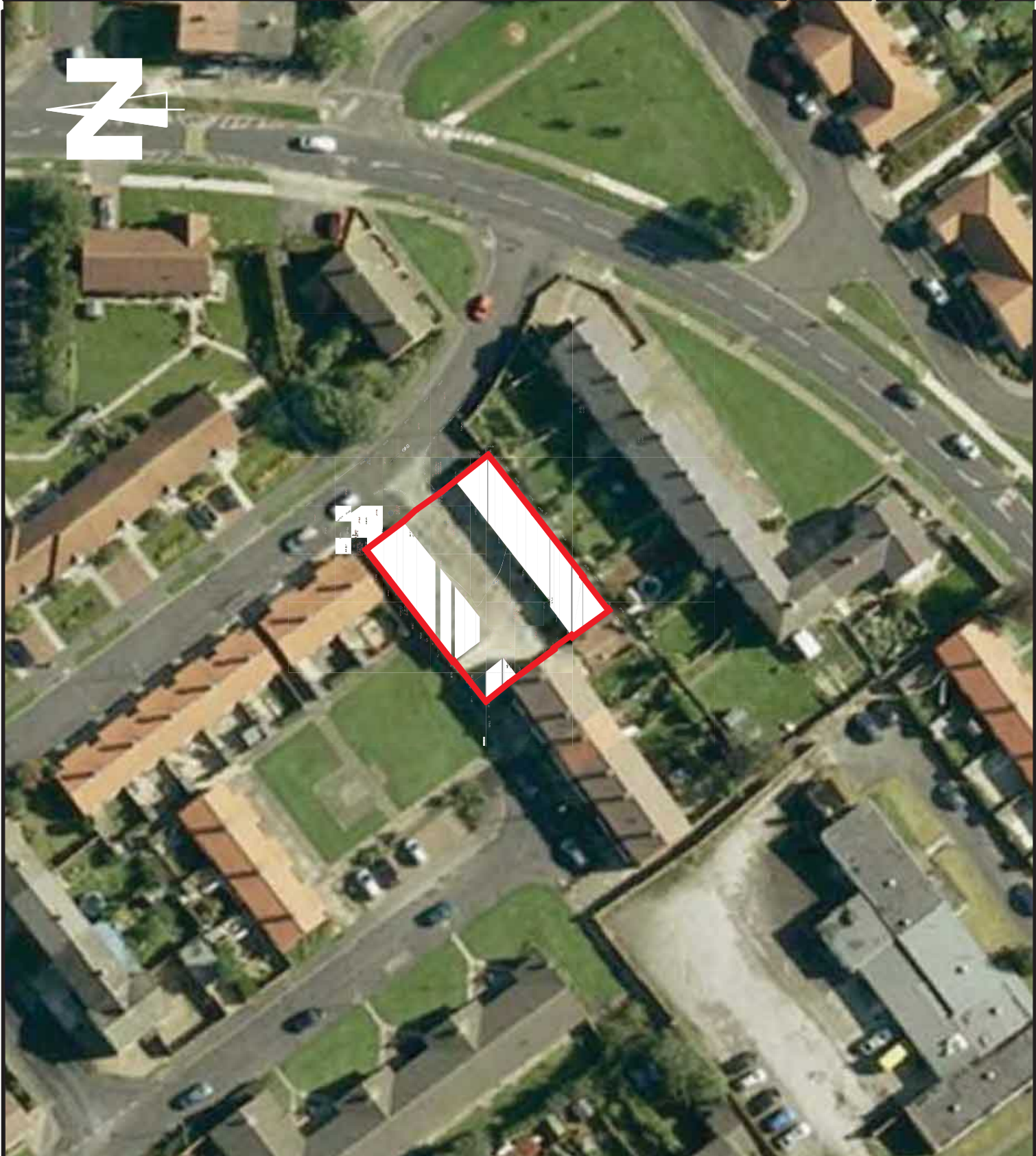
Aerial Photograph

Scale of A3: | Date: | Drawn by: | Approved by:

1:500 @ A3 | 12.09.17 | P.D | J.P.D

Job Ref: | Dwg no: | Rev:

17-631(F) | - | -





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LEGEND	APPROXIMATE SITE BOUNDARY

rev.	date	amendments	Drawn checked

Client:

LIVIN HOUSING LTD

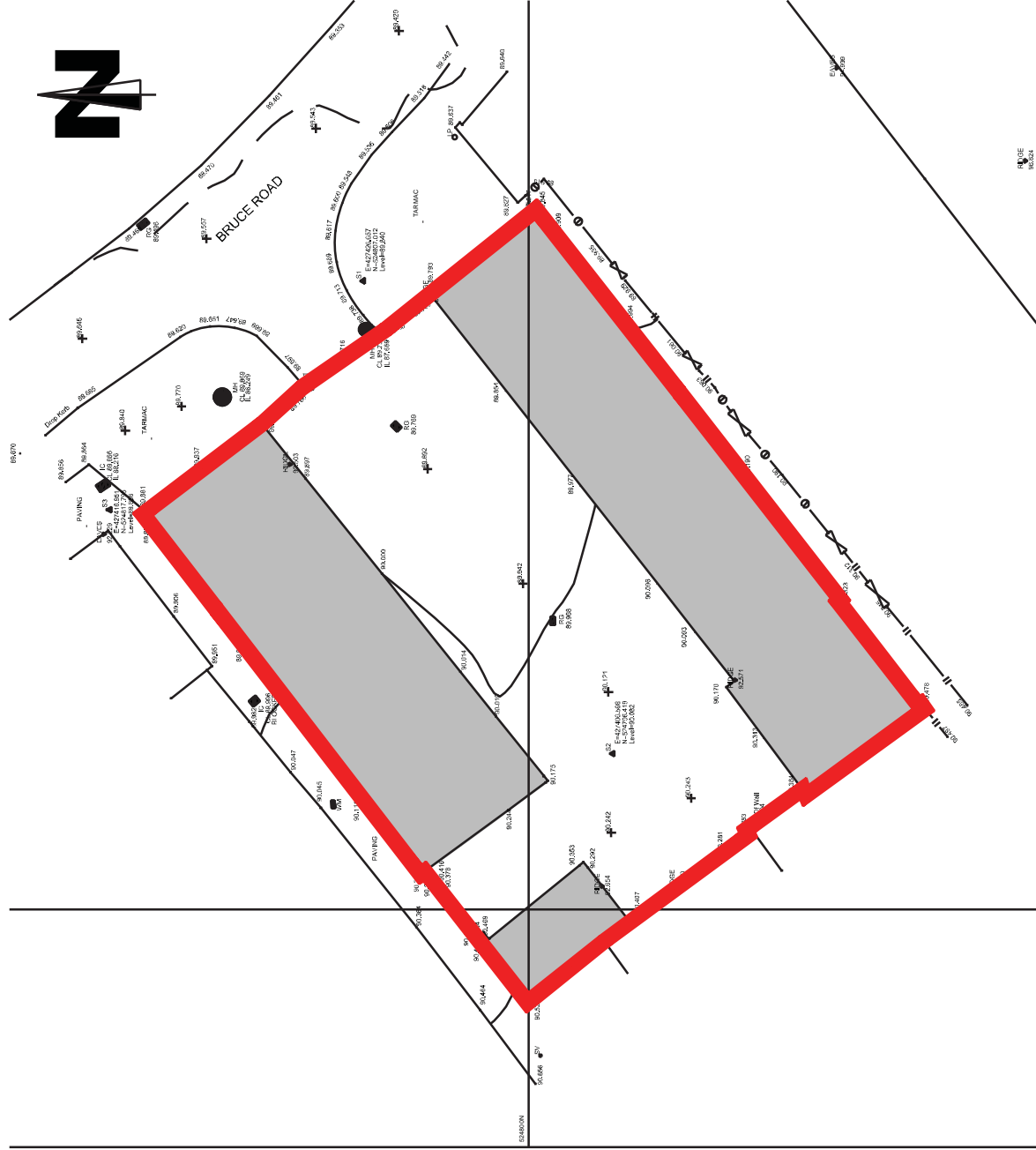
Project Title:
Proposed Residential Development
Land of Bruce Road
Newton Aycliffe

Drawing Title:

Existing Site Layout Plan

Scale of A3: 1:200 @ A3
Date: 12.09.17
Drawn by: P.D
Approved by: J.P.D

Job Ref: 17-631(F)
Rev: -





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e-mail: admin@arc-environmental.com
web: www.arc-environmental.com

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LEGEND	APPROXIMATE SITE BOUNDARY

rev.	date	amendments	Drawn checked

Client:

LIVIN HOUSING LTD

Project Title:

**Proposed Residential Development
Land at Bruce Road
Newton Aycliffe**

Drawing Title:

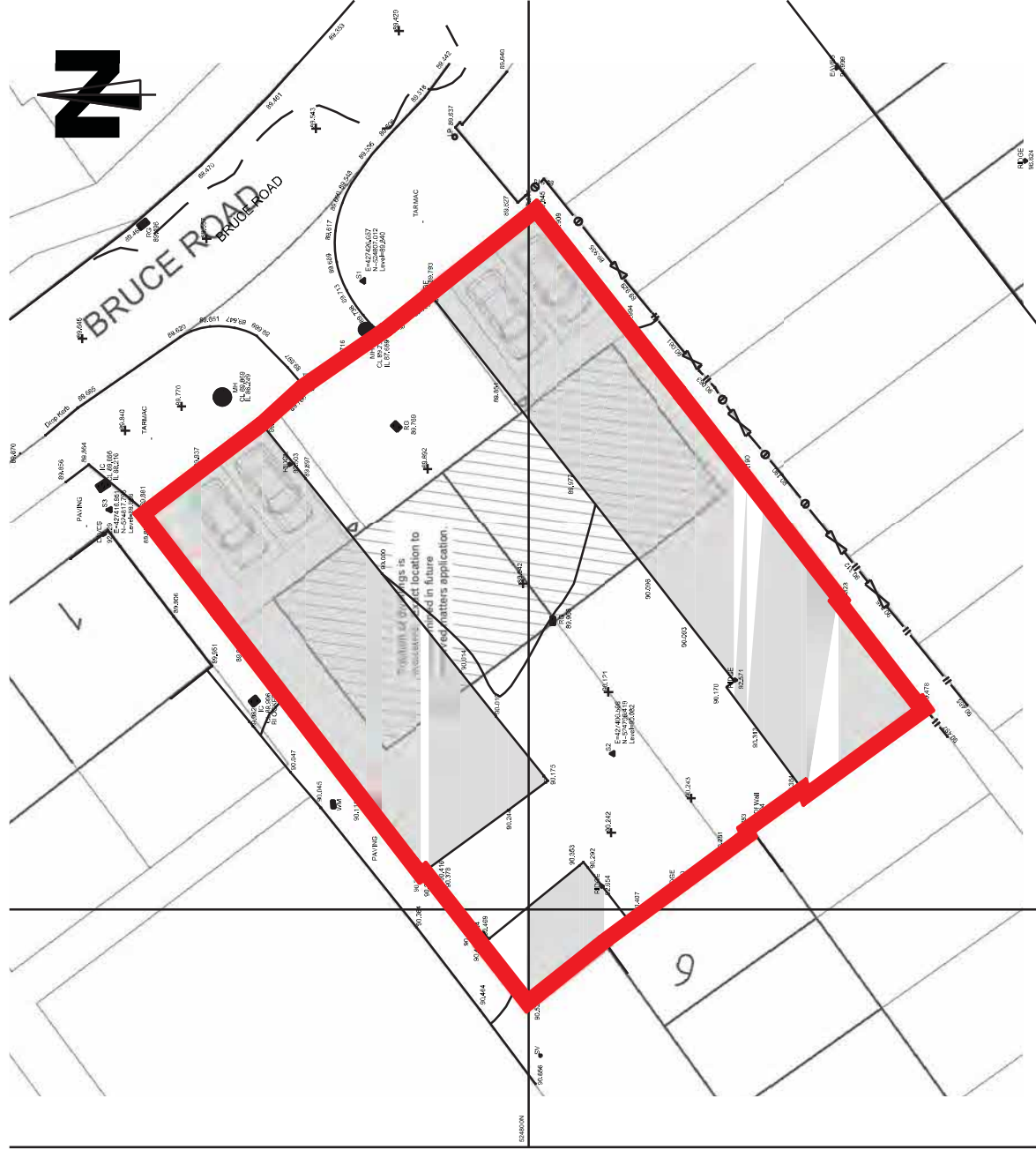
Proposed Development Layout Plan

Scale of A3: | Date: | Drawn by: | Approved by:

1:200 @ A3 | 12.09.17 | P.D | J.P.D

Job Ref: | Dwg no: | Rev:

17-631(F) | - | -





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LEGEND	APPROXIMATE SITE BOUNDARY
--------	---------------------------

rev.	date	amendments	Drawn checked

Client:

LIVIN HOUSING LTD

Project Title:

Proposed Residential Development

Land of Bruce Road

Newton Aycliffe

Drawing Title:

Site Photographic Record Sheet

Scale of A3: M5 @ A3

Date: 12.09.17

Drawn by: P.D

Approved by: J.P.D

Job Ref:

Drawn no:

Rev:

17-631(F)



CONCRETE SLABS AT GROUND LEVEL BETWEEN RESIDENTIAL LOCK-UP STYLE GARAGES



LOCALISED AREA OF FLY-TIPPED DOMESTIC WASTE



SPACE BETWEEN GARAGE UNITS ADJACENT NORTHERN SITE BOUNDARY



GENERAL CONDITION OF LOCK-UP GARAGES



LOOKING NE TOWARDS BRUCE ROAD TO THE NORTH OF SITE



LOOKING NE ALONG GARAGE BLOCK ALONG THE SOUTHERN SITE BOUNDARY



LOOKING SW ACROSS THE SITE ENTRANCE SHOWING SOUTHERN GARAGE BLOCK



LOOKING SW ACROSS THE SITE ENTRANCE SHOWING NORTHERN GARAGE BLOCK



GARAGE BLOCK ALONG THE NORTHERN SITE BOUNDARY

APPENDIX II

Historical Plans

Historical Mapping Legends

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

Quarry	Gravel Pit	Sand Pit	Refuse Heap	Clay Pit	Shingle	Sloping Masonry	Flat Rock	Marsh	Reeds	Furze	Wood	Mixed Wood	Fir	Ferry	Triang. Station	507 Altitude at Trig. Station	342 Surface Level	Arrow denotes flow of water	Antiquities (site of)	Embankment	Cutting	Railway crossing Road	Level Crossing	Road over Railway	Road over River or Canal	Road over single stream	County Boundary (Geographical)	County & Civil Parish Boundary	Administrative County & Civil Parish Boundary	County Borough Boundary (England)	County Borough Boundary (Scotland)	Boundary Post or Stone	Police Call Box	Bridle Road	Pump	Electricity Pylon	Signal Post	Foot Bridge	Sluice	Spring	Telephone Call Box

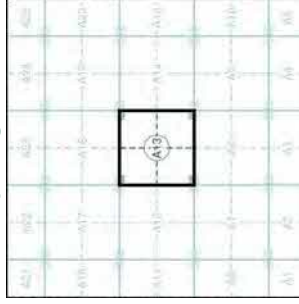
Large-Scale National Grid Data 1:2,500 and 1:1,250

Inactive Quarry, Chalk Pit or Clay Pit	Active Quarry, Chalk Pit or Clay Pit	Rock	Boulders	Cliff	Slopes	Roofed Building	Glazed Roof Building	Archway	Non-Confiferous Tree (surveyed)	Confiferous Tree (surveyed)	Non-Confiferous Trees (not surveyed)	Confiferous Trees (not surveyed)	Orchard Tree	Scrub	Reeds	Marsh, Saltings	Coppice, Osier	Rough Grassland	Heath	Culvert	Direction of water flow	Bench Mark	Antiquity (site of)	Electricity Pylon	Cave Entrance	Triangulation Station	Electricity Transmission Line	County Boundary (Geographical)	County & Civil Parish Boundary	Civil Parish Boundary	Admin. County or County Bor. Boundary	London Borough Boundary	L.S. Bay	Symbol marking point where boundary mereing changes	Barracks	Battery	PO Post Office	Public Convenience	Public House	Pump	Signal Box or Bridge	Signal Post or Light	Spring	Tank or Track	Telephone Call Box	Telephone Call Post	Trough	Well	Wind Pump

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Durham	1:2,500	1857	2
Durham	1:2,500	1895	3
Durham	1:2,500	1895	4
Durham	1:2,500	1897	5
Durham	1:2,500	1919	6
Ordnance Survey Plan	1:2,500	1963 - 1964	7
Ordnance Survey Plan	1:1,250	1972	8
Supply of Unpublished Survey Information	1:1,250	1974	9
Additional SIMs	1:1,250	1980 - 1989	10
Ordnance Survey Plan	1:1,250	1985 - 1989	11
Additional SIMs	1:1,250	1989	12
Large-Scale National Grid Data	1:1,250	1993	13
Historical Aerial Photography	1:2,500	1999	14

Historical Map - Segment A13



Order Details

Order Number: 136002360_1_1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Site: A
 Site Area (Ha): 0.06
 Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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



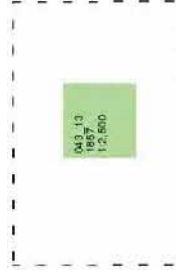
Durham

Published 1857

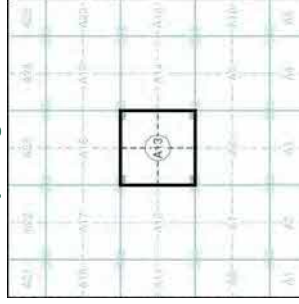
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey, which were adopted for England, Wales and Scotland in the 1940s. The first of these was published in 1857, and the second in 1864. The published date given below is often some years later than the surveyed date. Before 1938 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

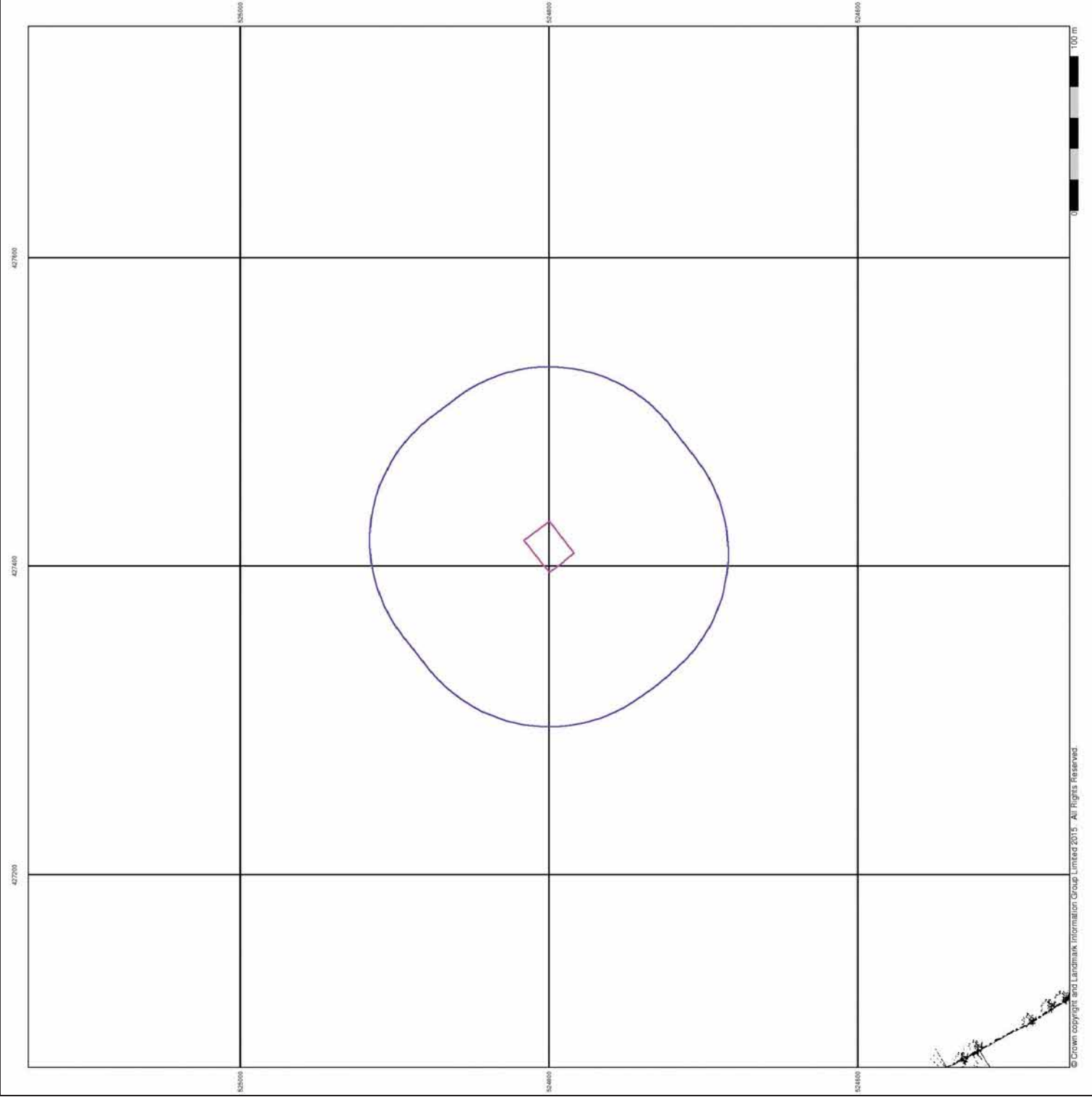
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National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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





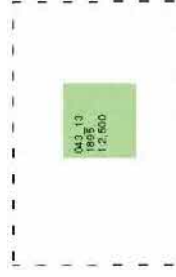
Durham

Published 1895

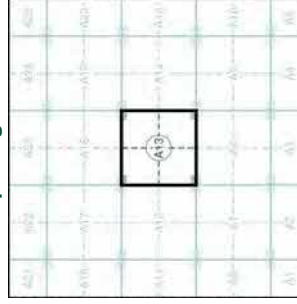
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey, which were adopted for England, Wales and Scotland in the 1940s. The 1895 map was created by the Ordnance Survey and is considered to be the most accurate map of the area. The published date given below is often some years later than the surveyed date. Before 1938 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

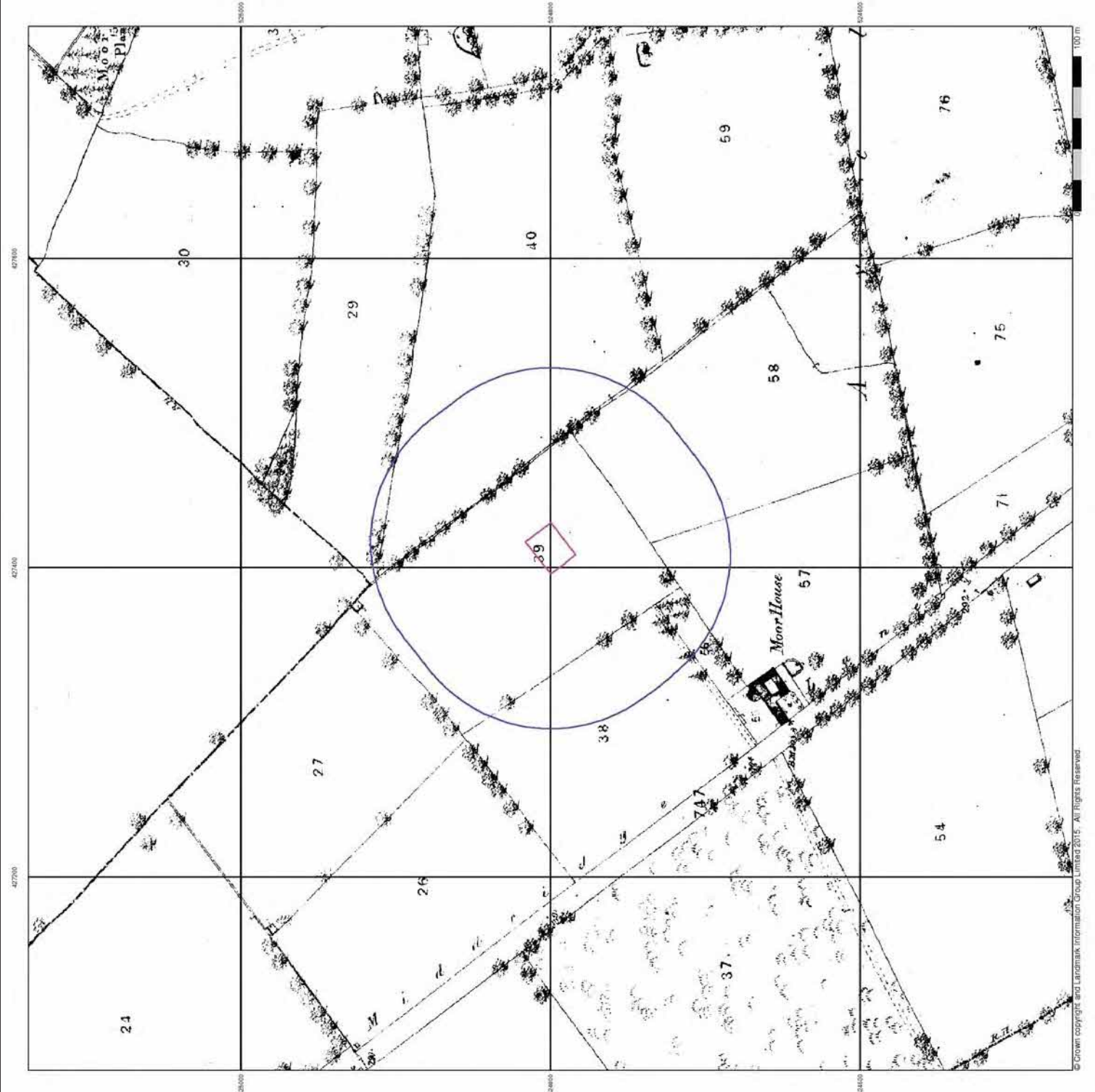
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National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 100

Site Details

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Durham

Published 1895

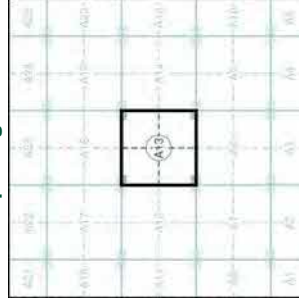
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey (OS) archive in the UK. The maps were adopted for England, Wales and Scotland in the 1970s. The first OS map of the area was published in 1895. The maps were compiled from a series of surveys conducted between 1864 and 1895. The published date given below is often some years later than the surveyed date. Before 1938 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

64.2.13	1895	1:2,500
---------	------	---------

Historical Map - Segment A13



Order Details

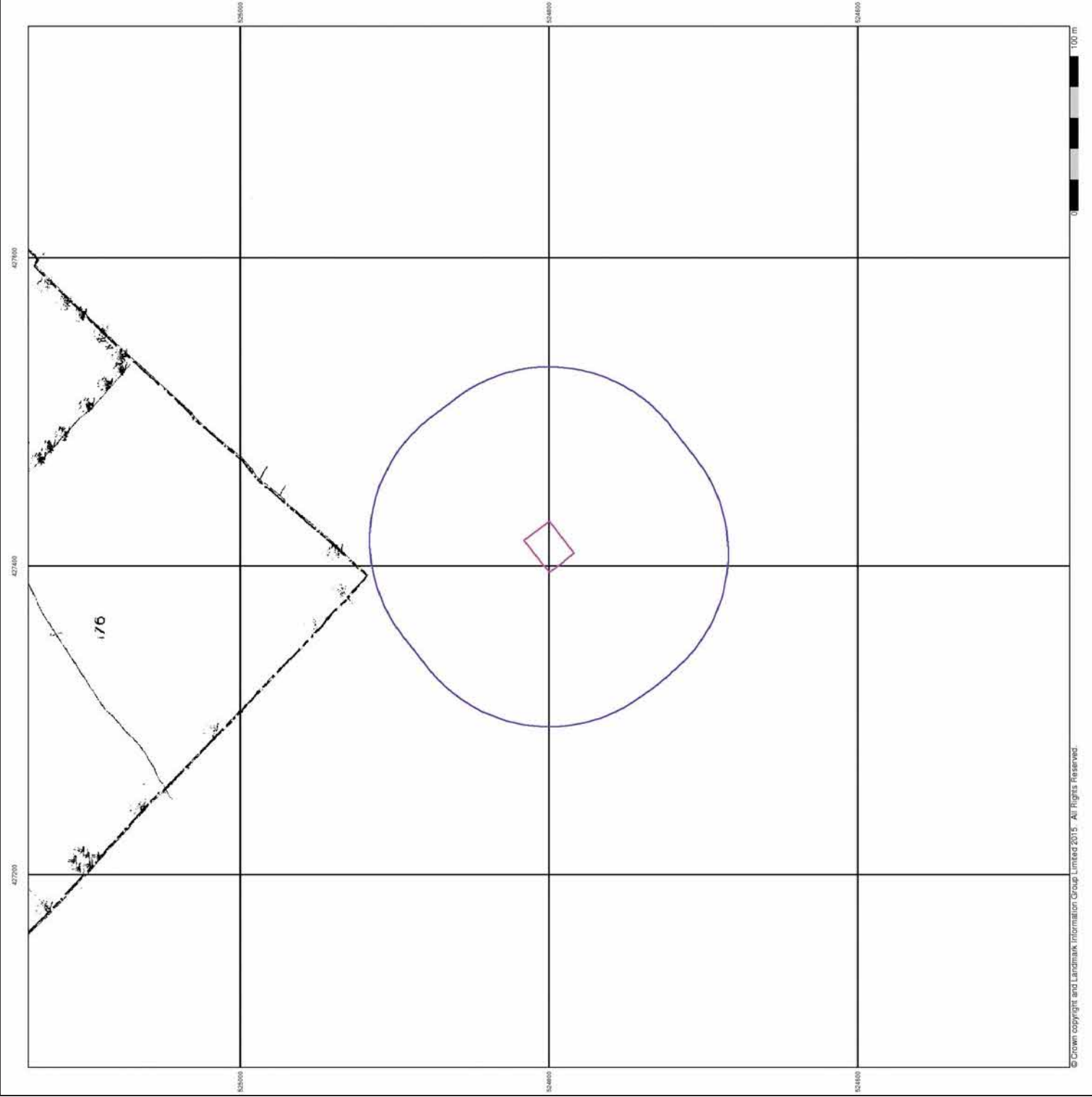
Order Number: 136002360_1_1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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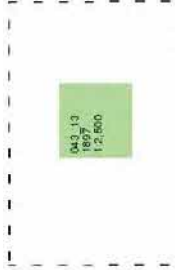




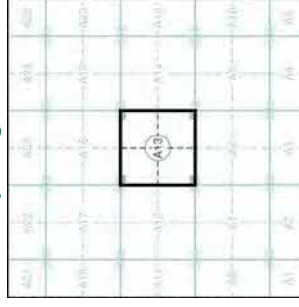
Durham
Published 1897
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the adopted for England, Wales and Scotland in the 1940s. The first edition of the 1:2,500 scale maps was produced in 1897. The maps were created by the Ordnance Survey, which was then known as the Ordnance Survey Office. The published date given below is often some years later than the surveyed date. Before 1938 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

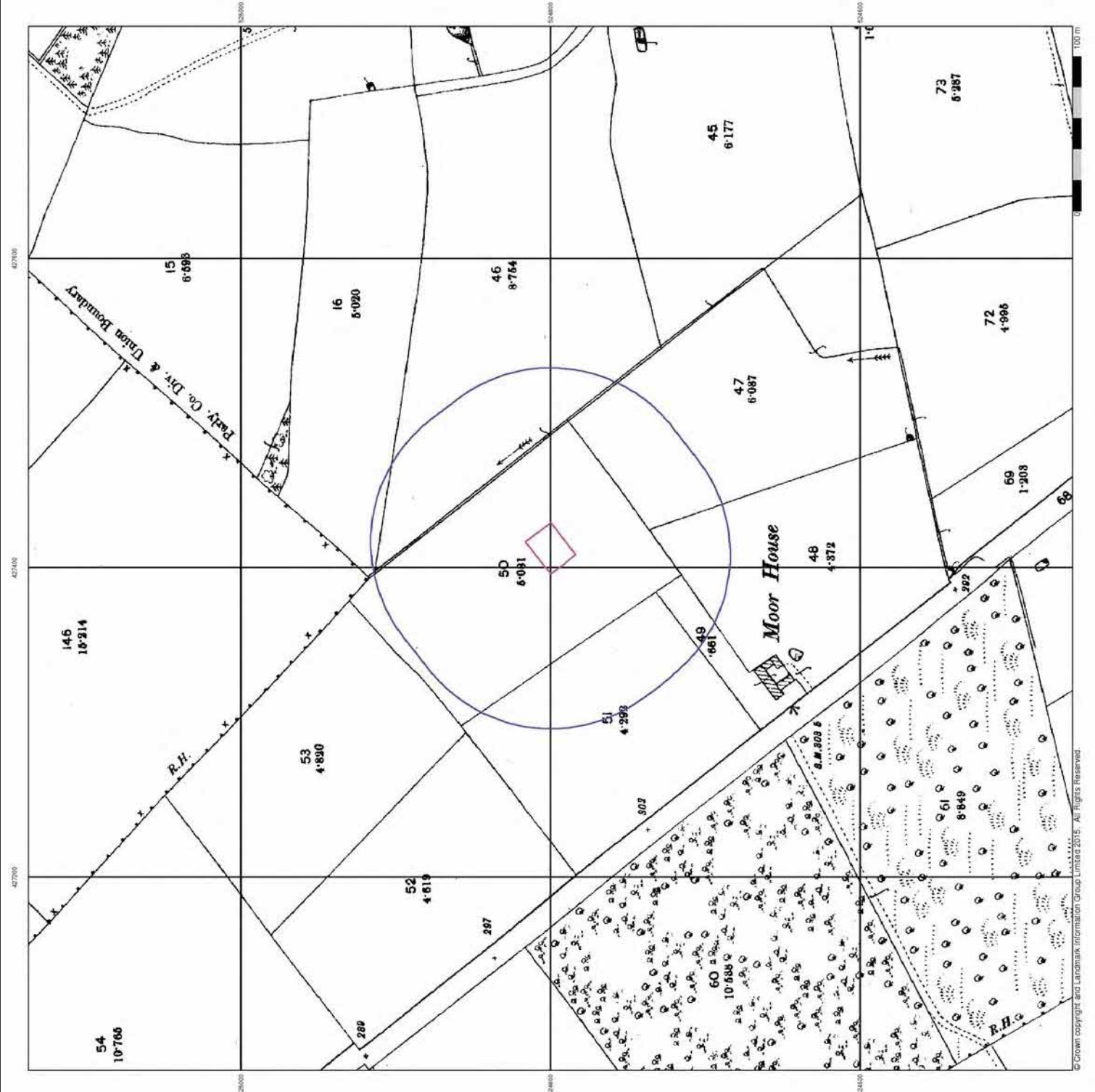
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 Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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 Fax: 0844 844 9951
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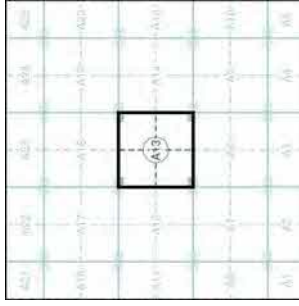
Published 1919
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey (OS) archives in the UK. The maps were first published in 1919 and were based on the Cassini Projection. The maps were based on the Cassini Projection, which was used in Great Britain until 1841. The maps were based on the Cassini Projection, which was used in Great Britain until 1841. The maps were based on the Cassini Projection, which was used in Great Britain until 1841.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

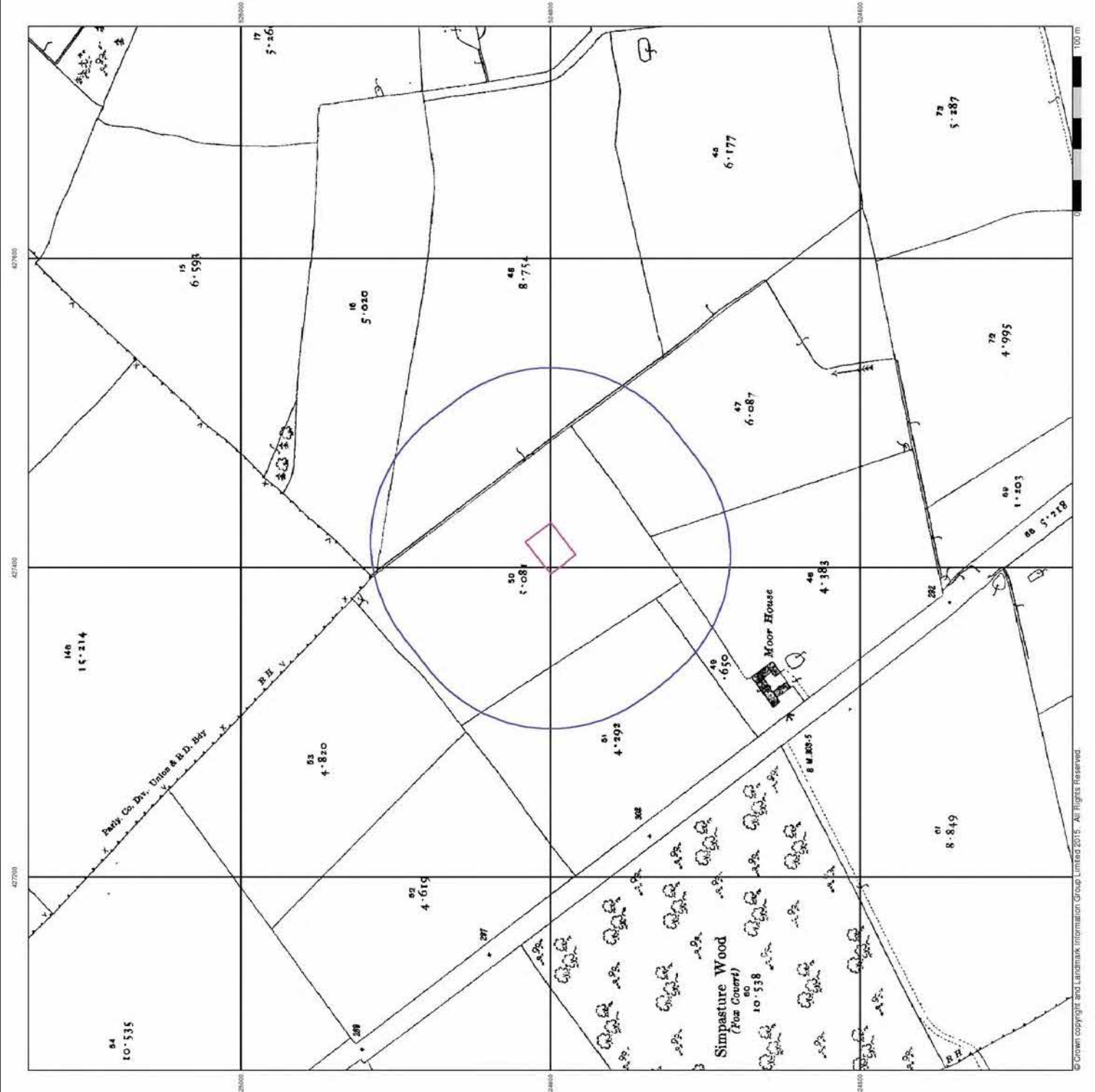
Order Number: 136002360_1_1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 100

Site Details

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Ordnance Survey Plan Published 1963 - 1964

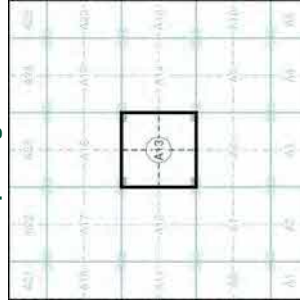
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey offices in England, Wales and Scotland in the 1940s. In 1964, the Ordnance Survey digitised the maps and created the digital data. The digitised data is considered to be the authoritative data for Great Britain. The published date given below is often some years later than the surveyed date. Before 1938 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

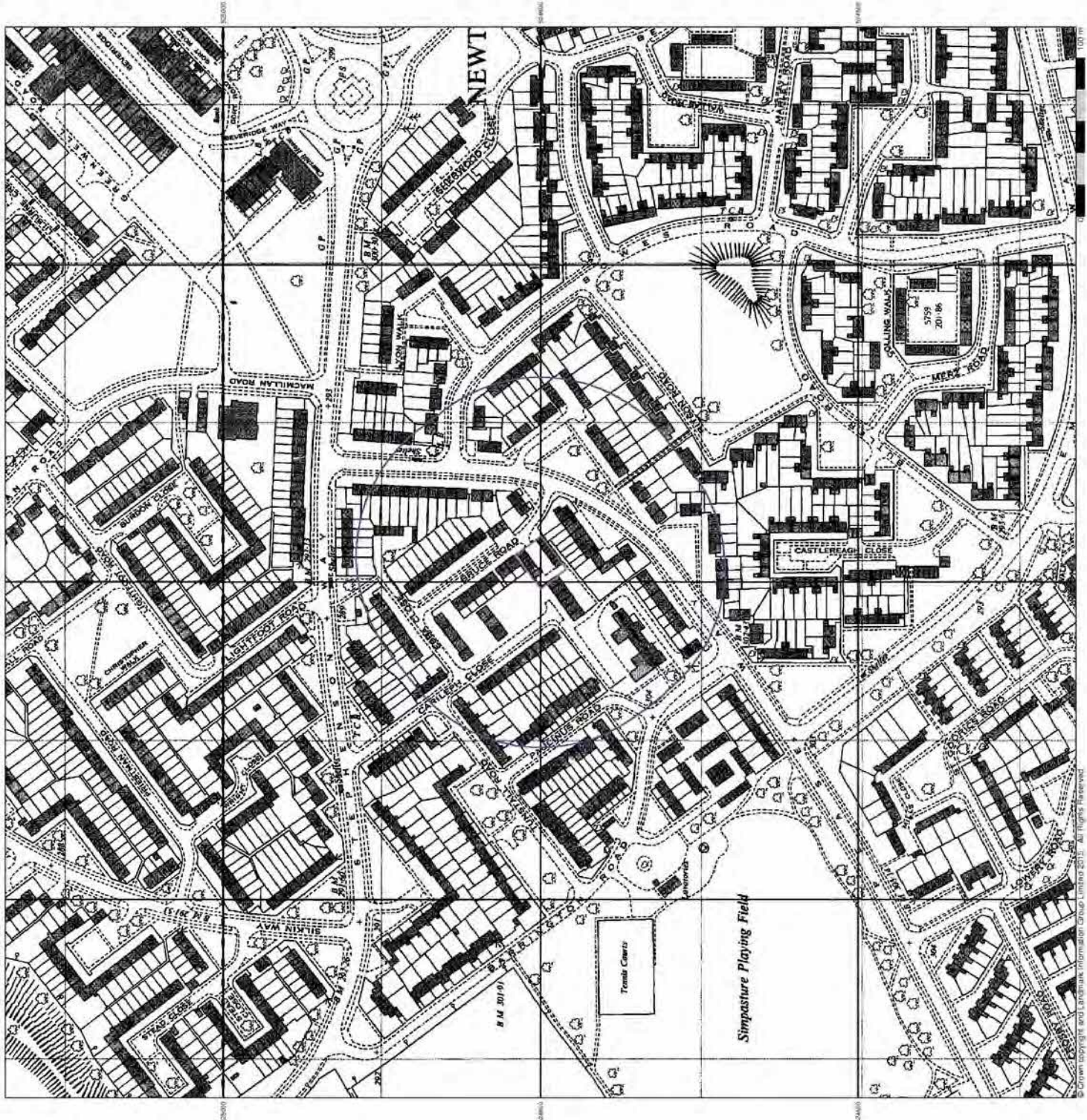
Order Number: 136002360_1_1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 100

Site Details

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Ordnance Survey Plan

Published 1972

Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey offices in England, Wales and Scotland in the 1970s. The maps were first published in 1864 and were updated in 1972. The maps were reproduced from the original maps and are considered to be the most accurate parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

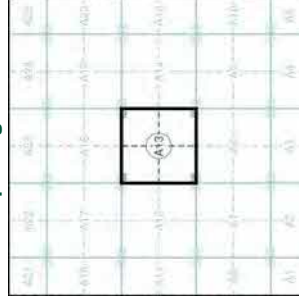
Map Name(s) and Date(s)

4272455N/427245E
1972 1972
1:1,250 1:1,250

4272441N/427244E
1972 1972
1:1,250 1:1,250

4272435N/427243E
1972 1972
1:1,250 1:1,250

Historical Map - Segment A13



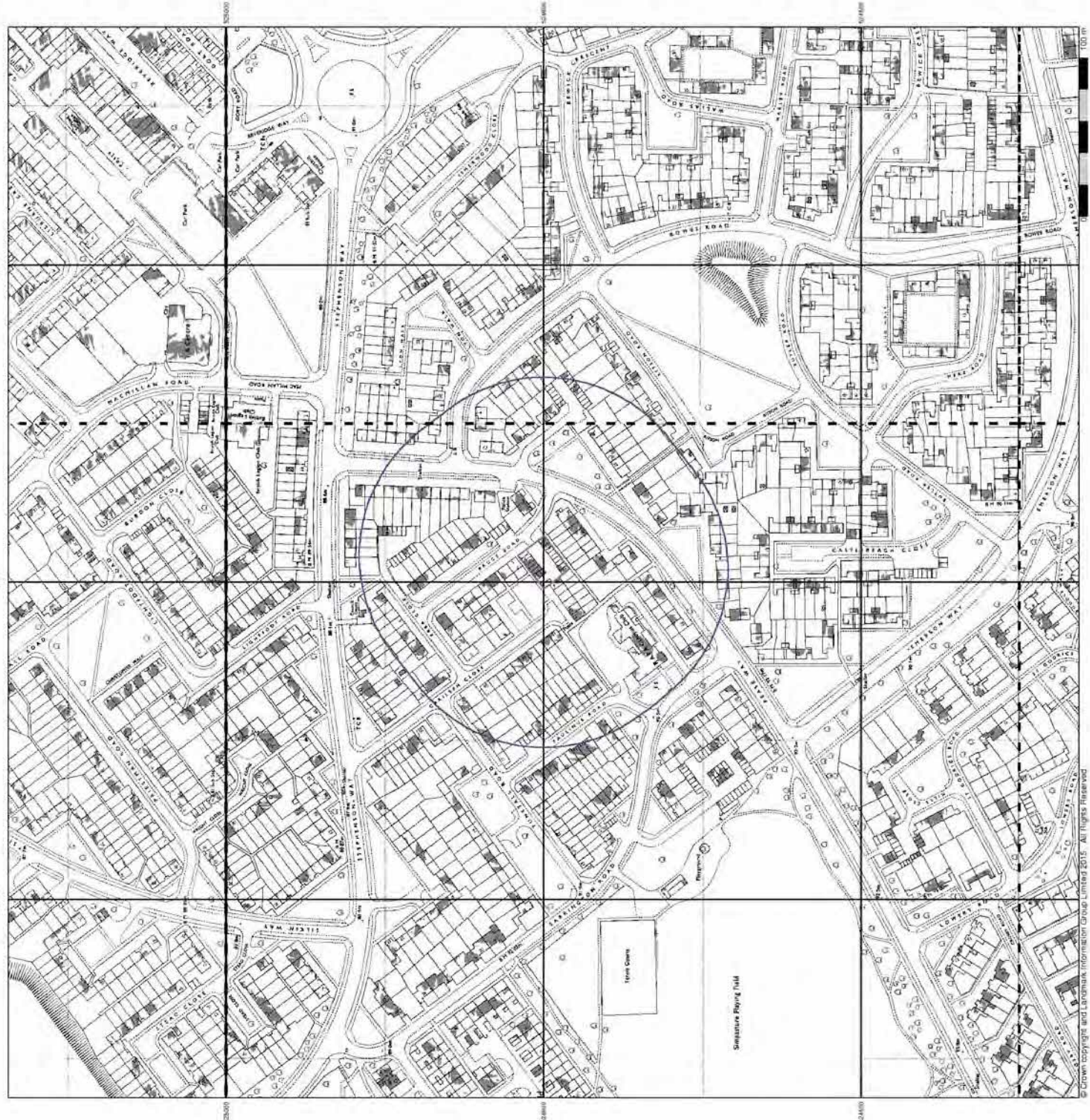
Order Details

Order Number: 136002360_1_1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800

Site Area (Ha): A
Search Buffer (m): 0.06
100

Site Details

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Supply of Unpublished Survey Information

Published 1974

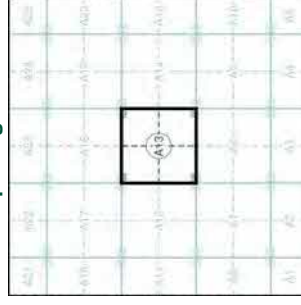
Source map scale - 1:1,250

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 show details of individual sites on a map. These maps were published at the time they were 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

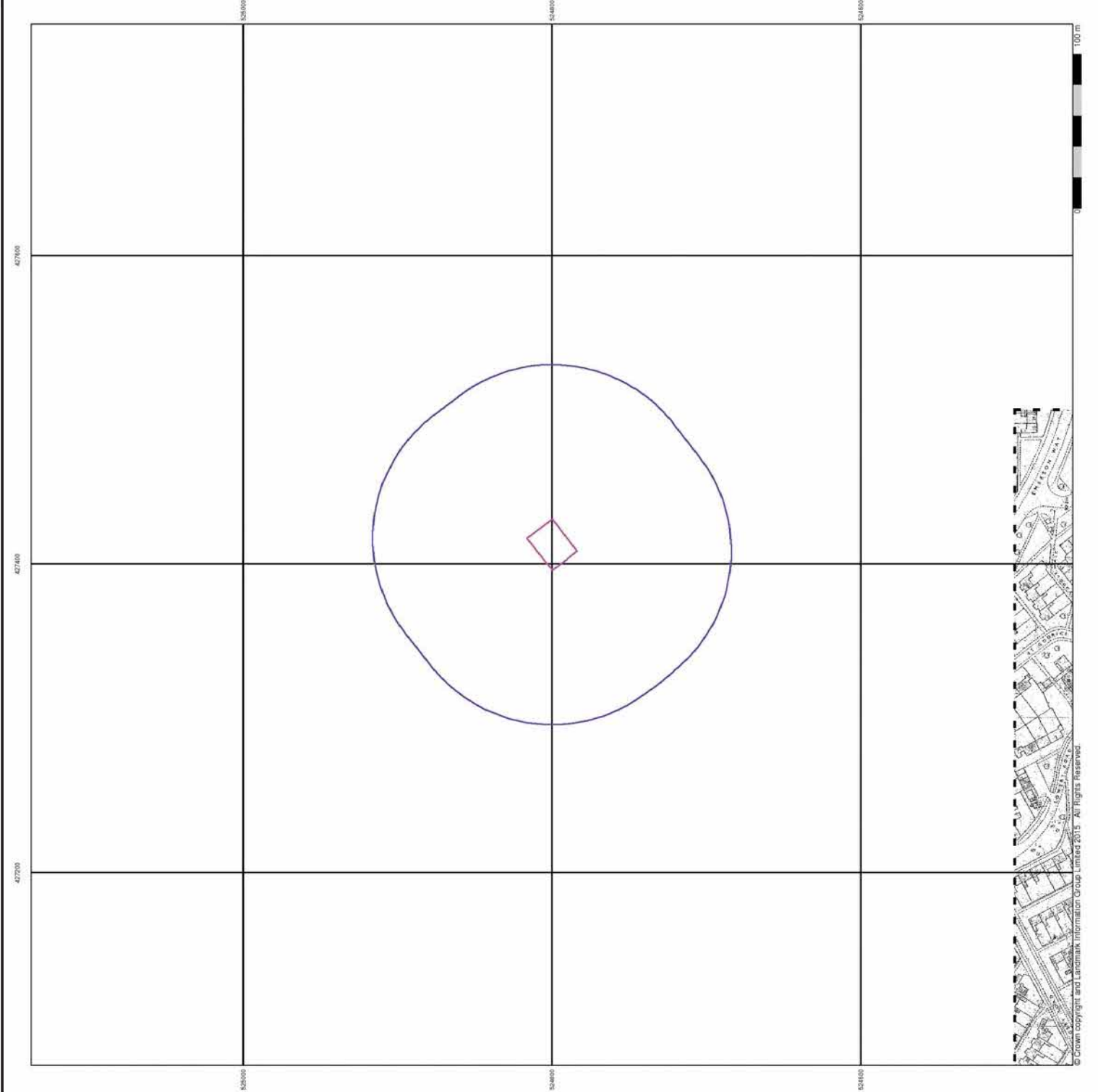


Order Details

Order Number: 136002360_1_1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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Additional SIMs

Published 1980 - 1989

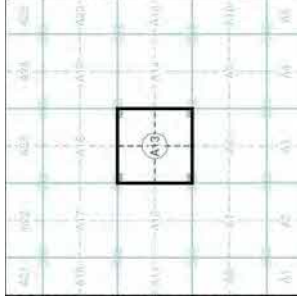
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are better minor editions or mappings which were produced and published from 1980 to 1989. The maps are available in digital format from 1997 to 1994, and also in hard copy format for 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)

4272305 WZ72358E	1980	1984
	1:1,250	1:1,250
4272344 WZ72344E	1980	1984
	1:1,250	1:1,250
4272353 WZ72353E	1980	1984
	1:1,250	1:1,250

Historical Map - Segment A13



Order Details

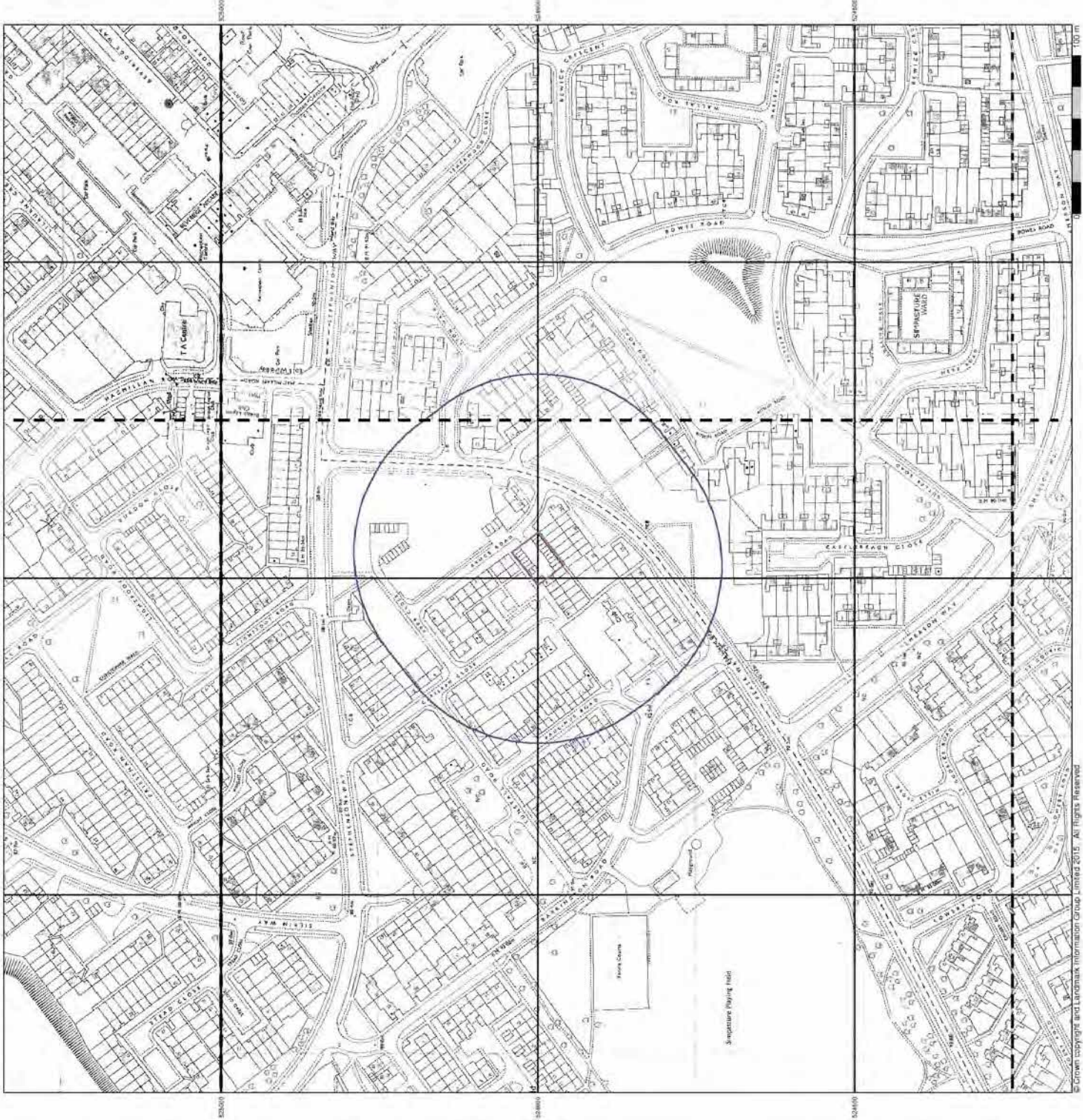
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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





Ordnance Survey Plan

Published 1985 - 1989

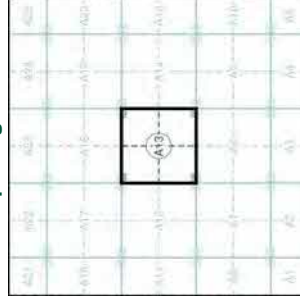
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey offices in Southampton in the 1970s. The maps were first adopted for England, Wales and Scotland in the 1940s. In 1864 the Ordnance Survey was created by the merger of the Ordnance Survey and the War Office. The published date given below is often some years later than the surveyed date. Before 1938 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

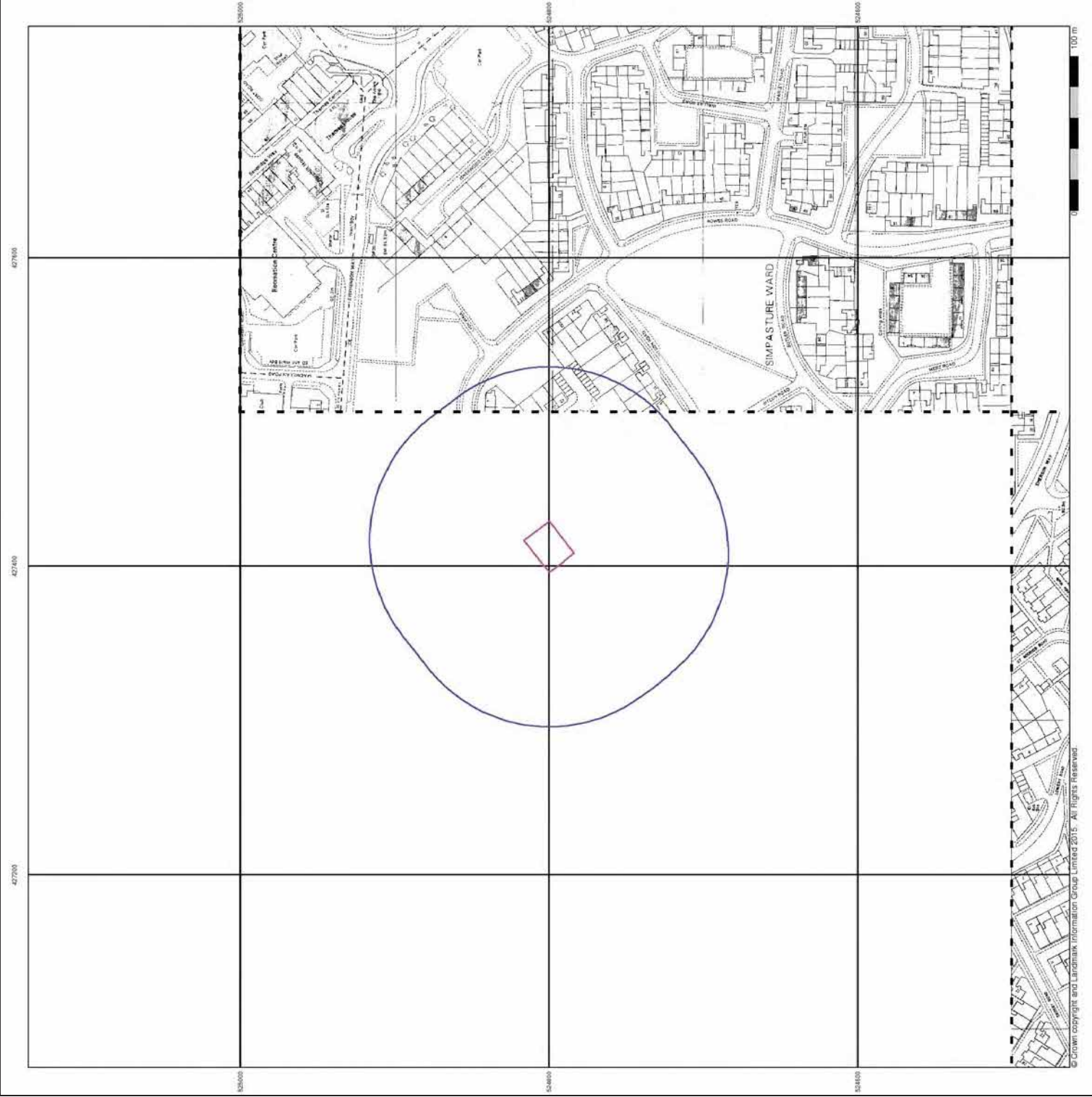
Order Number: 136002360_1_1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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





Additional SIMs

Published 1989

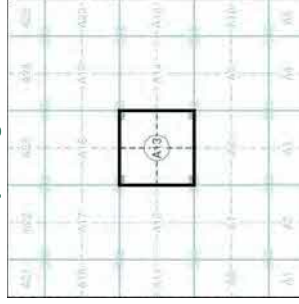
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are their minor editions or mappings which were produced and published in both the 1980s and 1990s. The cards contain 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

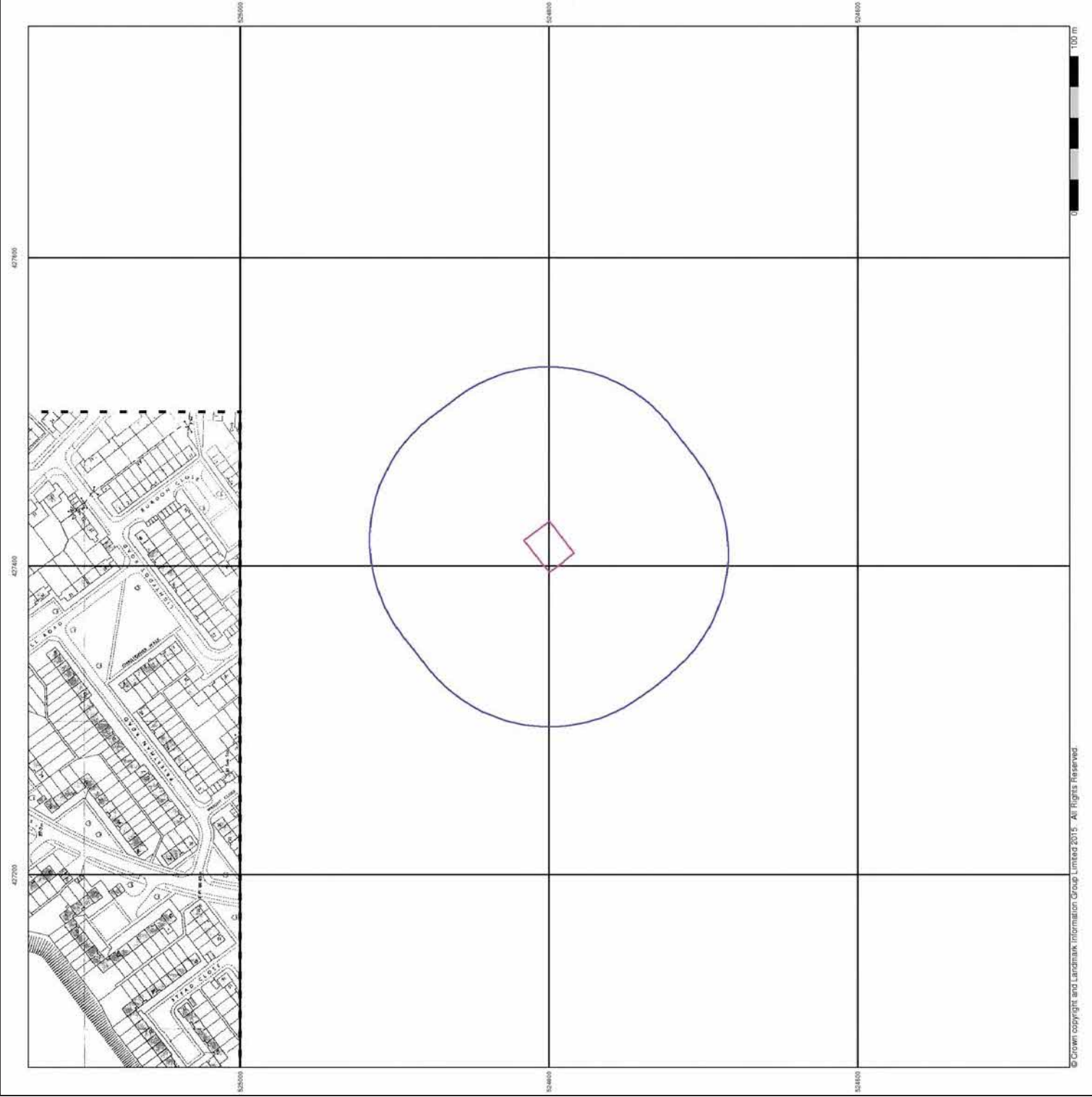
Order Number: 136002360_1_1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 100

Site Details

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Large-Scale National Grid Data

Published 1993

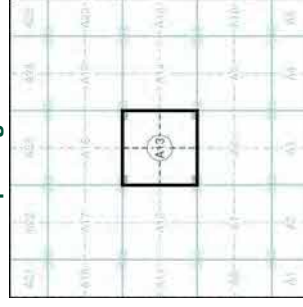
Source map scale - 1:1,250

Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's information on MicroSIM) in 1992, and continued to be produced until 1999. These maps were the first and only digital mapping data to provide detailed information on the ground surface, but tend to miss topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

UZZ7245 UNZZ245E	1:1,250	1993
UZZ7244 UNZZ244E	1:1,250	1993
UZZ7243 UNZZ243E	1:1,250	1993
UZZ7242 UNZZ242E	1:1,250	1993

Historical Map - Segment A13



Order Details

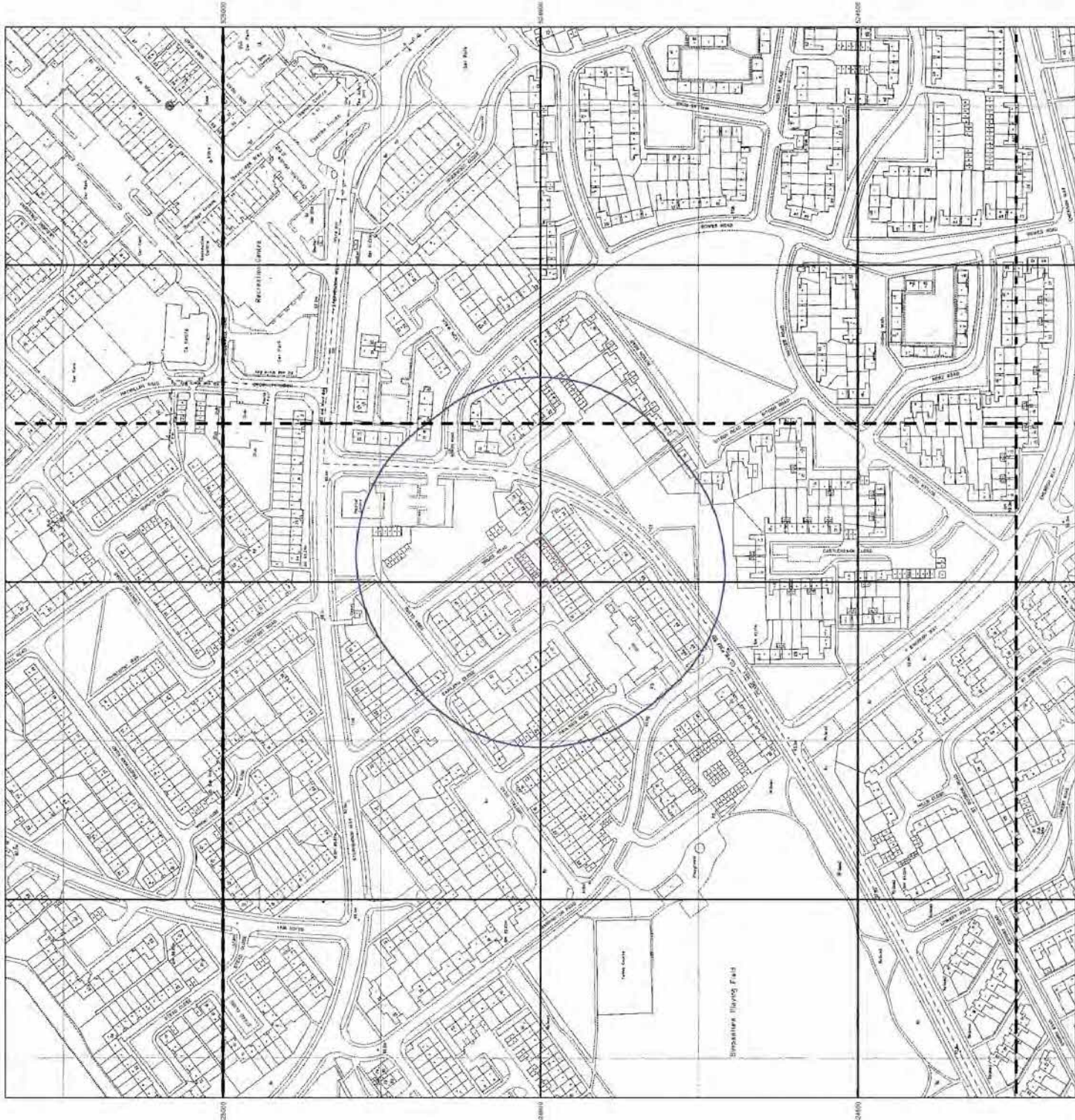
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 100

Site Details

Bruce Road, Newton Aycliffe, DL5 7AE



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 Fax: 0844 844 9951
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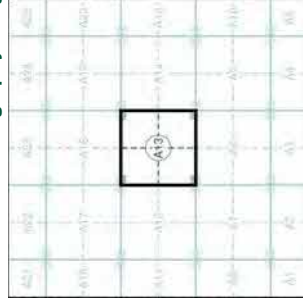
Historical Aerial Photography

Published 1999

This aerial photography was produced by Geomapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain.



Historical Aerial Photography - Segment A13



Order Details

Order Number: 136002360_1_1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Other Pits	Sand Pit	Shingle	Reeds	Deciduous	Brushwood	Rough Pasture	Trigonometrical Station	Bench Mark	Well, Spring, Boundary Post	Instrumental Contour	Fenced Un-Fenced	Minor Roads	Raised Road	Railway over River	Level Crossing	Road over Stream						

Ordnance Survey Plan 1:10,000

Gravel Pit	Disused Pit or Quarry	Lake, Loch or Pond	Boulders	Non-Coniferous Trees	Scrub	Heath	Reeds	Direction of Flow of Water																						

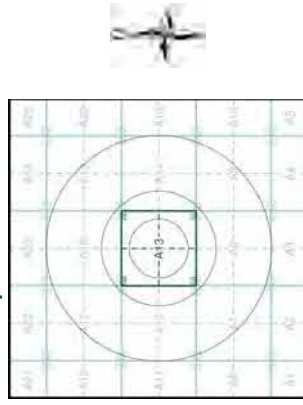
1:10,000 Raster Mapping

Refuse tip or slag heap	Rock (scattered)	Boulders (scattered)	Mud	Sand Pit	Top of cliff	Underground detail	Narrow gauge railway	Single track railway	Civil, parish or community boundary	Constituency boundary	Non-coniferous trees	Coniferous trees	Positioned tree	Coppice or Osiers	Heath	Marsh, Salt Marsh or Reeds	Flow arrows	Mean low water (springs)	Electricity transmission line (with poles)	Triangulation station	Pylon, flare stack or lighting tower	Glasshouse	Important Building

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pq
Durham	1:10,560	1858 - 1859	2
Durham	1:10,560	1898	3
Durham	1:10,560	1923 - 1924	4
Durham	1:10,560	1951	5
Ordnance Survey Plan	1:10,000	1954	6
Ordnance Survey Plan	1:10,000	1965 - 1966	7
Ordnance Survey Plan	1:10,000	1968	8
Ordnance Survey Plan	1:10,000	1976 - 1979	9
Ordnance Survey Plan	1:10,000	1983	10
Ordnance Survey Plan	1:10,000	1990 - 1992	11
10K Raster Mapping	1:10,000	2000	12
10K Raster Mapping	1:10,000	2006	13
VectorMap Local	1:10,000	2017	14

Historical Map - Slice A



Order Details

Order Number: 136002360_1_1
 Customer Ref: 17-63(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

Site Details

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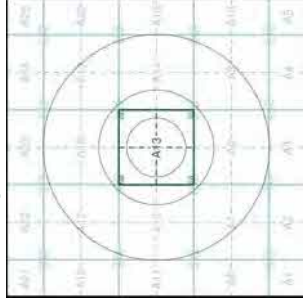
Published 1898
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1840's. In 1854 the Ordnance Survey produced the first 1:10,560 scale maps. These maps are used to update the 1:10,560 maps. The published date refers to the date the maps were surveyed, not the date they were published. 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 on 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)

042SE 1898 1:10,560	043SW 1898 1:10,560
048NE 1898 1:10,560	049NW 1898 1:10,560

Historical Map - Slice A



Order Details

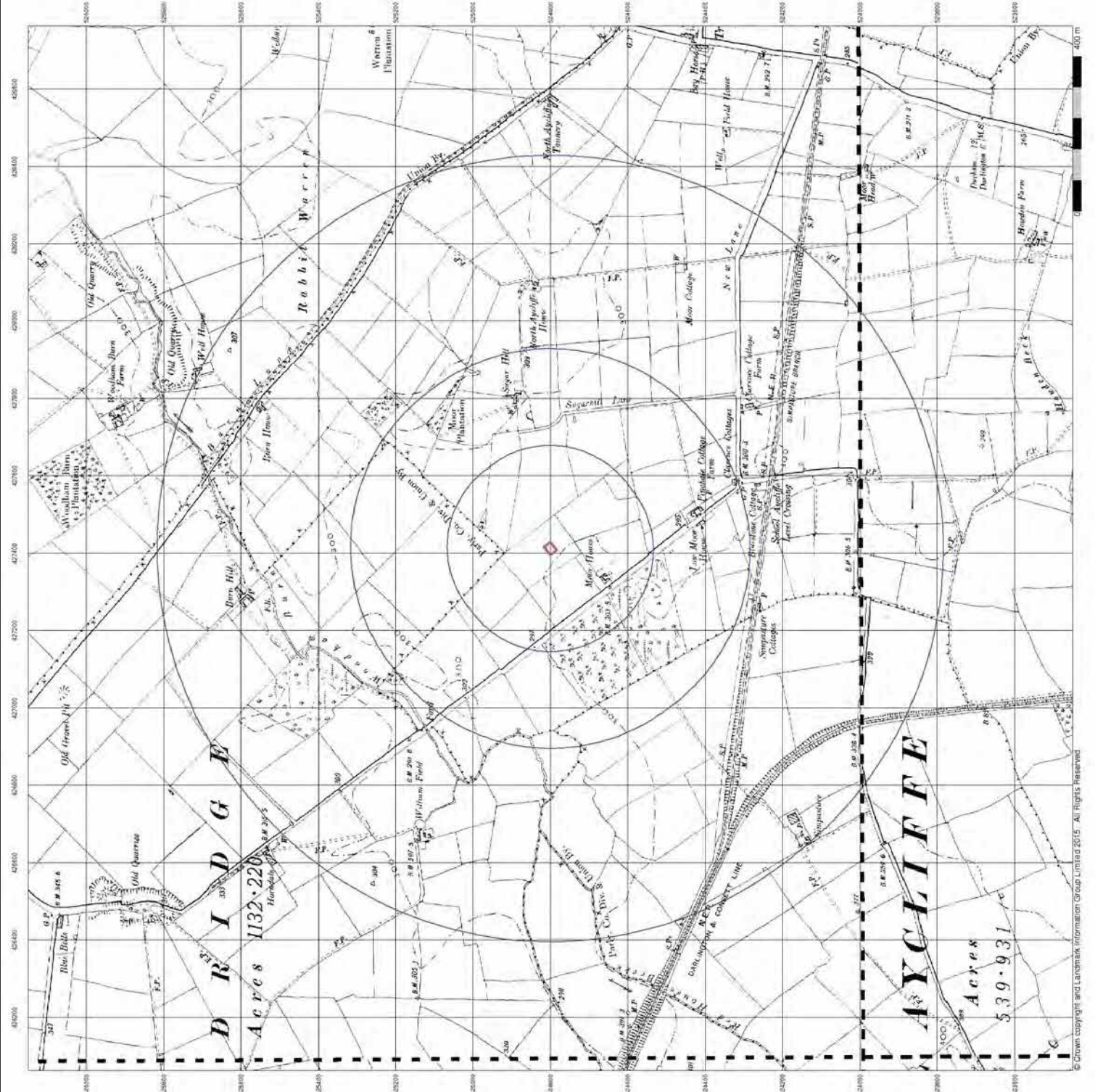
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

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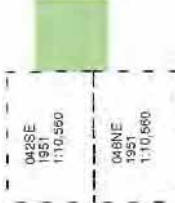
Durham

Published 1951

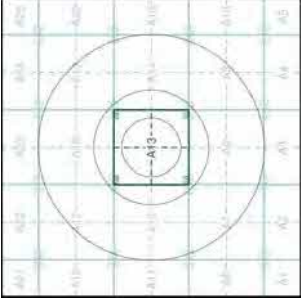
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1840's. In 1864 the Ordnance Survey began to print maps of urban areas, these maps are used to update the 1:10,560 maps. The published date of the maps are often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties giving rise to significant inaccuracies in outlying areas. In the late 1940's a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

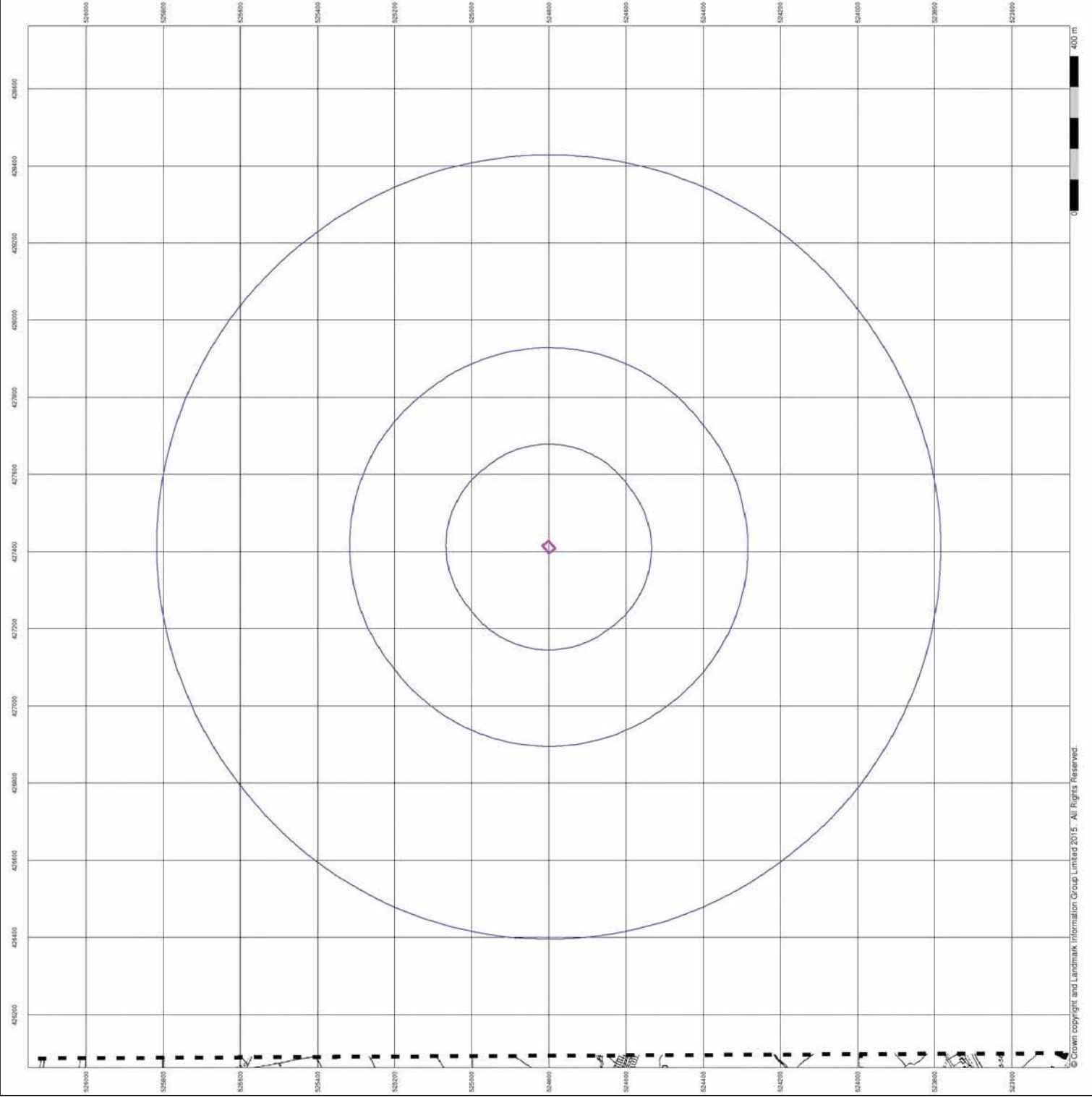
Order Number: 136002360_1_1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

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Ordnance Survey Plan Published 1954

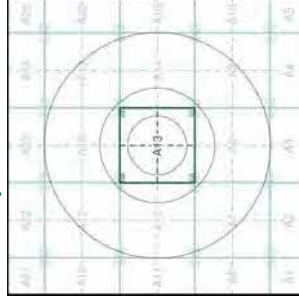
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey offices in England, Wales and Scotland in the 1940's. In 1954, the 1:10,000 maps were updated to reflect the changes in the landscape. The maps are 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 1:10,000 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)

NZ22NE	1954	1:10,550
NZ22SE	1954	1:10,550

Historical Map - Slice A



Order Details

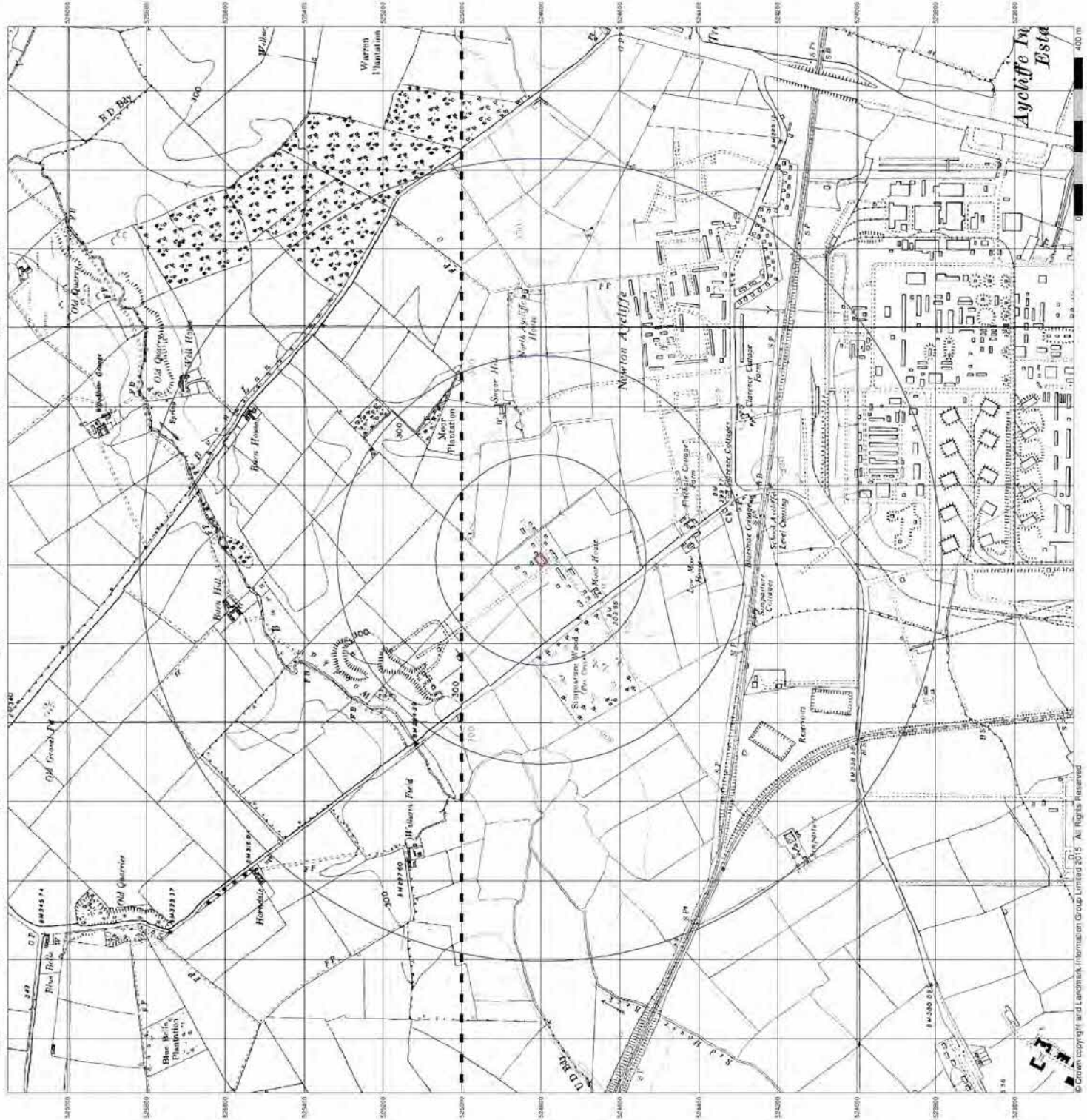
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

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Ordnance Survey Plan Published 1965 - 1966

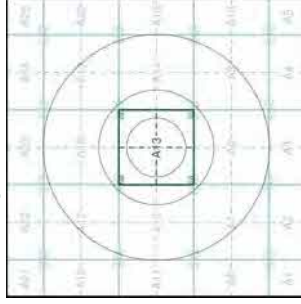
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey (OS) archives in the 1940's. In 1965, the OS used the 1:10,000 maps to update the 1:10,000 maps. The published date 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 1:10,000 mapping on 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)

NZ22NE	1965	1:10,560
NZ22SE	1966	1:10,560

Historical Map - Slice A



Order Details

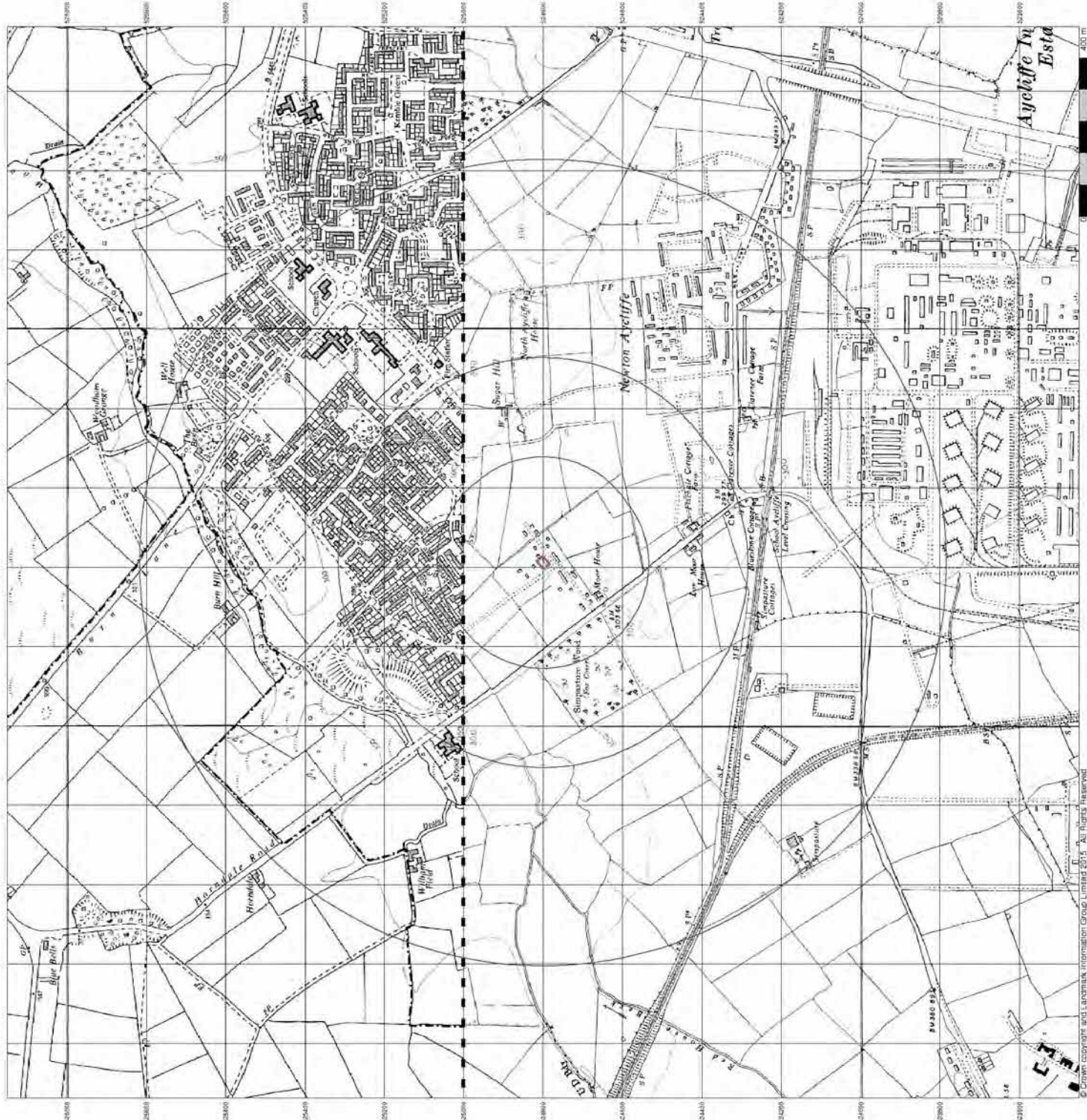
Order Number: 136002360_1_1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
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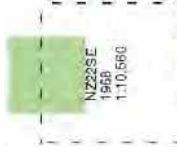
Ordnance Survey Plan

Published 1968

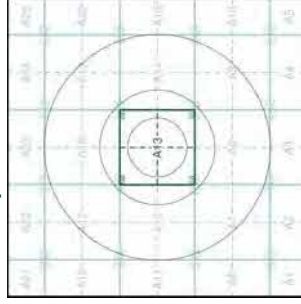
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey office in Southampton in the 1940's. In 1864 the first OS map of the United Kingdom was published. The maps are used to update the 1:10,000 maps. The published date of the maps are often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys in cutting county or group of counties giving rise to significant inaccuracies in cutting areas. In the late 1940's a Provisional Edition was produced, which updated the 1:10,000 mapping on a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 136002360_1.1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 1000

Site Details

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Ordnance Survey Plan Published 1976 - 1979

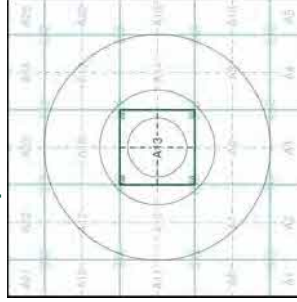
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey office in Southampton in the 1940's. In 1864 the Ordnance Survey was established in London. The maps shown here are the 1:10,000 maps. The published date of the maps are 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 1:10,000 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)

NZ22NE	1979	1:10,000
NZ22SE	1976	1:10,000

Historical Map - Slice A



Order Details

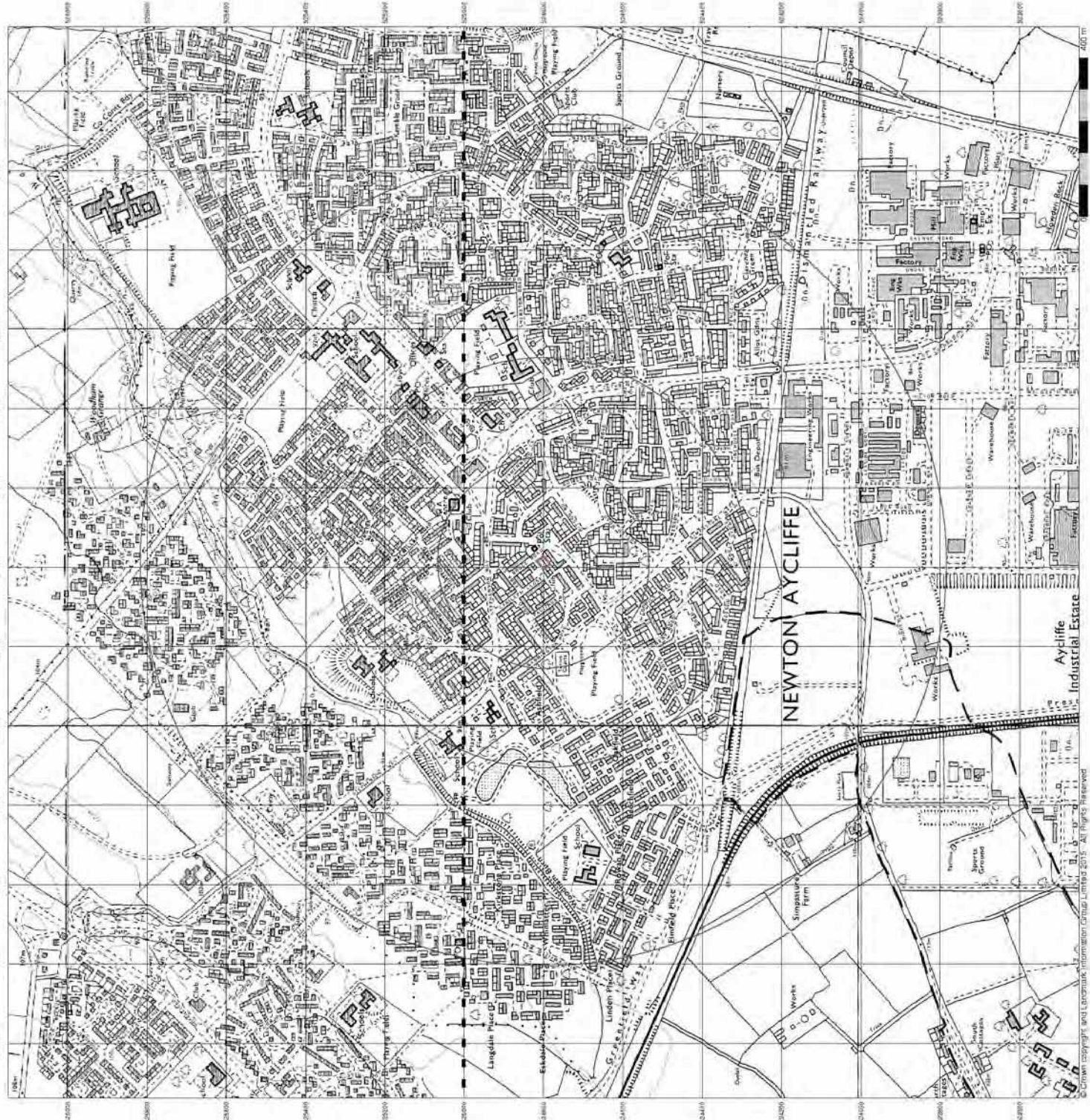
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

Site Details

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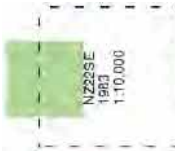


Ordnance Survey Plan Published 1983

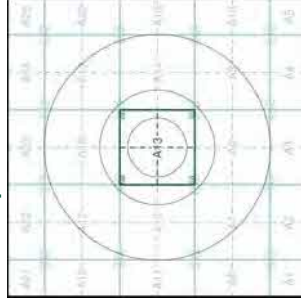
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1840's. In 1854 the Ordnance Survey began to publish maps for urban areas, these maps are used to update the 1:10,000 maps. The published date of the maps are 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 cutting areas. In the late 1940's a Provisional Edition was produced, which updated the 1:10,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

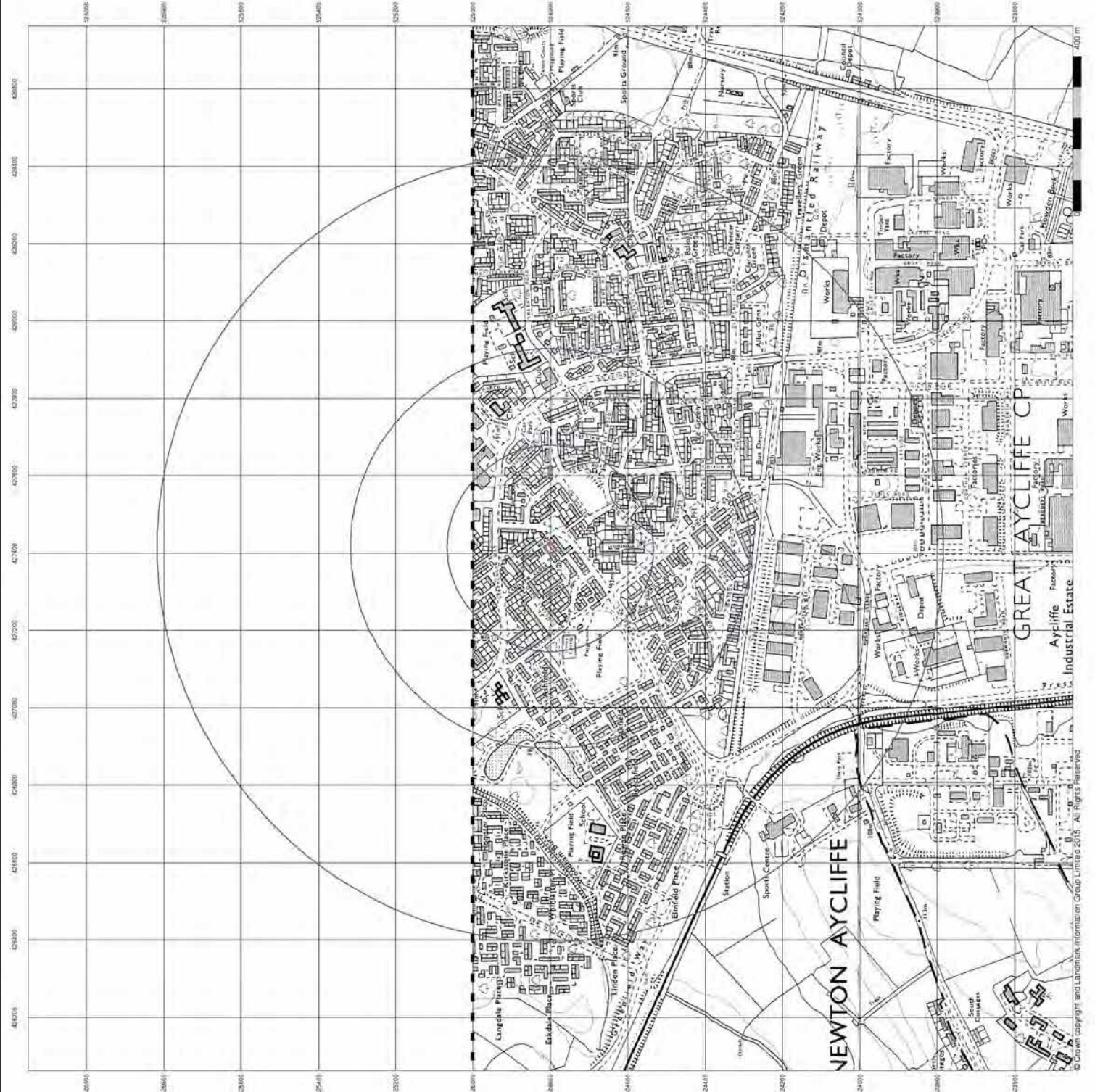
Order Number: 136002360_1.1
Customer Ref: 17-631(F)
National Grid Reference: 427410, 524800
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 1000

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Ordnance Survey Plan

Published 1990 - 1992

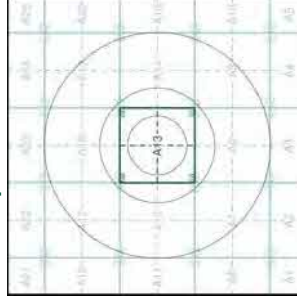
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1864 the Ordnance Survey produced the first 1:10,000 scale maps. These maps are used to update the 1:10,000 maps. The published date on the maps is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys in outlying areas. In the late 1940's a Provisional Edition was produced, which updated the 1:10,000 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)

NZ22NE	1990	1:10,000
NZ22SE	1992	1:10,000

Historical Map - Slice A



Order Details

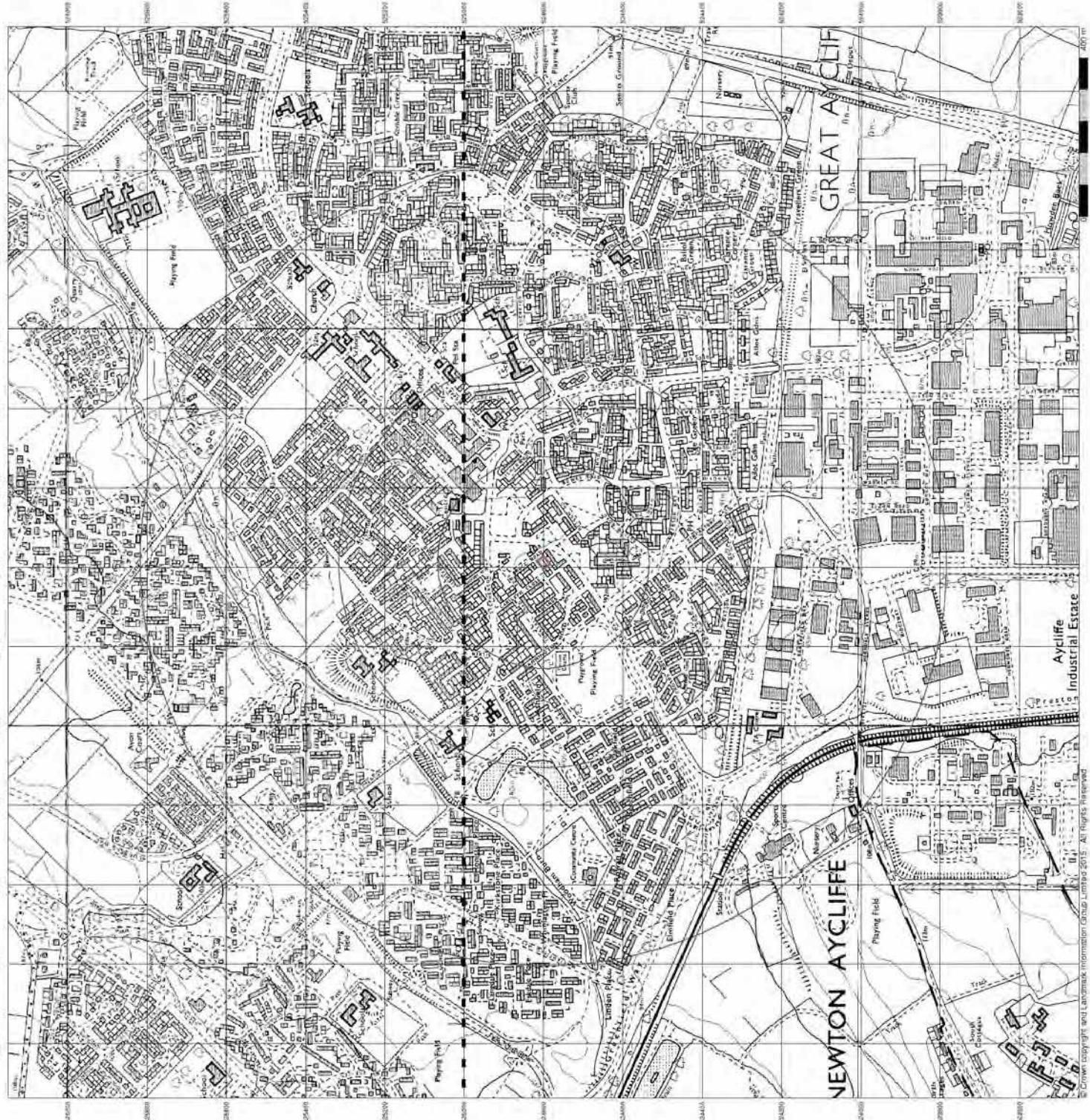
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

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10k Raster Mapping

Published 2000

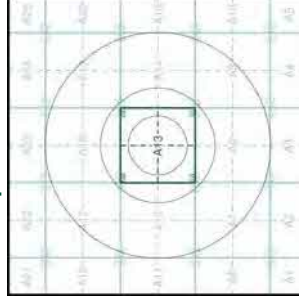
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are digitised from plan data which is highly detailed showing buildings, roads, tracks and paths, as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

NZ23NE	2000	1:10,000
NZ23SE	2000	1:10,000

Historical Map - Slice A



Order Details

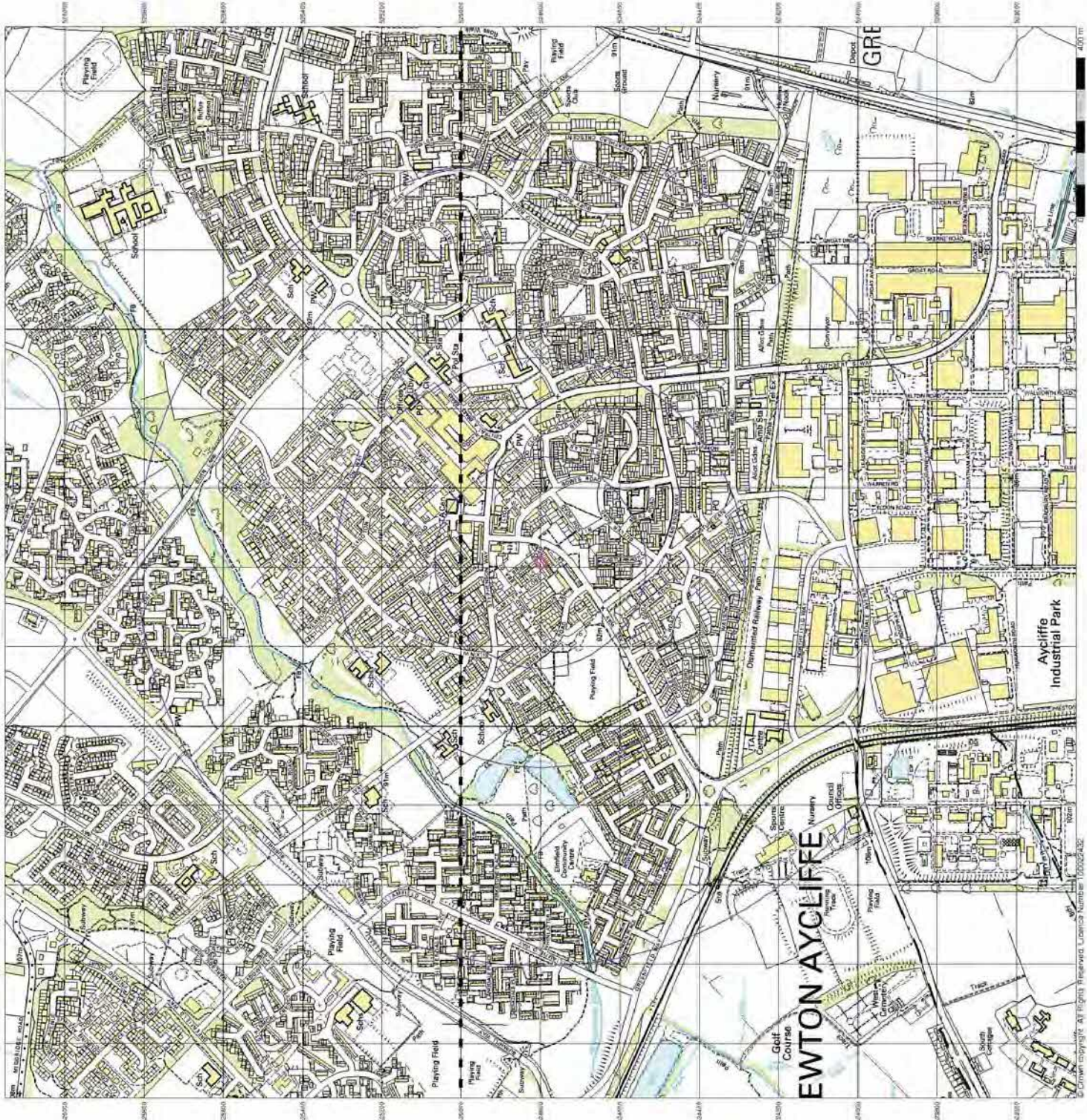
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

Site Details

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10k Raster Mapping

Published 2006

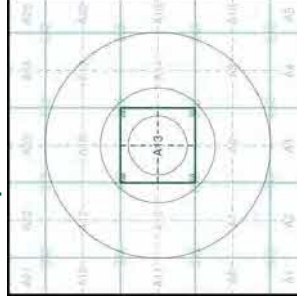
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are digitised from plan data which is highly detailed showing buildings, roads, tracks and paths, as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

NZ22NE	2006	1:10,000
NZ22SE	2006	1:10,000

Historical Map - Slice A



Order Details

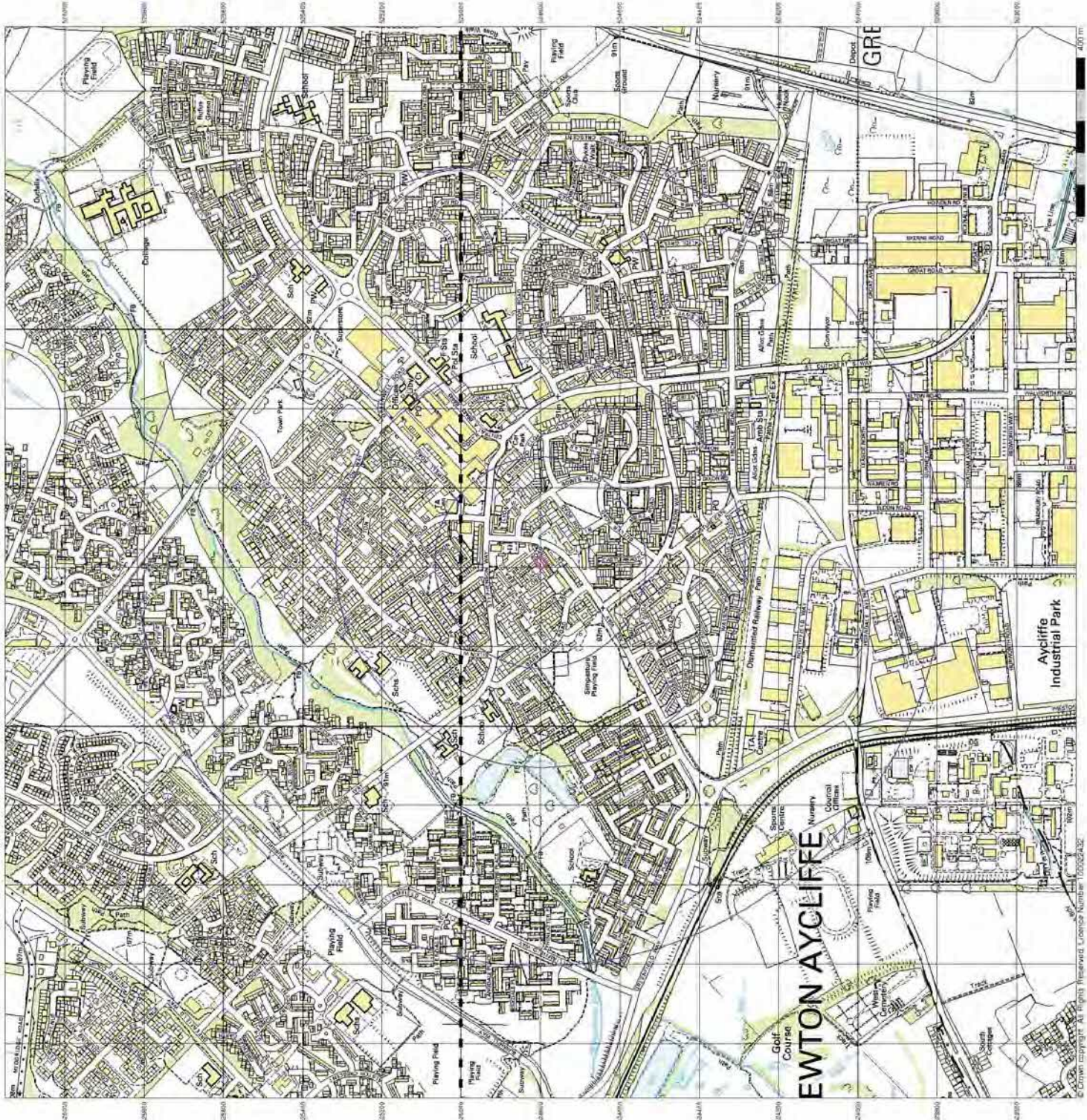
Order Number: 136002360_1.1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

Site Details

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VectorMap Local Published 2017

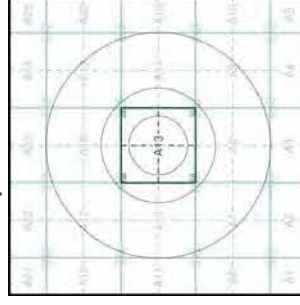
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced at OS's VectorMap Local, a mapping product that has been designed to create a digital map of Great Britain that has been designed to create a digital map of Great Britain. VectorMap Local is derived from large-scale information surveyed at 1:250 scale (covering major towns and cities), 1:2500 scale (smaller towns, villages and developed rural areas), and 1:10,000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

NZ22NE	2017	Variable
NZ22SE	2017	Variable

Historical Map - Slice A



Order Details

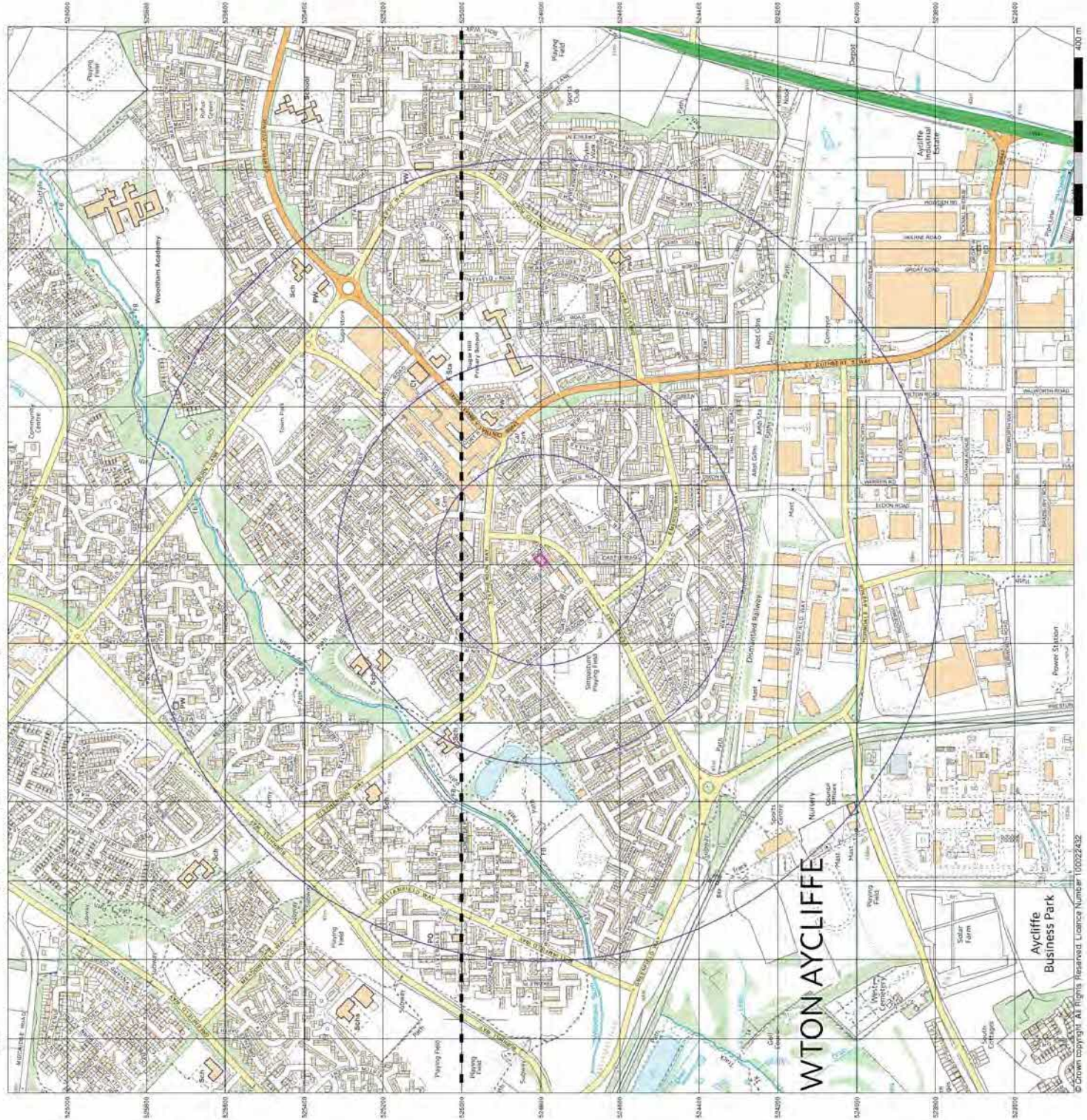
Order Number: 136002360_1_1
 Customer Ref: 17-631(F)
 National Grid Reference: 427410, 524800
 Slice: A
 Site Area (Ha): 0.06
 Search Buffer (m): 1000

Site Details

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APPENDIX III

Borehole Location Plan

Borehole Record Sheets



ARC ENVIRONMENTAL LTD

Solum House
 Unit 1 Elliott Court
 St. John's Road
 Meadowfield
 Durham, DH7 8PN
 Tel: (0191) 378 6380
 Fax: (0191) 378 0494
 e-mail: admin@arc-environmental.com
 web: www.arc-environmental.com

The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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LEGEND	
	APPROXIMATE SITE BOUNDARY
	WINDOWLESS SAMPLING BOREHOLE POSITION
	INTERNAL CORE POSITION THROUGH GARAGE FLOOR SLAB

rev.	date	amendments	Drawn checked

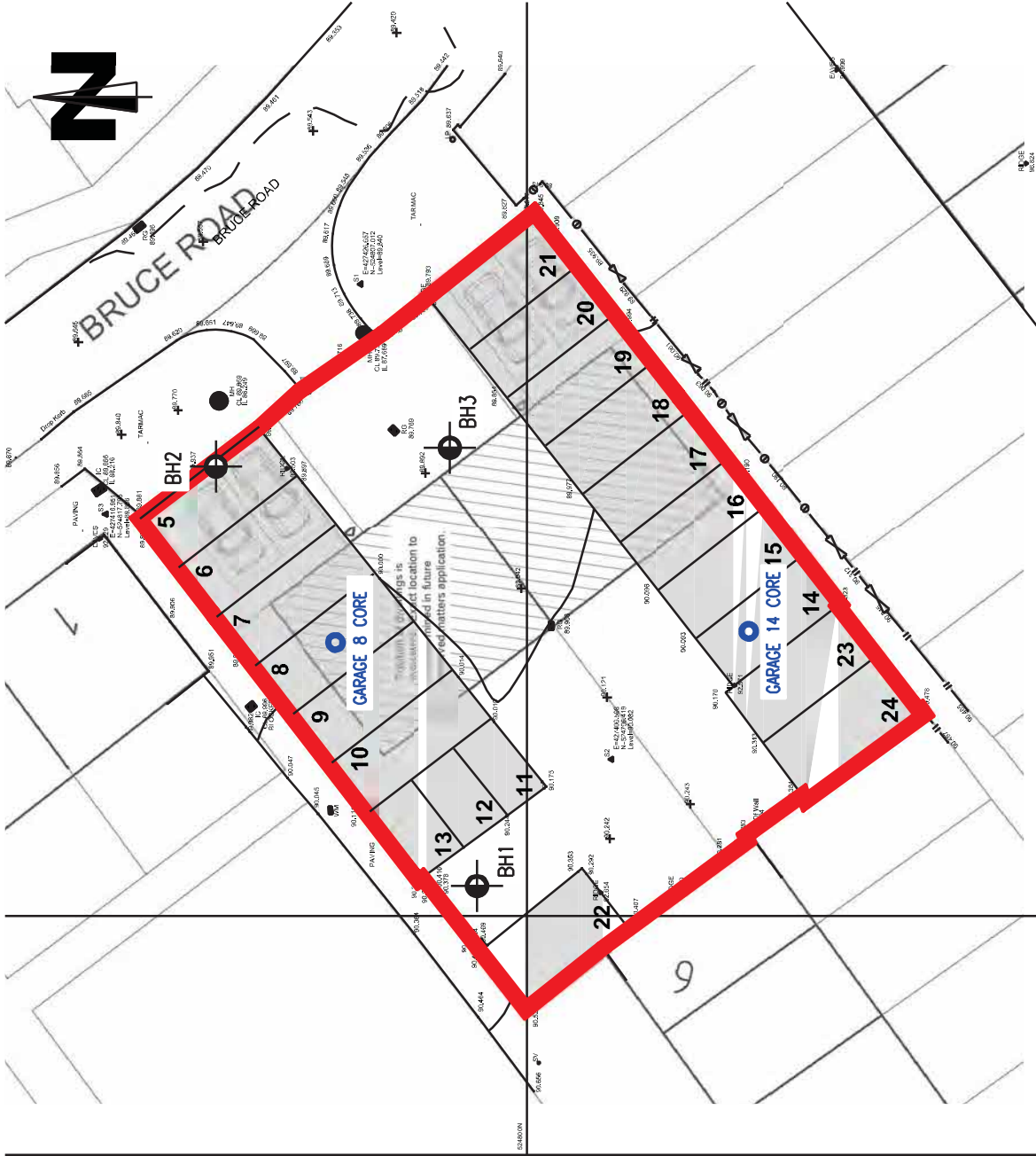
Client: **LIVIN HOUSING LTD**

Project Title: **Proposed Residential Development**
 Land of Bruce Road
 Newton Aycliffe

Drawing Title: **Borehole Location Plan**

Scale of A3: | Date: | Drawn by: | Approved by:
 1:200 @ A3 | 12.09.17 | P.D | J.P.D

Job Ref: | Dwg no: | Rev:
17-631(F) | - | -





Solum House, Unit 1 Elliott Court
 St Johns Road, Meadowfield
 Durham, DH7 8PN
 Telephone: 01913786380

BOREHOLE LOG

Project Bruce Road, Newton Aycliffe				BOREHOLE No BH1	
Job No 17-631(F)	Date 13-09-17	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.10-0.30	J/D			[Cross-hatch pattern]	0.10	Concrete (MADE GROUND)		[Cobble pattern]	
					0.30	Black ash, clinker and slag pieces (MADE GROUND)			
0.30-0.60	J/D			[Cross-hatch pattern]	(0.30)	Dark greyish brown sandy clay (MADE GROUND)			
0.50	V	46kN/m ²		[Cross-hatch pattern]	0.60				
0.60-1.00	J/D			[Cross-hatch pattern]	(0.50)	Firm becoming soft brown silty very sandy CLAY (GLACIAL TILL)			
1.00-2.00	B			[Cross-hatch pattern]	1.10				
1.00	V	36kN/m ²		[Cross-hatch pattern]		Stiff (high strength) brown sandy gravelly CLAY with some cobbles (GLACIAL TILL)			
1.50	V	102kN/m ²		[Cross-hatch pattern]					
2.00-3.00	B			[Cross-hatch pattern]					
2.00	V	110kN/m ²		[Cross-hatch pattern]					
2.50	V	114kN/m ²		[Cross-hatch pattern]	(2.90)				
3.00-4.00	B			[Cross-hatch pattern]					
3.00	V	>120kN/m ²		[Cross-hatch pattern]					
4.00	V	>120kN/m ²		[Cross-hatch pattern]	4.00				

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER OBSERVATIONS: Borehole dry.

All dimensions in metres Scale 1:31.25	Client Livin Housing Ltd	Method/ Plant Used Windowless Sampling	Logged By JPD
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AGS3 UK BH SITE F LOGS.GPJ AGS3_ALL.GDT 15/9/17



Solum House, Unit 1 Elliott Court
 St Johns Road, Meadowfield
 Durham, DH7 8PN
 Telephone: 01913786380

BOREHOLE LOG

Project Bruce Road, Newton Aycliffe				BOREHOLE No BH2	
Job No 17-631(F)	Date 13-09-17	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.10-0.50	B				[Cross-hatch pattern]	0.10	Tarmac (MADE GROUND)		[Stippled pattern]
					[Cross-hatch pattern]	(0.40)	Dark brown sandy clay with some brick fragments - concrete obstruction at 0.50m (MADE GROUND)		
					[Cross-hatch pattern]	0.50			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER OBSERVATIONS: Borehole dry.

All dimensions in metres Scale 1:31.25	Client Livin Housing Ltd	Method/ Plant Used Windowless Sampling	Logged By JPD
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AGS3 UK BH SITE F LOGS.GPJ AGS3_ALL.GDT 15/9/17



Solum House, Unit 1 Elliott Court
 St Johns Road, Meadowfield
 Durham, DH7 8PN
 Telephone: 01913786380

BOREHOLE LOG

Project Bruce Road, Newton Aycliffe				BOREHOLE No BH3	
Job No 17-631(F)	Date 13-09-17	Ground Level (m)	Co-Ordinates ()		
Contractor Arc Environmental Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.10-0.30	J/D			[Cross-hatch pattern]	0.10	Concrete (MADE GROUND)		[Cobble pattern]	
					0.30	Black ash, clinker and slag pieces (MADE GROUND)			
0.30-0.50	J/D				0.50	Dark greyish brown sandy clay (MADE GROUND)			
0.50-1.00	J/D					Stiff (high strength) brown sandy gravelly CLAY with some cobbles (GLACIAL TILL)			
1.00-2.00	B								
1.00	V	90kN/m ²							
1.50	V	100kN/m ²							
2.00-3.00	B								
2.00	V	108kN/m ²			(3.50)				
2.50	V	114kN/m ²							
3.00-4.00	B								
3.00	V	>120kN/m ²							
4.00	V	>120kN/m ²			4.00				

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER OBSERVATIONS: Borehole dry.

All dimensions in metres Scale 1:31.25	Client Livin Housing Ltd	Method/ Plant Used Windowless Sampling	Logged By JPD
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AGS3 UK BH SITE F LOGS.GPJ AGS3_ALL.GDT 15/9/17

APPENDIX IV

Laboratory Results



LABORATORY REPORT



4043

Contract Number: PSL17/4512

Report Date: 19 September 2017
Client's Reference: 17-631(F)
Client Name: Arc Environmental
Solum House
Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham
DH7 8PN

For the attention of: John Ditchburn

Contract Title: Bruce Road, Newton Aycliffe
Date Received: 18/9/2017
Date Commenced: 18/9/2017
Date Completed: 19/9/2017

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)


L Knight
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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH1		B	0.60	1.00	Brown gravelly sandy CLAY.
BH1		B	2.00	3.00	Brown gravelly very sandy CLAY.
BH3		B	1.00	2.00	Brown slightly gravelly sandy CLAY.
BH3		B	3.00	4.00	Brown gravelly very sandy CLAY.



Bruce Road, Newton Aycliffe


Contract No:	PSL17/4512
Client Ref:	17-631 F

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH1		B	0.60	1.00	21			41	21	20	81	Low plasticity CL.
BH1		B	2.00	3.00	11			33	16	17	80	Low plasticity CL.
BH3		B	1.00	2.00	21			48	23	25	97	Intermediate plasticity CL.
BH3		B	3.00	4.00	14			30	15	15	89	Low plasticity CL.

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.



PSL
Professional Soils Laboratory

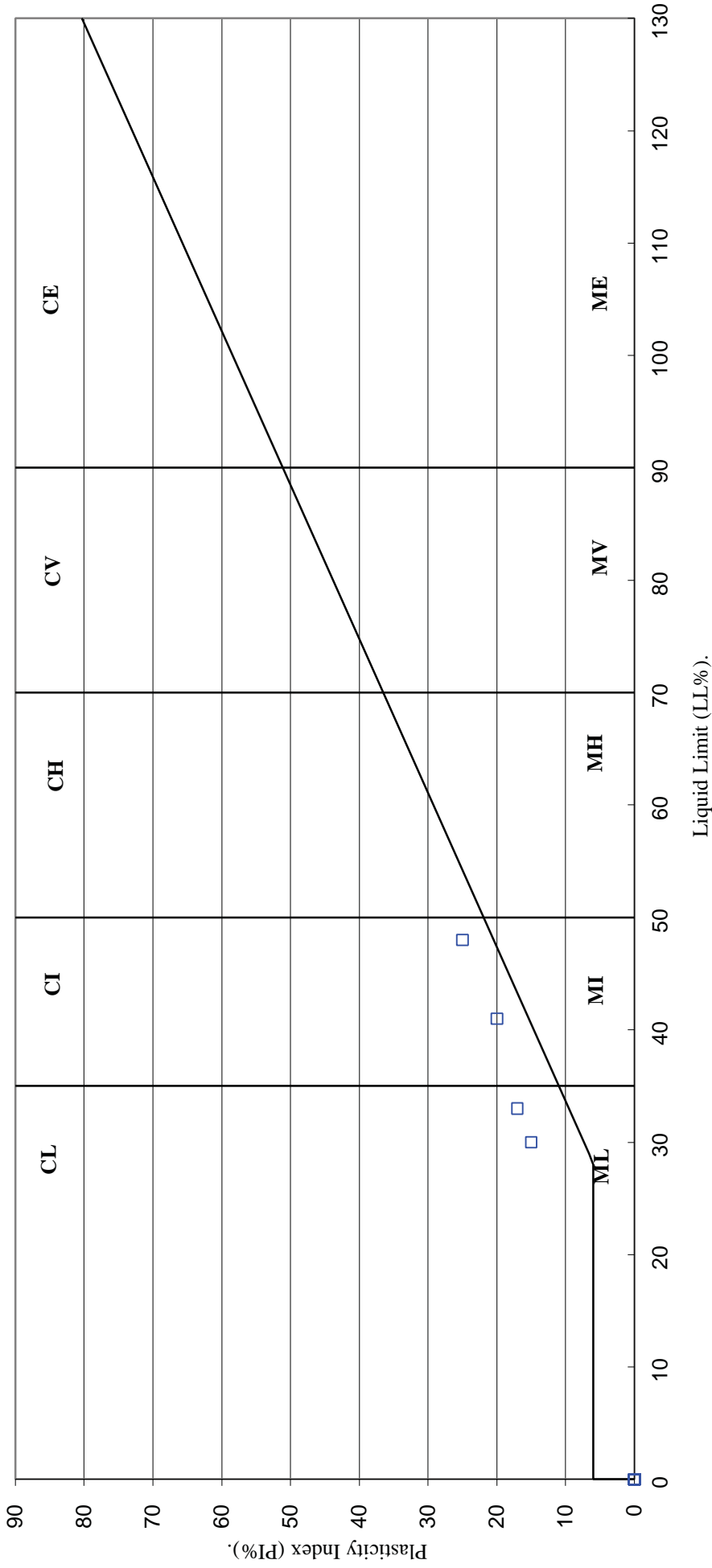
Bruce Road, Newton Aycliffe

Contract No:
PSL17/4512

Client Ref:
17-631 F

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



Bruce Road, Newton Aycliffe

Contract No:
PSL17/4512
Client Ref:
17-631 F



ANALYTICAL TEST REPORT

Contract no: 67266
Contract name: Bruce Road, Newton Aycliffe
Client reference: 17-631(F)
Clients name: ARC Environmental
Clients address: Solum House, Unit 1 Elliott Court
St Johns Road
Meadowfield
DH7 8PN

Samples received: 14 September 2017

Analysis started: 14 September 2017

Analysis completed 21 September 2017

Report issued: 21 September 2017

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

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

Approved by: 
James Spittle
Customer Services Team Leader

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

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

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

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
67266-1	BH1	0.10-0.30	Sandy Clay with Concrete	-	-	20.3
67266-2	BH1	1.00-2.00	Loamy Clay with Gravel	-	-	11.4
67266-3	BH3	0.10-0.30	Sandy Clay with Concrete	-	-	19.6
67266-4	BH3	0.50-1.00	Sandy Clay with Gravel	-	-	22.2

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SOILS

Lab number			67266-1	67266-2	67266-3	67266-4
Sample id			BH1	BH1	BH3	BH3
Depth (m)			0.10-0.30	1.00-2.00	0.10-0.30	0.50-1.00
Date sampled			12/09/2017	12/09/2017	12/09/2017	12/09/2017
Test	Method	Units				
Arsenic (total)	CE127 ^M	mg/kg As	3.3	-	3.7	-
Cadmium (total)	CE127 ^M	mg/kg Cd	<0.2	-	<0.2	-
Chromium (total)	CE127 ^M	mg/kg Cr	27	-	25	-
Chromium (III)	-	mg/kg CrIII	27	-	25	-
Chromium (VI)	CE146	mg/kg CrVI	<1	-	<1	-
Copper (total)	CE127 ^M	mg/kg Cu	20	-	12	-
Lead (total)	CE127 ^M	mg/kg Pb	44	-	16	-
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	-	<0.5	-
Nickel (total)	CE127 ^M	mg/kg Ni	5.9	-	7.3	-
Selenium (total)	CE127 ^M	mg/kg Se	5.8	-	4.2	-
Zinc (total)	CE127 ^M	mg/kg Zn	47	-	47	-
pH	CE004 ^M	units	8.9	8.6	9.3	9.6
Sulphate (2:1 water soluble)	CE061 ^M	mg/l SO ₄	1137	401	1215	366
Cyanide (free)	CE077	mg/kg CN	<1	-	<1	-
Total Organic Carbon (TOC)	CE072 ^M	% w/w C	0.20	-	0.31	-
PAH						
Acenaphthene	CE087 ^M	mg/kg	<0.01	-	<0.01	-
Acenaphthylene	CE087 ^M	mg/kg	<0.01	-	<0.01	-
Anthracene	CE087 ^U	mg/kg	0.09	-	<0.02	-
Benzo(a)anthracene	CE087 ^U	mg/kg	0.03	-	<0.02	-
Benzo(a)pyrene	CE087 ^U	mg/kg	<0.02	-	<0.02	-
Benzo(b)fluoranthene	CE087 ^M	mg/kg	<0.02	-	<0.02	-
Benzo(ghi)perylene	CE087 ^M	mg/kg	<0.02	-	<0.02	-
Benzo(k)fluoranthene	CE087 ^M	mg/kg	<0.02	-	<0.02	-
Chrysene	CE087 ^M	mg/kg	0.02	-	<0.01	-
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	-	<0.02	-
Fluoranthene	CE087 ^M	mg/kg	0.07	-	<0.02	-
Fluorene	CE087 ^U	mg/kg	<0.01	-	<0.01	-
Indeno(123cd)pyrene	CE087 ^M	mg/kg	<0.02	-	<0.02	-
Naphthalene	CE087 ^M	mg/kg	<0.01	-	<0.01	-
Phenanthrene	CE087 ^M	mg/kg	0.05	-	<0.02	-
Pyrene	CE087 ^M	mg/kg	0.07	-	0.02	-
PAH (total of USEPA 16)	CE087	mg/kg	0.34	-	<0.27	-
Benzo(j)fluoranthene	CE087	mg/kg	<0.02	-	<0.02	-
PAH (total of OIL 8)	CE087	mg/kg	<0.15	-	<0.15	-
TPH						
VPH (>C5-C7)	CE067	mg/kg	<0.1	-	<0.1	-
VPH (>C7-C8)	CE067	mg/kg	<0.1	-	<0.1	-
VPH (>C8-C10)	CE067	mg/kg	0.1	-	<0.1	-
EPH (>C10-C12)	CE033 ^M	mg/kg	<4	-	<4	-
EPH (>C12-C16)	CE033 ^M	mg/kg	<4	-	4	-

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SOILS

Lab number			67266-1	67266-2	67266-3	67266-4
Sample id			BH1	BH1	BH3	BH3
Depth (m)			0.10-0.30	1.00-2.00	0.10-0.30	0.50-1.00
Date sampled			12/09/2017	12/09/2017	12/09/2017	12/09/2017
Test	Method	Units				
EPH (>C16-C21)	CE033 ^M	mg/kg	10	-	17	-
EPH (>C21-C35)	CE033 ^M	mg/kg	234	-	1051	-
EPH (>C35-C44)	CE033 ^M	mg/kg	40	-	241	-
Subcontracted analysis						
Asbestos (qualitative)	\$	-	NAD	-	NAD	-

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
-	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	Wet	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO ₄
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	Wet		1	mg/kg CN
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE087	Acenaphthene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	Wet	U	0.01	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	Wet		0.27	mg/kg
CE087	Benzo(j)fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	PAH (total of OIL 8)	Solvent extraction, GC-MS	Wet		0.15	mg/kg
CE067	VPH (>C5-C7)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH (>C7-C8)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH (>C8-C10)	Headspace GC-FID	Wet		0.1	mg/kg
CE033	EPH (>C10-C12)	Solvent extraction, GC-FID	Wet	M	4	mg/kg
CE033	EPH (>C12-C16)	Solvent extraction, GC-FID	Wet	M	4	mg/kg
CE033	EPH (>C16-C21)	Solvent extraction, GC-FID	Wet	M	4	mg/kg
CE033	EPH (>C21-C35)	Solvent extraction, GC-FID	Wet	M	6	mg/kg
CE033	EPH (>C35-C44)	Solvent extraction, GC-FID	Wet	M	10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

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

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

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

Key

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

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
67266-1	BH1	0.10-0.30	N	
67266-2	BH1	1.00-2.00	N	
67266-3	BH3	0.10-0.30	N	
67266-4	BH3	0.50-1.00	N	