

Ferngrove House, Bury

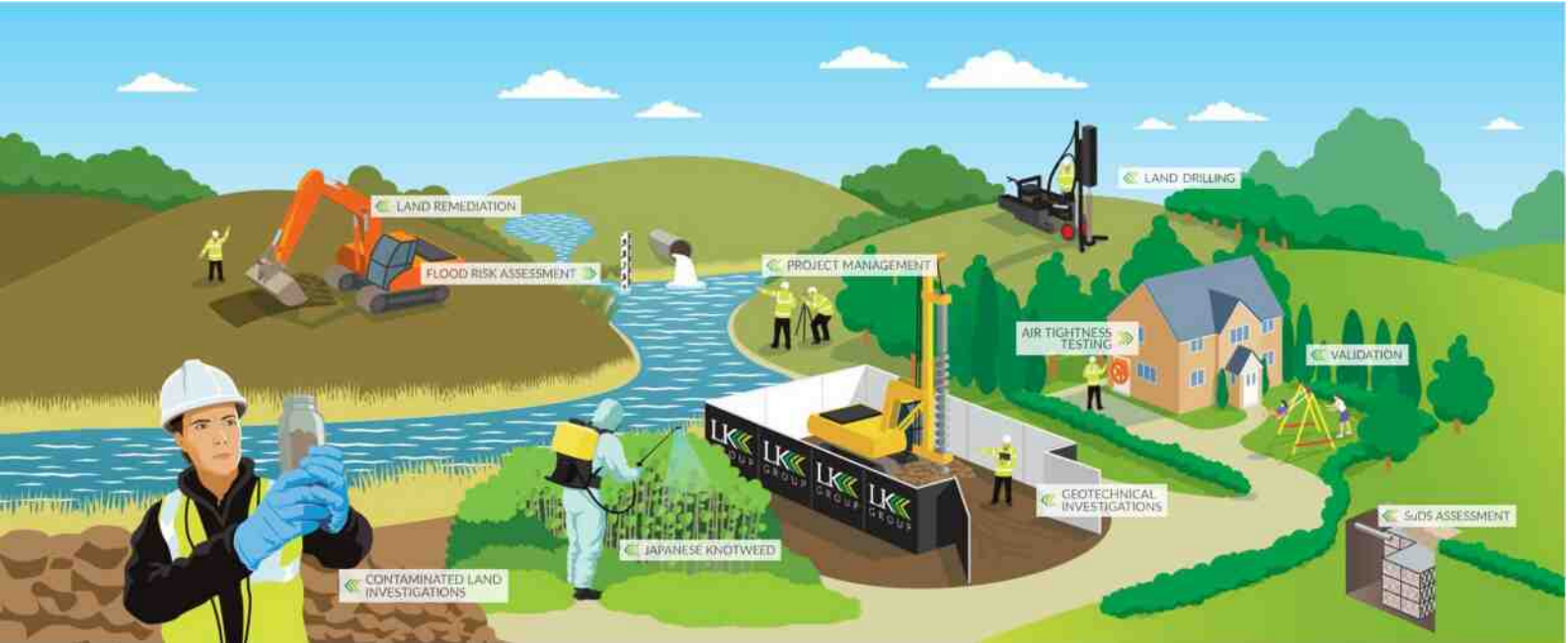
Phase 1 Preliminary Risk Assessment

Job Number: LKC 23 1742
Date: December 2023
Client: Woodtop Estates Ltd



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DOCUMENT QUALITY ASSURANCE

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Report Title	Phase 1 Preliminary Risk Assessment
Job Number	LKC 23 1742
Client	Woodtop Estates Ltd

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Written By	Elena Francis & Beth Ryder-Humphries		
Approved By	Colin Crompton		

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1. Introduction

LK Consult Ltd (LKC) has been commissioned to carry out a Phase 1 Preliminary Risk Assessment (PRA) for Ferngrove House.

In accordance with current guidance (including LCRM¹ and the National Planning Policy Framework (NPPF)²), the PRA will include a site reconnaissance, site history, geology, hydrogeology, hydrology, mineral search, and a landfill search. Information gathered from the desk study and site reconnaissance will be used to develop a contamination conceptual model for the site.

Based on the findings of this report, an appropriate site investigation can be derived, if required.

A summary of the site details is presented in Table 1-1. Figure 1 indicates the site location and boundary plan. Figure 2 indicates the proposed development.

Location	South of Ferngrove, on the north-eastern outskirts of Bury. Centred at National Grid Reference 382150E 411450N.
Area	540m ² .
Topography	107 metres above ordnance datum (AOD). Site falls to the south.
Current Site Use	Two-storey House in Multiple Occupation (HMO) with attached single-storey garage, hardstanding to the south and east and small garden area to the north.
Proposed Development	Demolition of existing garage and replacement with an extension to the HMO. Creation of additional car parking space in the southern part of the site.

Table 1-1: Summary of site details.

2. Historical Review

In compiling the site history, LKC consulted Envirocheck historical mapping (Appendix A).

Table 2-1 summarises features on site. Table 2-2 summarises potentially contaminative land uses within approximately 50m and potentially infilled features within approximate 250m.

Site Features	Location on Site	Dates Present		Comments
		From	To	
Current Residential building	N	1891	2023	Annotated as Fern Grove. Small structure annotated off the western elevation of Fern Grove house between 1959-1980 mappings, replaced by current building footprint by 1992 mapping. Anecdotal evidence from the client suggests the building was formerly the gate house to Fern Grove Mill.
Boundary wall	W	1891	2023	

Table 2-1: Summary of site features. Dates are based on available historical map editions.

Surrounding Area Features	Distance (m)	Direction	Dates Present		Comments
			From	To	
Fern Grove Mill (Weavery)	Adj	NE	1851	1992	1no. Chimney present within grounds between 1891 -1930 mapping, approximately 56m N of site boundary. 1no. Well present within grounds by 1891 mapping. Still present approximately 40m NE of site boundary. No longer present by 1999 mapping. Area in development for residential housing by 1999 aerial photo. Evidence of site clearance and earthworks.
3no. Reservoirs	210	W	1891	1975	Associated with woollen mill (approximately 190m W of site boundary). No longer present in 1984 mapping.
	45	NE	1891	2016	Associated with cotton mill, well also present adjacent to reservoir. No longer annotated by 1939 mapping. Inground structure still present Inground structure no longer present by 2023 mapping.
	50	NE	1891	1999	Not annotated as Reservoir by 1894 mapping, inground structure still present. Structure annotated on 1999 mapping, however no longer annotated by 1999 aerial photo. Location redeveloped for

Surrounding Area Features	Distance (m)	Direction	Dates Present		Comments
			From	To	
					residential housing by 2003 mapping.
Inland River	13	E	1891	2023	
2no. Allotments	40	N	1959	1960	No longer present in 1967 mapping. Location redeveloped for residential housing by 1999 mapping.
	5	NW	1959	1964	No longer present in 1967 mapping.
Electricity Substation	Adj	N	2006	2023	Associated with residential development to the N.

Table 2-2: Summary of potentially contaminative features within 50m and potentially infilled features within 250m. Dates are based on available historical map editions.

3. Environmental Setting

A summary of the environmental settings is presented in Table 3-1, based on a review of available environmental data.

Categories ^(data sources)			Details
Geology ^{1, 2}	Artificial Ground		No BGS recorded artificial ground.
	Superficial Deposits		Glacial Till, Devensian (diamicton).
	Bedrock		Pennine Lower Coal Measures Formation - Sandstone.
	BGS Logs (100m)		10.no BGS boreholes within 100m of site, closest and most relevant summarised below. <u>BH Ref: SD81SW6, 55m NE.</u> gravel to 0.30m, grey sandstone to 26.97m, shale and sandstone to > 39.62m. <u>BH Ref: SD81SW262, 60m N.</u> Topsoil then clayey subsoil to 0.15m, sandy CLAY, mixed with clayey SAND to 0.40m, sandy CLAY with occasional gravel to 0.55m, silty, SAND to 1.20m, sandy CLAY with occasional rootlets to 1.40m, clayey SILT with occasional rootlets, occasional sand, wet on surfaces to 2.00m, silty CLAY with occasional rootlets to > 2.50m. <u>BH Ref: SD81SW267, 70m N.</u> Sandy SILT with rootlets (topsoil) to 0.40m, silty, sandy CLAY (alluvium) to 1.10m, silty SAND with little gravel (alluvium) to 1.70m, clayey SILT (alluvium) to 2.60m, silty CLAY (glacial till) to > 3.70m.
Hydro-geology ¹	Aquifer Designation	Superficial	Secondary Undifferentiated Aquifer.
		Bedrock	Secondary A Aquifer.
	Source Protection Zone (SPZ)		Site not within an SPZ.
	Groundwater Abstractions (100m)		None.
Hydrology ¹	Surface Watercourses (100m)		Un-named inland river, 13m SE, flowing SW. River Mersey Catchment.
	Flooding Risk ^{1, 3}		Flood Zone 1.
	Surface Water Abstractions (100m)		None.
	Discharge Consents (onsite)		None.
	Pollution Incidents (onsite)		None.

Table 3-1: Summary of the environmental setting.

Notes: Distance in brackets is the distance from site that features are included. Where no distance given, features relate to onsite only.

Data Sources:

1 Envirocheck Report (Appendix A & B).

2 <http://mapapps2.bgs.ac.uk/geoindex/home.html> (Appendix C).

3 <https://flood-map-for-planning.service.gov.uk/location>

4 The Coal Authority Web Mapping Services (WMS) / <http://coal.decc.gov.uk/en/coal/cms/publications/data/map/map.aspx>.

5 Zetica UXO Unexploded Bomb Risk Map (Appendix D).

Categories ^(data sources)		Details
Minerals & Mining ^{1,4}	Coal Mining	Within a Coal Reporting Area. Not within a Development High Risk Area.
	Surface Mineral Extractions (250m)	None.
	Non-Coal Mining Area	No Hazard.
Ground Stability ¹	Collapsible Ground	Very low hazard.
	Compressible Ground	No hazard.
	Ground Dissolution	No hazard.
	Landslide	Very low hazard.
	Running Sand	Very low hazard.
	Shrinking / Swelling Clay	Very low hazard.
Landfill Sites (250m) ¹	Known / Registered	None.
	Potentially Infilled Land (non-water and water), based on Envirocheck Report	1no. features: Unknown filled ground, 210m SW.
	Potentially Infilled Sites, based on LKC historical review	3no. features: See Table 2-2.
Radon Potential ¹		<1% of homes above Action Level. No protective measures are necessary in the construction of new dwellings or extensions.
Designated Sites (50m) ¹		None.
Contemporary Trade Directory (50m) ¹		None.
Fuel Station Entries (50m) ¹		None.
Unexploded Ordnance Risk (UXO) – Zetica Risk Map	Zetica Risk Map ⁵	Bomb Risk: Low.

Table 3-2 (continued): Summary of the environmental setting.

Notes: Distance in brackets is the distance from site that features are included. Where no distance given, features relate to onsite only.

Data Sources:

1 Envirocheck Report (Appendix A & B).

4 The Coal Authority Web Mapping Services (WMS) / <http://coal.decc.gov.uk/en/coal/cms/publications/data/map/map.aspx>.

5 Zetica UXO Unexploded Bomb Risk Map (Appendix D).

4. Site Reconnaissance

A site reconnaissance was carried out on the 15th of December 2023. Hand dug trial holes were undertaken in accessible areas to confirm the shallow ground conditions.

Relevant features identified on site are summarised below:

- The site includes a two-storey semi-detached house (HMO) with a garage attached to the western elevation. The garage comprised a concrete floor and corrugated metal roofing and sides. No evidence of asbestos containing material was noted on the garage buildings.
- The garage was used to store builders materials and tools. There was no evidence of hydrocarbon staining on the floor.
- A substantial block paved parking area is present to the south of the building with a small soft landscaped area to the southern boundary of the site. LKC understands this is maintained by the landlord.
- An enclosed garden / patio area is located to the north of the HMO building. The majority is paving slabs with a small soft landscaped strip along the northern edge. Vehicular access is present to the north and south of the garage.
- The site slopes gradually down towards the south.
- No visual or olfactory evidence of hydrocarbon contamination identified.
- The client confirmed there is a cellar present under the existing HMO building but will not be present under the extension that is to be built. The HMO has gas central heating, as will the extension.

The surrounding area comprises electricity substation to the north-west, residential housing to the north and south, and a stream to the east.

Hand dug pits were carried out in 3no. locations and are summarised in Table 4-1.

HD1	HD2	HD3
0.00-0.40m TOPSOIL: black silty SAND 0.40-0.60m Brown sandy CLAY with rare coal, rare rootlets and rare sandstone gravel.	0.00-0.30m TOPSOIL: black silty GRAVEL. 0.30-0.40m Made ground black clinker and sandstone GRAVEL with rare ash. 0.40-0.50m Brown gravelly, sandy CLAY.	Ornamental sandstone gravel at surface. 0.00-0.20m TOPSOIL: black silty SAND with frequent roots and rare gravel. A geotextile membrane was present under the topsoil. 0.20-0.50m Brown SAND with rare roots.

Table 4-1: Hand dug pit logs.

Site photographs are provided in Table 4-2.

	
Photograph 1: View of HMO from SW looking NE including entrance.	Photograph 2: View of site from N looking S including driveway and soft landscaping area.
	
Photograph 3: View of garage W of the house.	Photograph 4: Storage inside the garage.
	
Photograph 5: Electricity substation NW of site.	Photograph 6: Made ground and natural soil from hand dug pit 3 in the back garden to the N of site.

Table 4-2: Site photographs.

Site features are also shown on Plate 4-1.



Plate 4-1: Plan showing relevant site features.

5. Preliminary Conceptual Model

5.1. Introduction

The aim of the conceptual model is to provide a preliminary assessment of the likelihood of a pollutant linkage for each potential combination of contaminant, pathway, and receptor. A conceptual model can be used to make an informed decision on the contamination risks associated with the site and whether further site investigation work is required.

The sections below are therefore divided into potential contaminant, potential pathway and potential receptor as described in LCRM³, on the premise that, if there is no pollutant linkage, then there will be no risk to the receptor. The final section provides an assessment of the potential pollutant linkages that may still be present on the site if redevelopment were to occur.

5.2. Potential Contaminants

Potential viable contamination sources are detailed in Table 5-1. These are split into onsite sources, offsite sources and underlying geology.

Potential Source	Contaminants
On site	
Shallow made ground below some or all of site (e.g., site levelling)	Assuming predominantly reworked natural soils with possible demolition rubble, ash and clinker: asbestos, heavy metals, sulphates, PAHs ⁴ . Not expected to be a significant source of gas given anticipated depth and nature of made ground.
Residential property	No significant contamination source anticipated.
Garage	Given use for storage of building materials and tools, not anticipated to be significant source of contamination. No evidence of spillages and / or leakages during site reconnaissance.
Surrounding Area	
Adjacent Cotton Mill	Cotton mill: metals, PAHs, petroleum hydrocarbons, chlorinated organic solvents, soaps and detergents, pesticides, and other inorganic compounds. Cotton Mill partially redeveloped for residential use to the NW of site boundary (remedial measures assumed given the type of development). Excavation on the northern boundary identified made ground comprising ornamental gravel and topsoil to 0.20mbgl over potential natural sand to 0.7mbgl. No evidence of contamination identified therefore not considered significant risk to human health.
Surrounding land uses (allotments)	Not considered to be significant source of contamination given time since allotments present; and clay anticipated below site which may limit lateral migration from offsite sources.
Electricity Substation	Recent (post 2000) substation and appears to be maintained. Therefore, PCBs and mineral oils are not anticipated to a significant source to the site.

Table 5-1: Potential contamination sources.

Surrounding Area	
Landfills / offsite potentially infilled features within 250m	Given size, distance and age of features, there not considered to be a source of hazardous gas (principally carbon dioxide and methane). In addition a recorded borehole (SD81SW6) in the location of a former reservoir (approximately 55m from site boundary) recorded gravel to 0.30m, grey sandstone to 26.97m, shale and sandstone to > 39.62m.
Underlying Geology	
Pennine Lower Coal Measures	Ground Gas (principally carbon dioxide and methane) ⁵ . No shallow coal workings anticipated below the site, no significant source of ground gas.
Radon Affected Area	<1% of homes above Action Level. No protective measures are necessary in the construction of new dwellings or extensions. No further consideration required.
Superficial / Bedrock	Glacial Till over Pennine Lower Coal Measures. No significant contamination sources identified.

Table 5-2 (continued): Potential contamination sources.

5.3. Potential Receptors

Potential receptors are detailed in Table 5-2.

Receptors	
Human health	Future site users (including residents, visitors, and site workers).
Controlled waters	Inland River 13m SE. Secondary A Aquifer.
Buildings.	
Potable water pipes.	

Table 5-3: Potential receptors.

5.4. Potential Pathways

Potential pathways are detailed in Table 5-3.

Pathways		
Soil	Human health ⁶ (residential land use: houses with shared landscaping)	Ingestion of soil. Ingestion of soil-derived indoor dust. Dermal contact with soil. Dermal contact with soil-derived indoor dust. Inhalation of soil-derived outdoor dust. Inhalation of soil-derived indoor dust. Inhalation of vapours outside. Inhalation of vapours inside. Omitted: Ingestion of contaminated home-grown produce, Ingestion of soil attached to home-grown produce.
Soil	Windblown dust and fibres to adjacent receptors.	
Soil	Direct contact with receptors (services).	
Surface water	Surface run-off over impermeable surface.	
Groundwater	Infiltration into the ground, through potentially contaminated material (contamination possibly going into solution).	
Groundwater and gas	Migration through potentially permeable strata and preferential pathways. Superficial (Till) likely to be low permeability. Bedrock (sandstone) likely to be relatively permeable.	
Gas	Migration into buildings (e.g., via services) and accumulation of gases in confined spaces (potentially causing explosion if methane is present).	

Table 5-4: Potential pathways.

5.5. Preliminary Contamination Conceptual Model

The Preliminary Contamination Conceptual Model is illustrated in Table 5-4.

Generic potential pollutant linkages are described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552⁷.

In order to assess the potential risk for each pollutant linkage, an assessment of the magnitude of the potential consequence (severity) of the risk occurring and the magnitude of the probability (likelihood) of the risk occurring has been considered and classified. This is based on the guidance provided in CIRIA C552 and further details including a risk matrix is provided in Appendix E.

The probability is based on the site history, site reconnaissance, environmental setting, pathways, and receptors.

Reasonable worst-case consequence has been assumed at this stage.

Where LKC identified a low to very low risk, targeted or low-density intrusive investigation work, a watching brief (during construction work) or no investigation work will be recommended. This will be dependent on the nature of the site and the proposed development.

Where the risk falls into the moderate/low risk, LKC will undertake an assessment to establish what further work will be required.

Where LKC identifies a moderate or higher risk, intrusive investigation work or precautionary remediation is recommended.

Recommendations are discussed further in Section 7.

Due to the minor consequence associated with the phytotoxic effect to flora (i.e., loss of plants in a landscaping scheme), the overall risk for the majority of sites will be very low to low. Where soils contain significant concentrations of heavy metals, in general there will other pollutant linkages (i.e., the risk to human health) that will trigger the requirement for remediation (e.g., a clean environmental cover system). As such the risk to flora associated with phytotoxic contaminants will not be considered further.

The risk to buildings associated with elevated sulphate will be considered as part of the geotechnical assessment and will not be included in the contamination risk assessment.

It should be noted that there may be risk from short term exposure from contaminated soil to site workers. The Preliminary Contamination Conceptual Model deals with long term exposure to key receptors. Acute risks can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance⁸) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

PL	Contaminants of Concern (source)	Pathway	Receptor	Probability	Consequence	Risk	Comments
1	Asbestos, heavy metals, sulphates, PAHs, petroleum hydrocarbons (made ground, current and previous building)	Dermal contact. Inhalation of soil, fibres, and dust. Windblown dust.	Future site users.	Unlikely	Medium	Low	Proposed development work comprises a residential extension and additional car parking space only, no additional soft landscaping and / or garden proposed. Low risk considered in existing soft landscaping areas.
2	Volatile contaminants (no significant source identified).	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users.	Unlikely	Medium	Low	No significant source identified within development boundary.
3	Ground gas: methane, carbon dioxide (made ground, infilled ground within 250m).	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings.	Unlikely	Severe	Moderate / Low	Shallow made ground identified site during site reconnaissance (maximum 0.4mbgl). Clay anticipated beneath site that will limit lateral migration from offsite sources.
4	Heavy metals, PAHs, (made ground, ash identified in made ground during site reconnaissance).	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater Surface water	Unlikely	Medium	Low	Limited source identified and clay anticipated below site that will limit migration.
5	Naphthalene (made ground).	Ingestion of tainted water supply.	Future site users. Water pipes.	Unlikely	Medium	Low	No new water pipelines currently proposed. However, a water pipeline risk assessment will be required if new pipelines proposed.

Table 5-5: Preliminary Contamination Conceptual Model.

Notes: PL = Pollutant Linkage. Contaminant of Concern (CoC) - See Table 5-1 for contamination sources. See Section 7 for recommendations.

6. Preliminary Geotechnical Risk Assessment

Table 6-1 summarises the possible geotechnical constraints of the site, based on the site history, environmental settings and site reconnaissance. Investigation work will be required to confirm the risks and provide a detailed geotechnical assessment and foundation design.

Coal Mining	Site is not within a Development High Risk Area. No further assessment required.
Slope stability	Site slopes gradually southwards, but not considered significant to affect ground stability.
Envirocheck Ground Stability Hazards	No to very low hazard identified. No further action required.
Made Ground	Unknown depth and constituent of made ground across the site. Possible in-ground structures from previous developments.
Superficial	Unknown strength of soils for foundation design. Strata may be variable giving differential settlement.
Bedrock	Strength and extent of weathering unknown. Unknown depth to bedrock.
Groundwater	Unknown depth and variability of groundwater. Shallow / fluctuating groundwater can affect the strength of the soil, particularly in granular ground. Shallow groundwater can also affect construction works.
Plasticity	Plasticity of clay deposits should be confirmed, particularly where trees are present or proposed, to identify the shrink / swell risk. Clay recorded on site in BGS borehole data.
Sulphate	Unknown sulphate content of the made ground and natural.

Table 6-1: Summary of geotechnical constraints.

7. Summary Conclusions and Recommendations

7.1. Summary Conclusions

Table 7-1 summarises the site details, historical review, environmental settings and site reconnaissance.

Current Site Use & Pertinent Features	Two-storey House in Multiple Occupation (HMO) with attached single-storey garage, hardstanding to the south and east, and small garden area to the north.
Proposed Development	Demolition of existing garage and replacement with an extension to the HMO and creation of additional car parking space.
Main Historical Features	Onsite: Residential building with garage and parking. Surrounding Area: Cotton Mill, Woollen Mill, Reservoirs, Allotments.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Glacial Till (sandstone). Secondary Undifferentiated. Bedrock: Lower Coal Measures. Secondary A Aquifer.
Landfills / Infilled ground	No recorded landfills. Potentially infilled ground identified.

Table 7-1: Summary of site details, historical review, environmental settings and site reconnaissance.

A preliminary contamination conceptual model has been produced by LKC, which is summarised in Table 7-2.

Pollutant Linkage	Contaminants	Risk
PL1: No viable pathway therefore no pollutant linkage.	Asbestos, heavy metals, sulphates, PAHs, petroleum hydrocarbons	Low
PL2: Volatile contaminants posing a risk to receptors via the inhalation of vapours.	Volatile Contaminants	Low
PL3: Gas posing a risk to buildings and receptors via the migration of gas into building causing explosion and asphyxiation.	Hazardous Gas.	Moderate / Low
PL4: Mobile contamination posing a risk to controlled waters via the migration through permeable strata.	Heavy metals, PAHs.	Low
PL5: Organic contaminants posing a risk to receptors.	Naphthalene.	Low

Table 7-2: Summary risk table.

A preliminary geotechnical assessment has been carried out by LKC. Table 7-3 summarises the geotechnical constraints.

Coal Mining	No further assessment required.
Made Ground	Unknown depth and constituent of made ground across the site.
Superficial	Unknown strength of soils for foundation design.
Bedrock	Unknown depth to bedrock.
Groundwater	Unknown depth and variability of groundwater.
Plasticity	Plasticity of clay deposits should be confirmed.
Sulphate	Unknown sulphate content of the made ground and natural.

Table 7-3: Summary of geotechnical constraints.

7.2. Recommendations

Recommendations are provided in Table 7-4.

Contamination Status	There is sufficient information on the potential contaminative status of the site to allow conditional approval of a planning application, based on the proposed end use detailed in the PRA.
Further Assessment Recommendations	Watching brief during construction work (groundworks).
Local Authority Approval	Conditional planning approval is likely to require an agreed detailed scope of work.
Reporting	Information from the above can be used to produce a letter report to confirm ground conditions on site for planning.
Unexpected Contamination	If unexpected contamination is identified during groundworks, further assessment will be required.

Table 7-4: Recommendations.

Figures



Client: Woodtop Estates Ltd				Title: Site Location & Boundary Plan		
Site: Ferngrove House, Bury				Scale (see scale bar): 1:25,000 & 1:1000 @ A4		
Job No.: LKC 23 1742	Drawn By: EF	Checked By: BRH	Drawn: Dec 2023	Figure: 1	Revision:	



KEY

 Site Boundary

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.

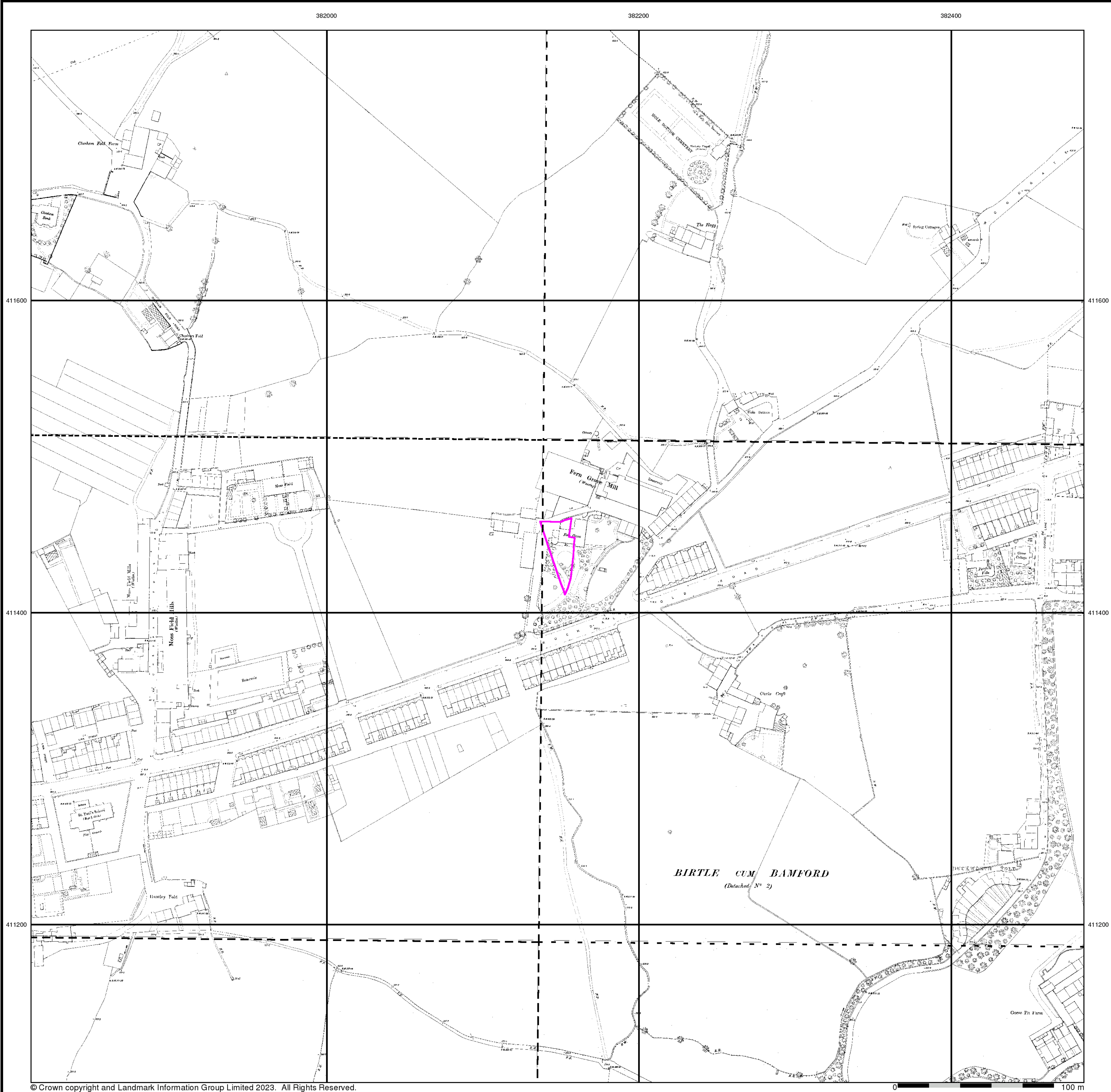


Client:		Woodtop Estates Ltd		
Site:		Ferngrove House, Bury		
Title:		Proposed Development Plan		
Job No.:	Scale (See Scale Bar):	Figure:	Revision:	
LKC 23 1742	See Scale Bar	2		
Drawn By:	Checked By:			Drawn:
AC	EF			Dec 2023

Extract From: APB Consultant Building Surveyors
Drawing Ref: Revised Car Park Layout, No.DWG/01, Rev:C (26/03/2023)

0 10
SCALE (Metres)

Appendix A – Historical Maps



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Lancashire And Furness

Published 1891

Source map scale - 1:500

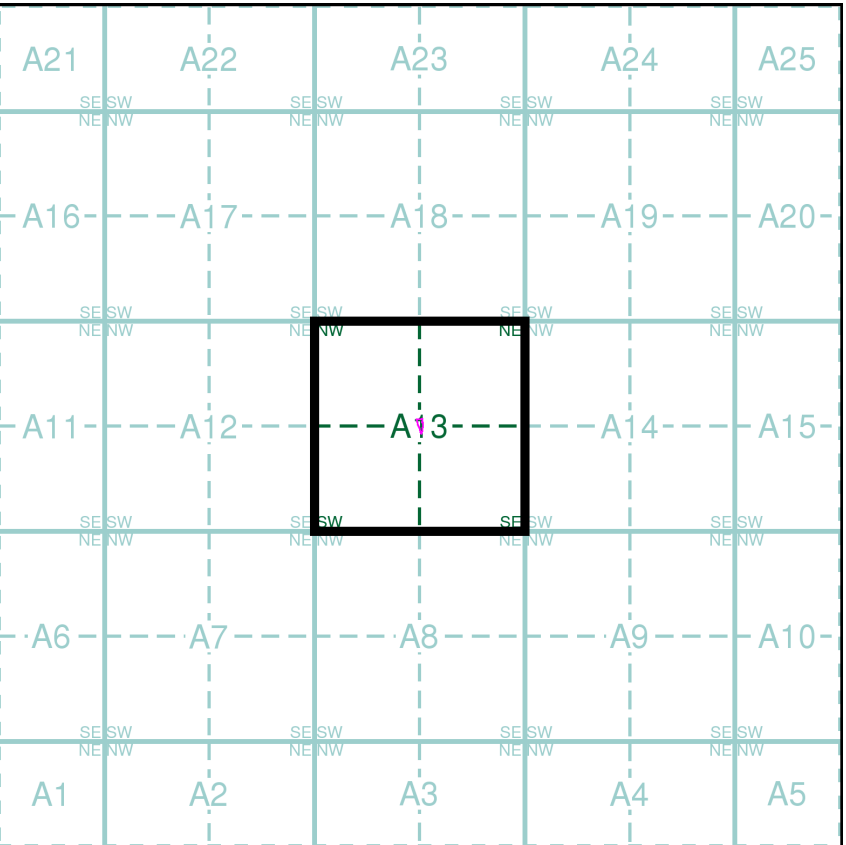
The 1:500 scale Ordnance Survey mapping was introduced in 1855 as a replacement for the 1:528 scale and to complement the 1:2500 scale that had been implemented in 1853. By 1895, the 1:500 scale covered most towns over a population of about 4000 at the time of survey, although very few towns were mapped 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 divisions between tenements, interior ground floor layouts of public buildings, and on 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)

088_05_020	088_05_016
1891	1891
1:500	1:500
088_05_025	088_06_021
1891	1891
1:500	1:500
088_09_005	088_10_001
1891	1891
1:500	1:500

Historical Town Plan - Segment A13



Order Details

Order Number: 328158794_1_1
Customer Ref: LKC 23 1742
National Grid Reference: 382150, 411440
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 0

Site Details

Ferngrove House, Bury, BL9 7LS

Landmark
INFORMATION GROUP

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

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

	Chalk Pit, Clay Pit or Quarry		Gravel Pit
	Sand Pit		Disused Pit or Quarry
	Refuse or Slag Heap		Lake, Loch or Pond
	Dunes		Boulders
	Coniferous Trees		Non-Coniferous Trees
	Orchard		Scrub
	Bracken		Heath
	Marsh		Reeds
	Building		Glasshouse
	Sloping Masonry		Pylon
	Cutting		Embankment
	Road Under		Road Over
	Level Crossing		Foot Bridge
	Standard Gauge Multiple Track		Standard Gauge Single Track
	Siding, Tramway or Mineral Line		Narrow Gauge
	Geographical County		Administrative County, County Borough or County of City
	Municipal Borough, Urban or Rural District, Burgh or District Council		Borough, Burgh or County Constituency
	Civil Parish		
	BP, BS Boundary Post or Stone		Police Station
	Church		Post Office
	Club House		Public Convenience
	Fire Engine Station		Public House
	Foot Bridge		Signal Box
	Fountain		Spring
	Guide Post		Telephone Call Box
	Mile Post		Telephone Call Post
	Mile Stone		Well

1:10,000 Raster Mapping

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

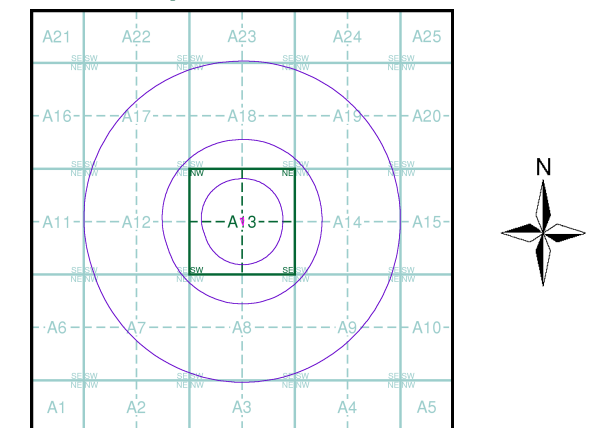


GROUP

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1851	3
Lancashire And Furness	1:10,560	1894	4
Lancashire And Furness	1:10,560	1910 - 1911	5
Lancashire And Furness	1:10,560	1931	6
Lancashire And Furness	1:10,560	1938 - 1939	7
Ordnance Survey Plan	1:10,000	1956	8
Ordnance Survey Plan	1:10,000	1967	9
Manchester	1:25,000	1975	10
Ordnance Survey Plan	1:10,000	1984	11
10K Raster Mapping	1:10,000	1999	12
10K Raster Mapping	1:10,000	2006	13
VectorMap Local	1:10,000	2023	14

Historical Map - Slice A



Order Details

Order Number: 328158794_1_1
Customer Ref: LKC 23 1742
National Grid Reference: 382150, 411440
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 1000

Site Details

Ferngrove House, Bury, BL9 7LS

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Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

a. Not drawn to scale b. Drawn to scale

Government and Administrative Buildings Military and Industrial Buildings

Military and Communication Areas Subway Entrance

Fireproof Building Prominent Fireproof Building

Non-fireproof Building Non-fireproof Building (non-dwelling)

Factory, mill, and flour mill, with chimneys Factory, mill, and flour mill, without chimneys

Power Station, drawn to scale Hydroelectric Power Station

Radio Station, drawn to scale Telephone Station, drawn to scale

Abandoned Open-pit Mine or Quarry Open-pit Salt Mine

Pit Oil Deposit or Well Oil Seepage

Tailings Pile Fuel Storage Tanks Natural Gas Tank

Bench Mark Drill Hole Burial Mound Triangulation Point on Burial Mound

Single-track Railroad Double-track Railroad and Station Building

Coniferous Forest Deciduous Forest Mixed Forest

Lawns Citrus Orchard Wet Ground Scattered Vegetation

243.8 Values for prominent elevations

186.0 Numbers for spot elevations, depth soundings, contour lines, etc.

0.2 Velocity of the current, width of river bed, depth of river

180/12 Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A) З з (Z) П п (P) Ч ч (CH)

Б б (B) И и (I) Р р (R) Ш ш (SH)

В в (V) Й й (Y) С с (S) Щ щ (SHCH)

Г г (G) К к (K) Т т (T) Ъ ъ (-)

Д д (D) Л л (L) У у (U) Ы ы (Y)

Е е (E) М м (M) Ф ф (F) Ь ь (')

Ё ё (YO) Н н (N) Х х (KH) Э э (E)

Ж ж (ZH) О о (O) Ц ц (TS) Ю ю (YU or IU)

Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

Government and Administrative Buildings Military and Industrial Buildings

Military and Communication Areas Subway Entrance

Partly Demolished Buildings Demolished Buildings

Built-Up Area with Fireproof Buildings Predominant Built-Up Area with Non-Fireproof Buildings Predominant

Individual Fireproof Building Prominent Industrial Building

Individual Dwelling, Fireproof Ruins of an Individual Dwelling

Factory or Mill Chimney Factory or Mill with Chimney Factory or Mill without Chimney Mine or Open Pit Mine

Operating Shaft or Mine Non-Operating Shaft or Mine Salt Mine Tailings Pile

Pit Stone Quarry Gas Pump or Service Station Fuel Storage or Natural Gas Tank

Oil or Natural Gas Derrick Small Hydroelectric Power Station Power Station Transformer Station

Cemetery Burial Mound (height in metres) Triangulation Point on Burial Mound Triangulation Point

Bench Mark Bench Mark (monumented) Telegraph Office Telephone Station

Radio Station Radio Tower Airfield or Seaplane Base Landing Strip

Telegraph/Telephone Lines Main Highway Highway under Construction Improved Dirt Road (former truck road)

Double-track Railroad with First Class Station Railroad Under Construction

Shore Embankment River or Ditch with Embankment Direction and velocity of current Water Gauge Water Level Mark

Well Water Reservoir or Rain Water Pit Spring Isobath with value

Heavy (Index) Contour Line Contour Line and Value Half Contour Line Spot Elevation Value

Coniferous Deciduous Mixed Scrub

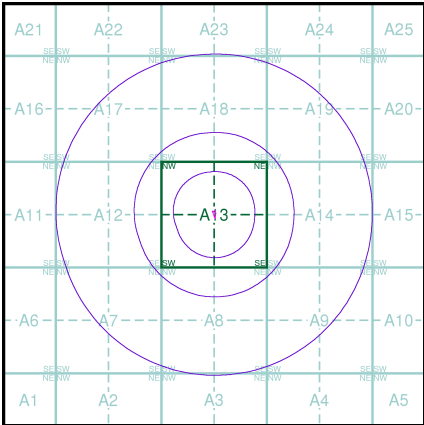
Key to Numbers on Mapping



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1851	3
Lancashire And Furness	1:10,560	1894	4
Lancashire And Furness	1:10,560	1910 - 1911	5
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Ordnance Survey Plan	1:10,000	1984	11
10K Raster Mapping	1:10,000	1999	12
10K Raster Mapping	1:10,000	2006	13
VectorMap Local	1:10,000	2023	14

Russian Map - Slice A



Order Details

Order Number: 328158794_1_1

Customer Ref: LKC 23 1742

National Grid Reference: 382150, 411440

Slice: A

Site Area (Ha): 0.06

Search Buffer (m): 1000

Site Details

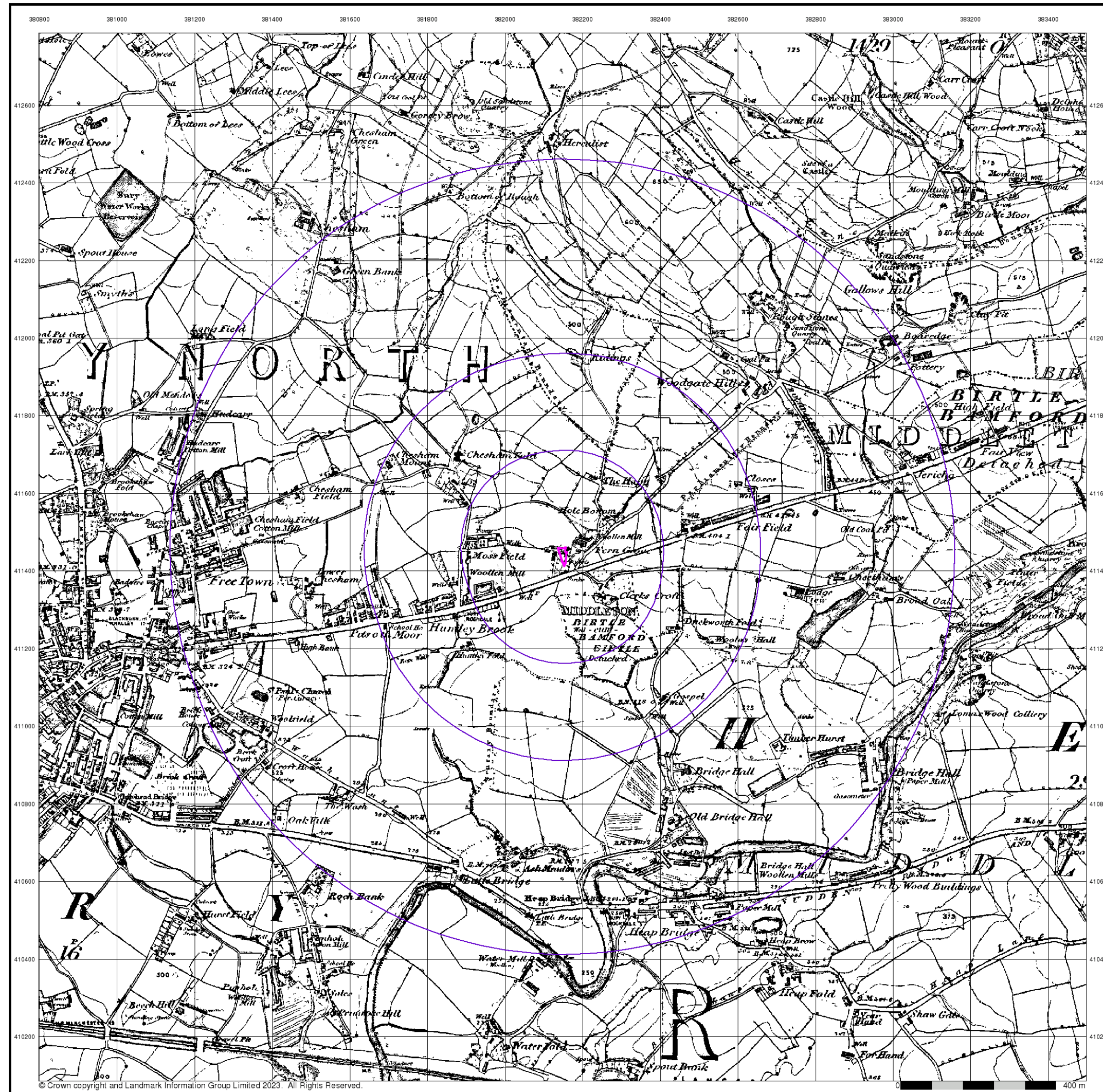
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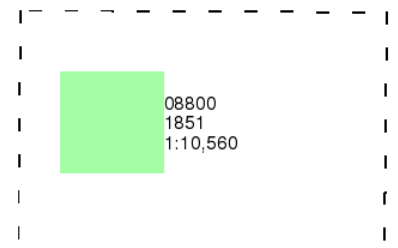
Lancashire And Furness

Published 1851

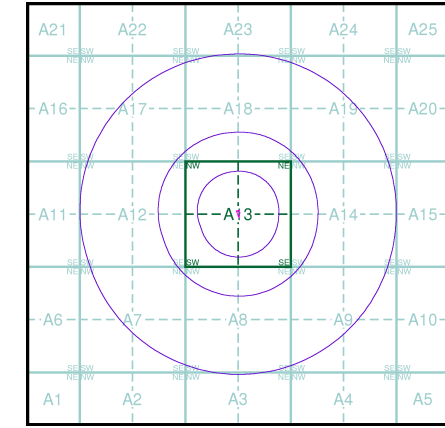
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

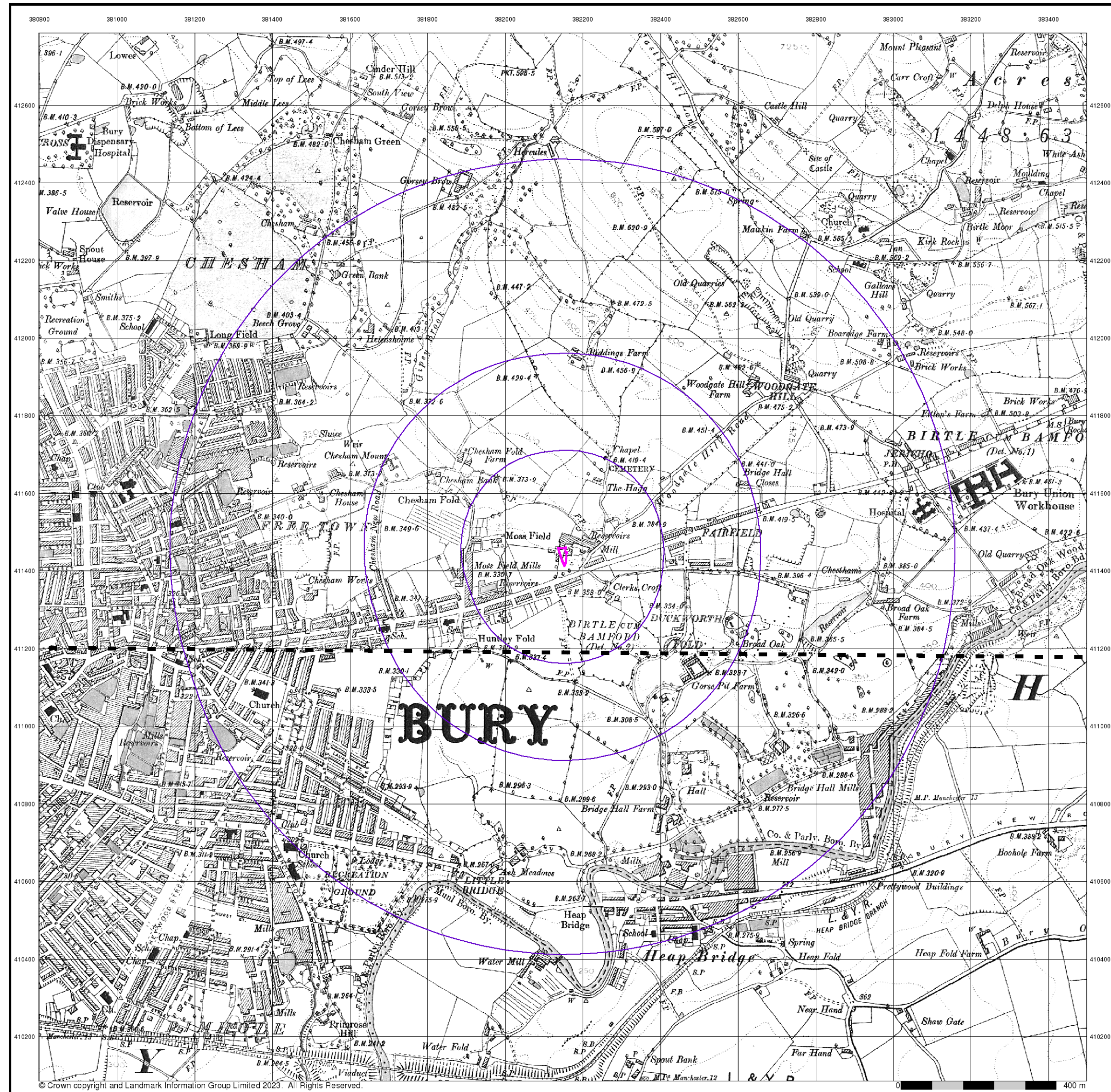


Historical Map - Slice A



Order Details	
Order Number:	328158794_1_1
Customer Ref:	LKC 23 1742
National Grid Reference:	382150, 411440
Slice:	A
Site Area (Ha):	0.06
Search Buffer (m):	1000

Site Details
Ferngrove House, Bury, BL9 7LS





GROUP

Lancashire And Furness

Published 1894

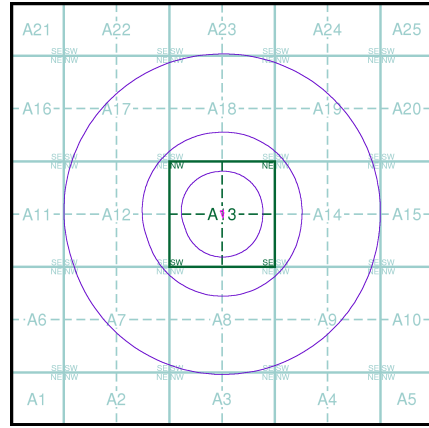
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

088NW	1894
1:10,560	
088SW	1894
1:10,560	

Historical Map - Slice A



Order Details

Order Number:	328158794_1_1
Customer Ref:	LKC 23 1742
National Grid Reference:	382150, 411440
Slice:	A
Site Area (Ha):	0.06
Search Buffer (m):	1000

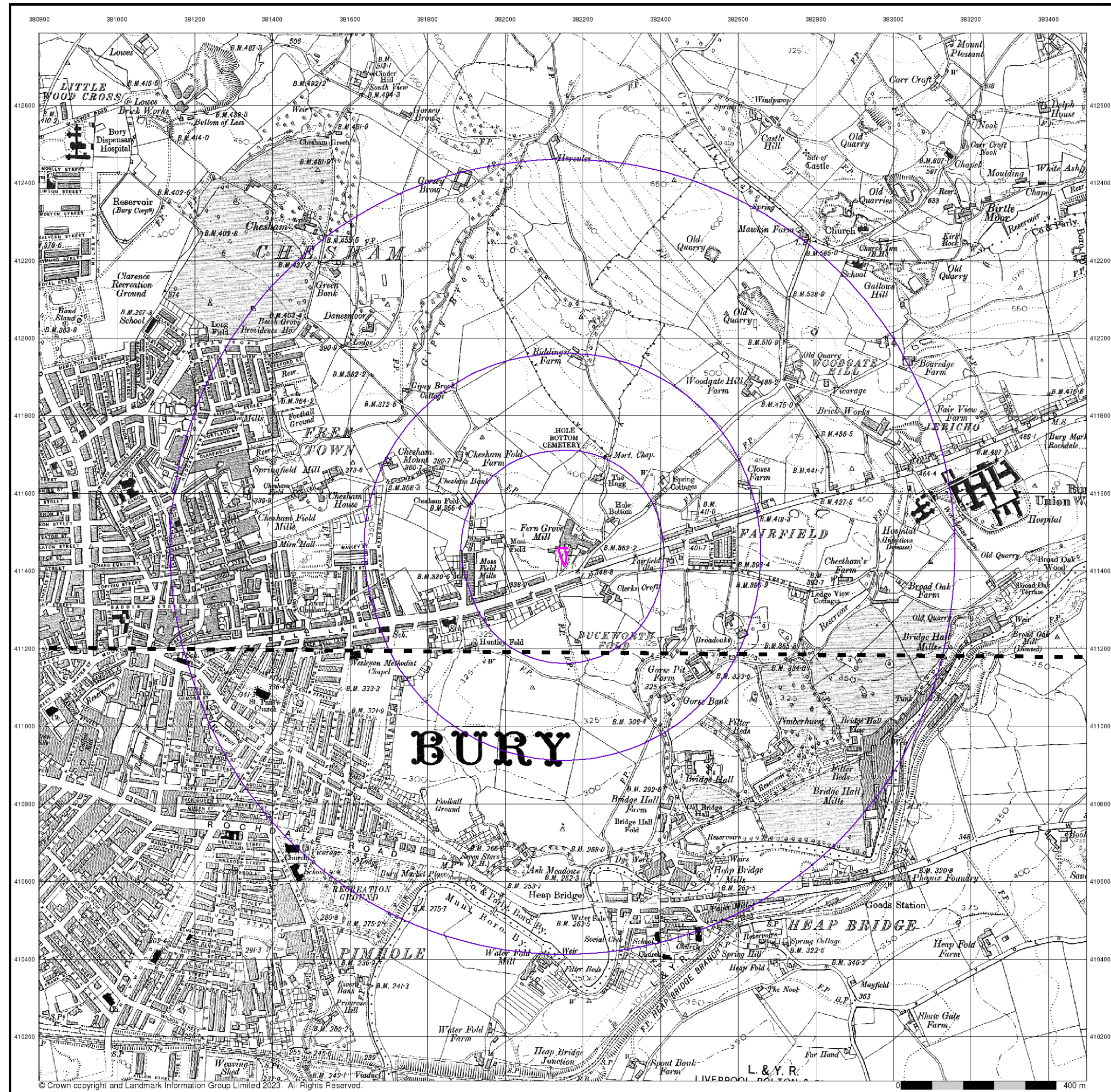
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Lancashire And Furness

Published 1910 - 1911

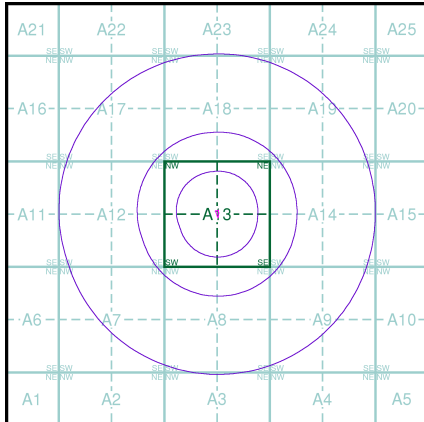
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

088NW	1911
1:10,560	
088SW	1910
1:10,560	

Historical Map - Slice A



Order Details

Order Number:	328158794_1_1
Customer Ref:	LKC 23 1742
National Grid Reference:	382150, 411440
Slice:	A
Site Area (Ha):	0.06
Search Buffer (m):	1000

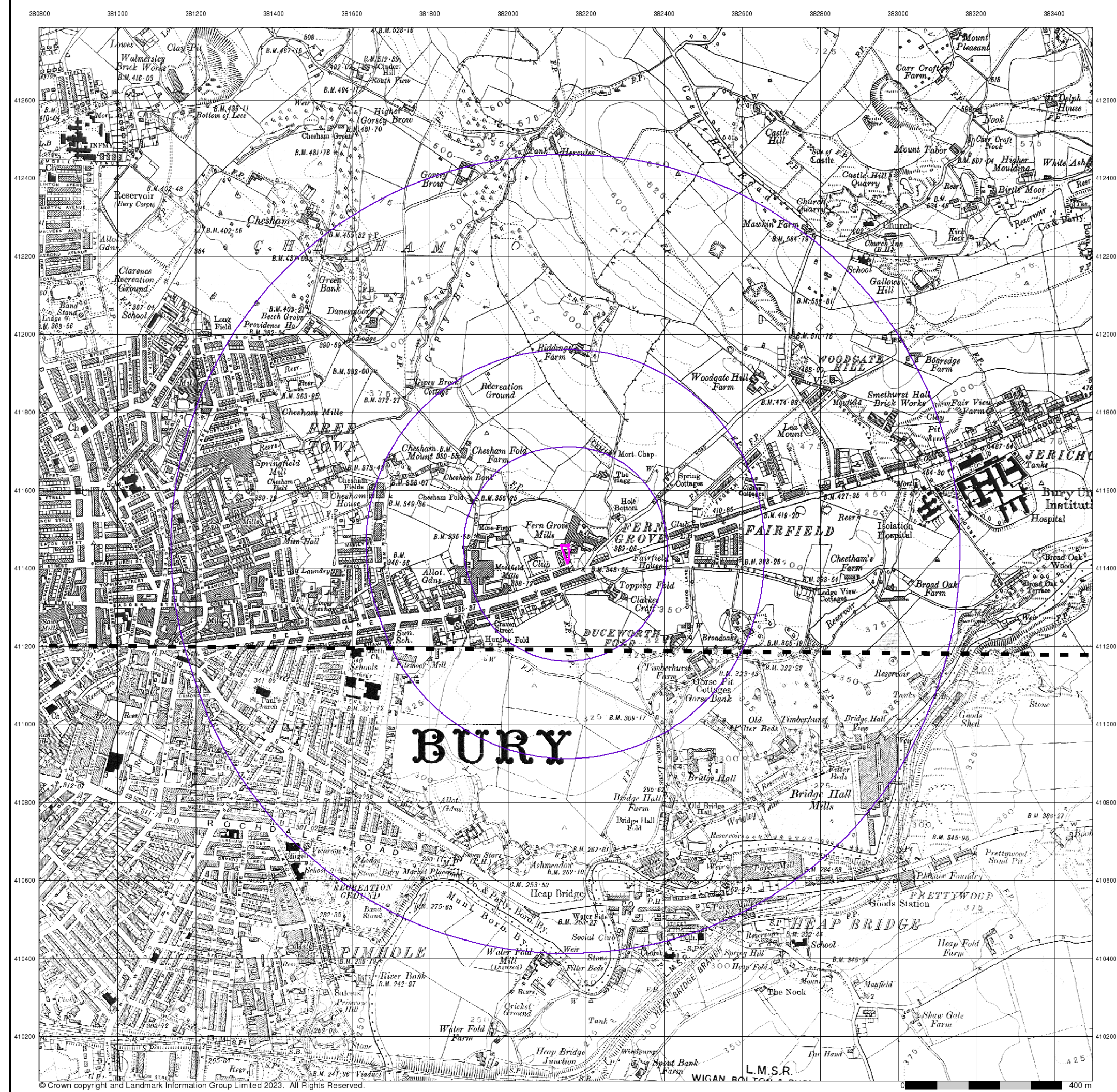
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Landmark

GROUP

Lancashire And Furness

Published 1931

Source map scale - 1:10,560

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

Map Name(s) and Date(s)

088NW

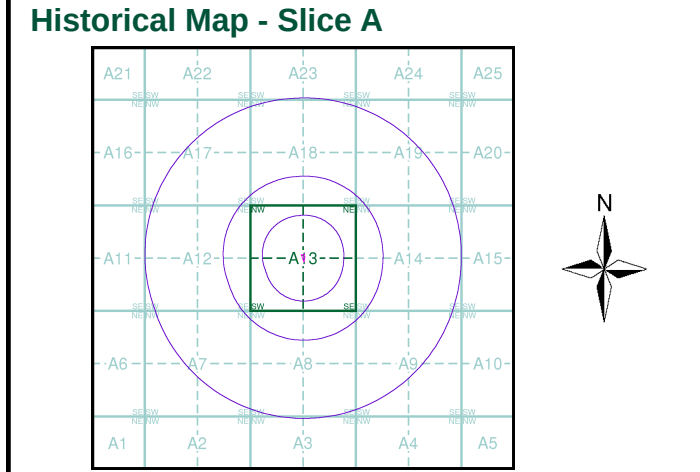
1931

1:10,560

088SW

1931

1:10,560



Order Details

Order Number:

328158794_1_1

Customer Ref:

LKC 23 1742

National Grid Reference:

382150, 411440

Slice:

A

Site Area (Ha):

0.06

Search Buffer (m):

1000

Site Details

Ferngrove House, Bury, BL9 7LS

Landmark

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Tel:

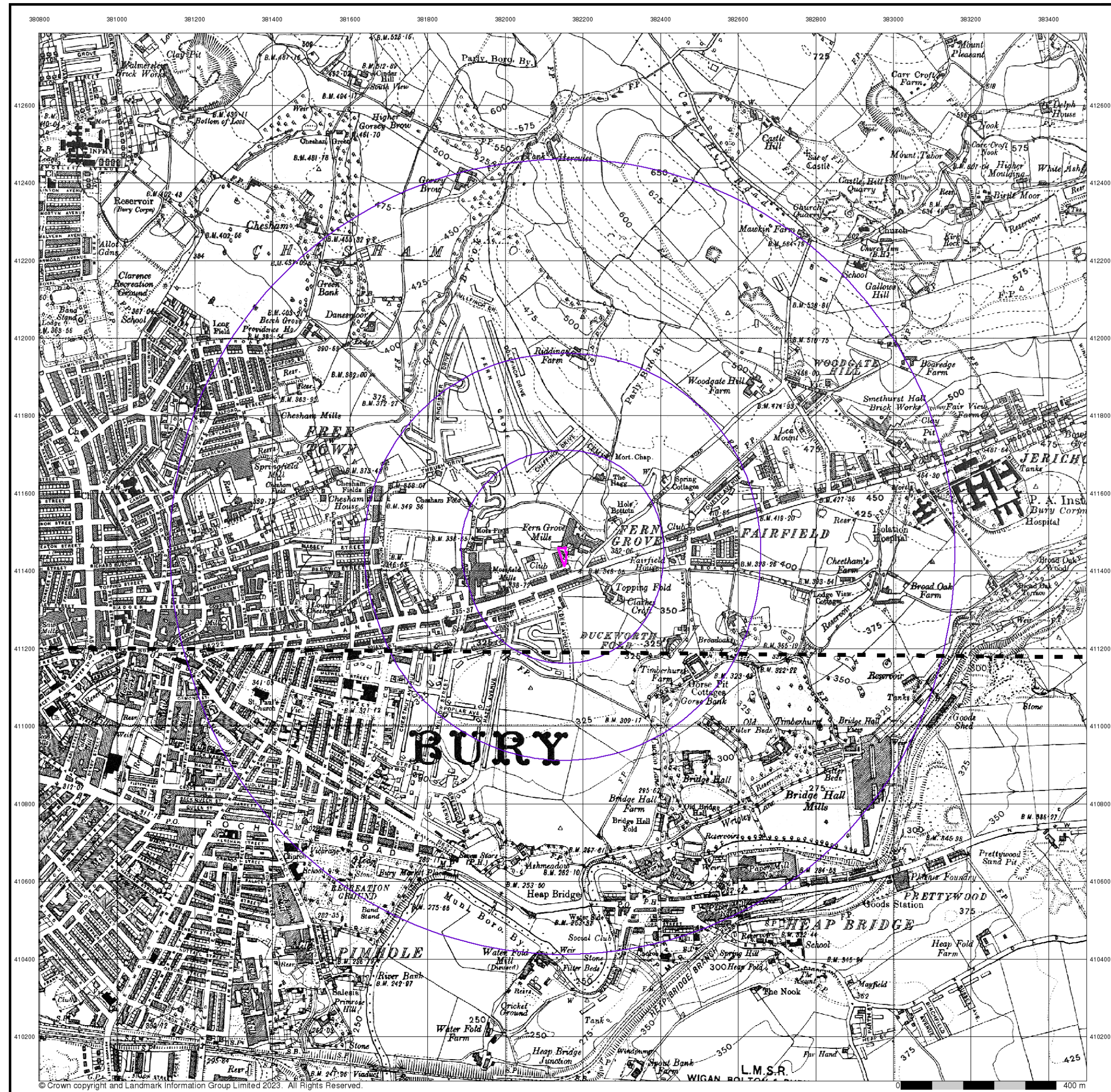
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GROUP

Lancashire And Furness

Published 1938 - 1939

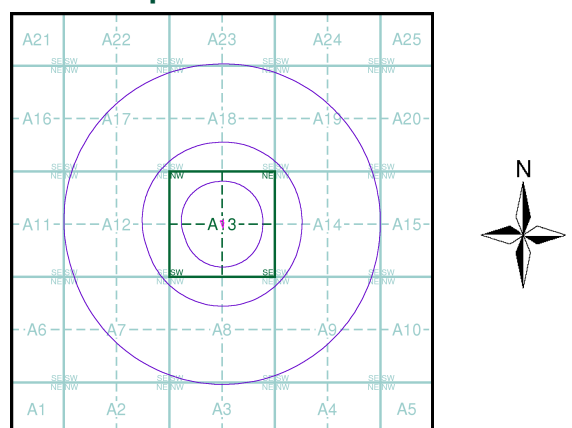
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

088NW	1939
1:10,560	
088SW	1938
1:10,560	

Historical Map - Slice A



Order Details

Order Number:	328158794_1_1
Customer Ref:	LKC 23 1742
National Grid Reference:	382150, 411440
Slice:	A
Site Area (Ha):	0.06
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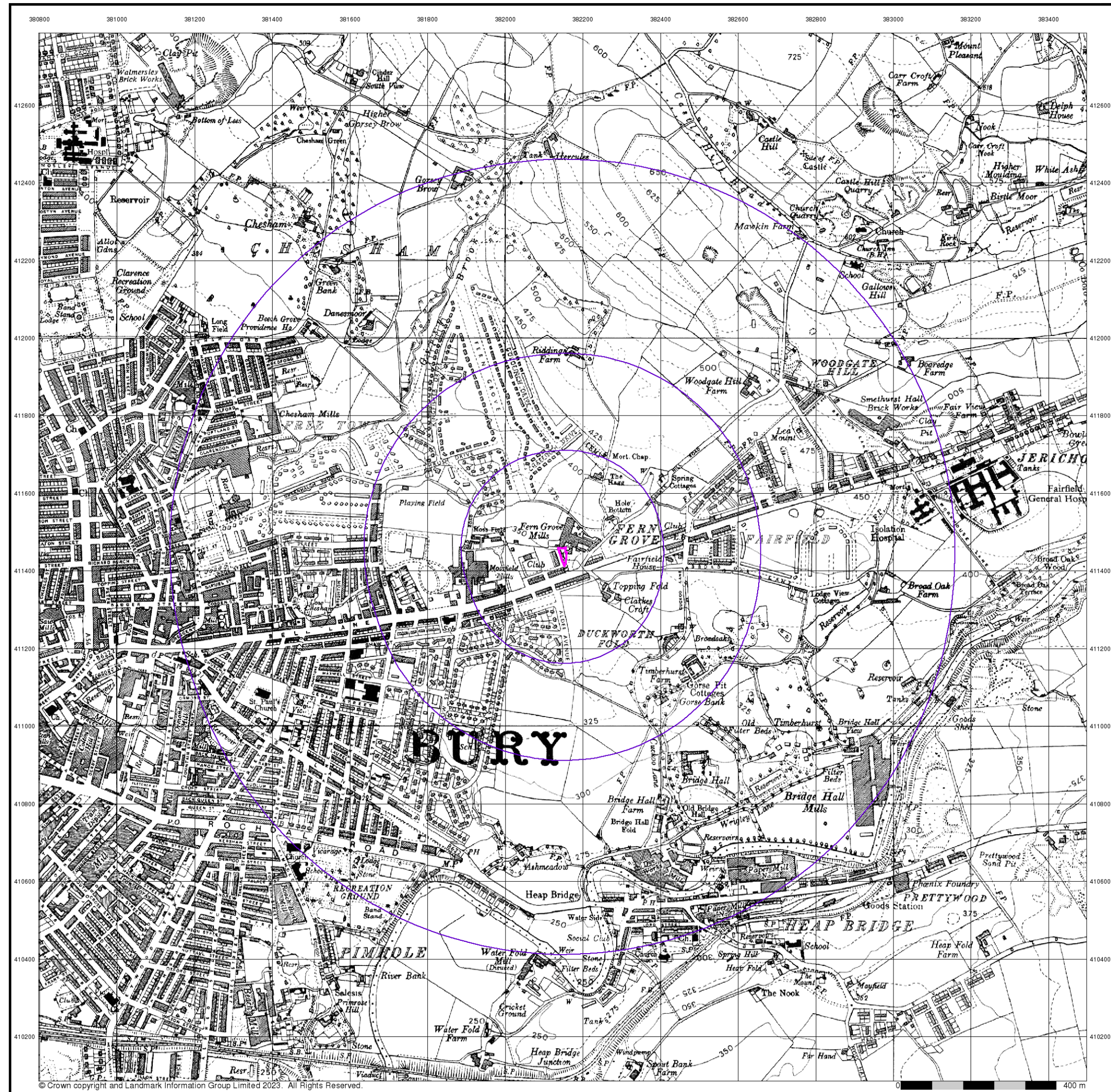
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LK

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Ordinance Survey Plan

Published 1956

Source map scale - 1:10,000

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Map Name(s) and Date(s)

SD81SW

1956

1:10,560

Historical Map - Slice A

Order Details

Order Number:

328158794_1_1

Customer Ref:

LKC 23 1742

National Grid Reference:

382150, 411440

Slice:

A

Site Area (Ha):

0.06

Search Buffer (m):

1000

Site Details

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Landmark

INFORMATION GROUP

Tel:

0844 844 9952

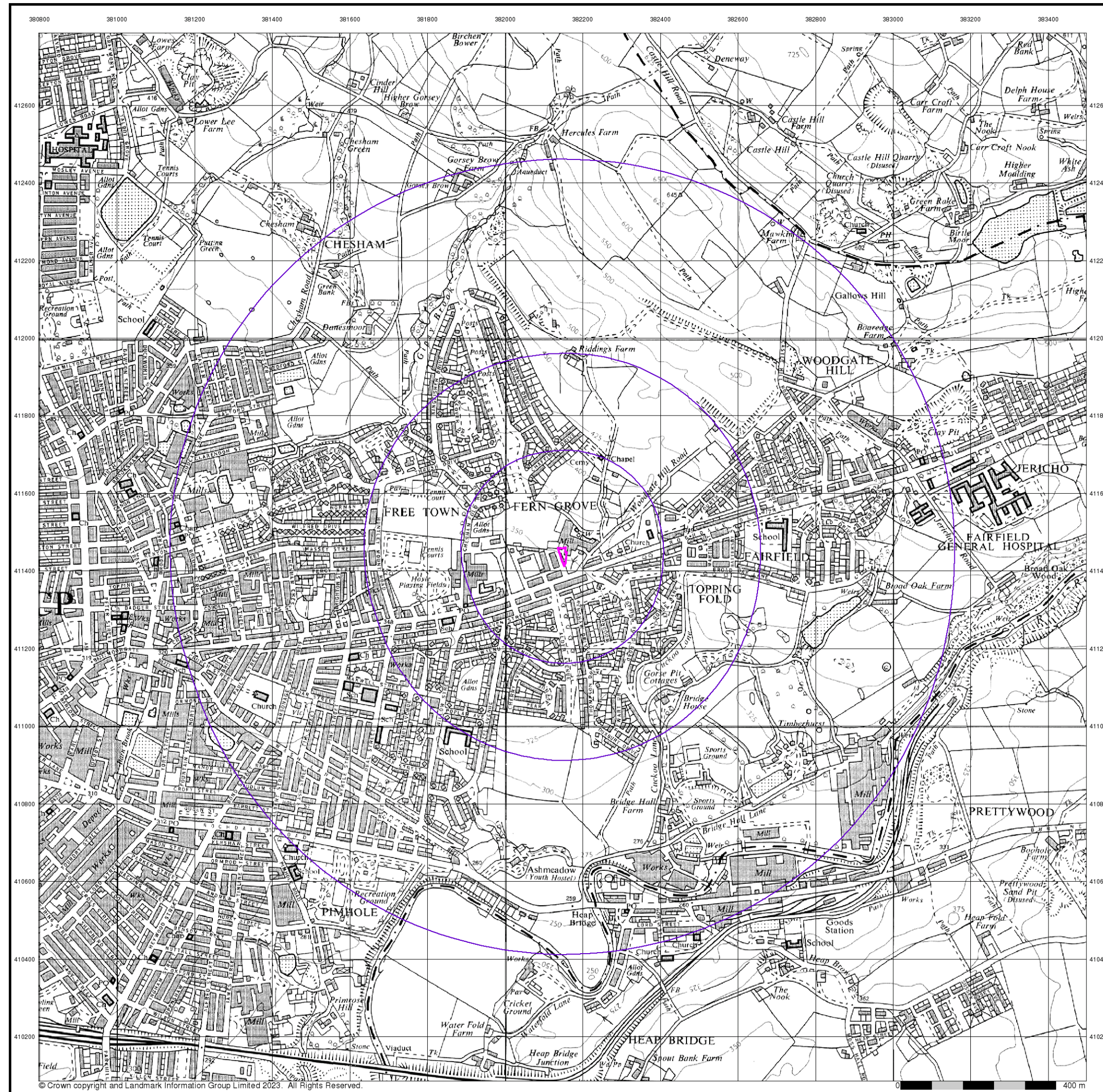
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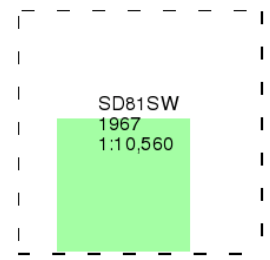
Ordnance Survey Plan

Published 1967

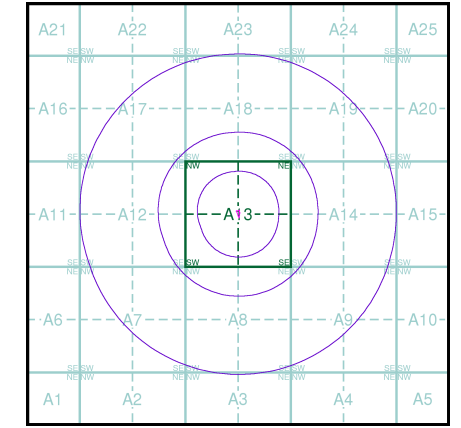
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 328158794_1_1
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National Grid Reference: 382150, 411440
Slice: A
Site Area (Ha): 0.06
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