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Planning & Development

Environmental Site Assessment

Hadfield + Noblin Architects Limited

Lawnwood House, Lawnwood Road, Easton, Bristol, BS5 0EF

Document Control

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Legal

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Risk Summary

The overall land contamination risk estimation in the context of the proposed change of use is Low. The likelihood of the site reaching the statutory tests for designation as "Contaminated Land," under Part 2A of the Environmental Protection Act 1990, is considered to be Very Low.

Land Condition Key Findings

Current Operations: The site is vacant. Based on the profile of prior tenants and site usage, the potential for any associated environmental liabilities is Low.
Historical Uses: The historical map information indicates the site was encroached by two buildings from the north. The southern area of the site remained undeveloped, until Ca. 1965, the site was then cleared, with the current configuration constructed. On this basis, the site is considered to have a low contamination source potential from historical sources.

- Overall, the potential for significant contamination sources beneath the site is considered to be low.
- The site is being repurposed and the existing building will remain, resulting in limited potential for exposure to site occupiers.
- Based on the proposed scheme there is likely to be limited soft landscaping; the level of exposure to any potential contamination is still likely to remain low.
- The risk to groundwater resources is considered to be low.
- No permitted or licenced activities with the potential to adversely impact the environmental condition of the site have been identified.
- No pollution incidents have been identified on or within the immediate vicinity of the site.
- The potential for ground gas generation on the site is estimated to be low.

Flood Risk Screen

Overall, the risk of flooding from fluvial and coastal sources at the site is considered to be very low. The overall risk of surface water flooding is considered to be Low. The site is not located within the extent of flooding from a nearby reservoir. The site is situated in an area with a limited potential for groundwater flooding to occur.

Ground Stability

The property is in an area of Negligible (No Hazard) susceptibility to shrink-swell subsidence. The highest hazard rating for all other natural subsidence hazards within the vicinity of the site is Low.

Recommendations

Based on the findings of the PRA (Section 4.3), Ashfield recommends that the following actions be considered to manage the identified potential land contamination risks associated with the development of the site:

- Targeted, soil sampling restricted to surficial shallow soils in proposed soft cover areas to demonstrate that the materials are suitable for their intended use. In the instance that the sampling exercise identifies potentially unacceptable contaminant concentrations in soft

cover areas, then risk mitigation comprising a localised shallow “scrape” of soil with replacement with imported clean topsoil is considered the most viable form of mitigation at this stage.

- Where any intrusive groundwork (i.e. excavation) is required, we recommend that a contamination watching brief is adopted as a matter of good practice on previously developed land. Adequate records of encountered ground conditions (including photos) should be maintained to demonstrate the absence of contamination. A suitable plan of action if “unexpected contamination” is encountered should be developed and implemented, as necessary.
- Given the age of the building(s), it is possible that asbestos containing material is present within the building fabric. An asbestos survey should be undertaken prior to the conversion of the building.

This Executive Summary is part forms part of our full report and should not be used as a standalone document.

1 Introduction

1.1 Authorisation

Ashfield Solutions Limited ("Ashfield") was commissioned by Hadfield + Noblin Architects Limited ("Hadfield + Noblin" or "the client") to undertake a Phase 1 Environmental Site Assessment, in relation to land at Lawnwood House, Lawnwood Road, Easton, Bristol, BS5 0EF (the "site"). The location and boundary of the site is shown in Drawing 01.

This report has been prepared in accordance with e-mail correspondence from the client dated November 10, 2023.

1.2 Objectives and Context

This report has been prepared in the context of proposed site redevelopment and as a requirement of the granted planning permission (application no. 20/01829/F) by Bristol City Council ("BCC"), specifically for:

"Proposed extension over existing business premises (Use Class B1) to create 4no. 2 bed & 5no. 1 bed self-contained dwelling apartments with glazed semi-open stair hall and associated refuse, recycling, and secure cycle storage".

The Proposed Development (Appendix B) application proposes to create nine residential dwelling apartments arranged on two floors above the existing building, Lawnwood House, whilst retaining the current B1 use within the existing building, at Ground Floor Level. Access is gained from Tyndall Road and a portion of the Ground Floor area within the existing building is re-purposed to provide an open Entrance Court with access to Refuse & Recycling Stores, and Secure Cycle Storage, together with areas of soft landscaping and a fully glazed, semi-open Stair Hall at the centre of the building.

As the proposed scheme is built over the existing building there is little space left over for structural landscaping, particularly planting. However, where it is possible soft landscaping is proposed both to the south of the Entrance Court, and in the central Stair Hall below the perforated stairs and landings

In response to the planning application, comment was provided by The Public Protection Team (Land Contamination)[1] at BCC, stating that:

"The proposed development is sensitive to contamination and is situated on or adjacent to land which has been subject to land uses which could be a potential source of contamination.

A site within 10m of this one was found to require remediation including clean cover for landscaping and gas protection measures (although it should be stated that the latter option was chosen in lieu of a full round of gas monitoring). The presence of asbestos within the building also cannot be discounted at this time.

This scheme will see some demolition and the introduction of some soft landscaping. Whilst this is a minor application, a risk assessment is required because of the potential risks identified. A minimum

[1] Consultee Comments for Planning Application 20/01829/F from The Public Protection Team (Land Contamination) to Case Officer: Amy Prendergast dated 24 Jun 2020

of a phase 1 desk study looking into contamination must be submitted to the local planning authority and where deemed necessary (or instead of) a phase 2 intrusive investigation shall take place If any information is already prepared submission prior to determination is encouraged to reduce the burden of pre-commencement conditions".

The overarching aim of this assessment is to identify any environmental issues at the site, including the potential or actual presence of contamination and determine the corresponding implications in terms of the proposed development.

In the context outlined above, the objectives of this report, are to:

- Provide an outline conceptual site model and Preliminary Risk Assessment (PRA), consistent with the overarching industry guidance laid out in the Environment Agency's Land Contamination Risk Management (LCRM) framework.
- To meet the minimum requirements of the National Planning Policy Framework (NPPF, DCLoG, 2019) by providing an assessment of whether the site "is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination".
- Address specific regulatory comments related to contaminated land.
- Provide recommendations as to whether further site investigations and risk assessments would be beneficial in relation to understanding land contamination risks.

1.3 Information Sources

This report has been prepared using the following information sources:

- Environmental data searches (referred to hereafter as "the Environmental Data Searches":
  - Landmark Envirocheck® Site Sensitivity report (Nov-2023)
  - Landmark Envirocheck® Historic Map report (Nov-2023)
  - Landmark Envirocheck® Geology report (Nov-2023)
- Environmental Agency (EA) Flood Map for Planning and Long-Term Flood Risk Maps (accessed Nov-2023)
- British Geological Survey Onshore GeoIndex Service (accessed Nov-2023)
- Coal Authority Interactive Map (accessed Nov-2023)
- Zetica UXO online UXB Risk Map[2] (accessed Nov-2023)
- Bristol City Council Planning Records[3] (accessed Nov-2023)
- GRM Development Solutions Ltd Coal Mining Risk Assessment (Dated 21st September 2017) (Ref P8135 – CMRA-1)

No site inspection has been undertaken as part of this commission.

1.4 Report Limitations

This report has been prepared with due care and diligence in accordance with industry good practice and guidance. The conclusions presented in this report represent Ashfield's professional judgement based upon the information available to us and the conditions existing as of the date of this report (as indicated in Section 1.3). Accordingly, the conclusions in this report are valid only to the extent that

[2] https://zeticauxo.com/downloads-and-resources/risk-maps/
[3] https://pa.bristol.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=Q9I795DNHPE00

the information provided to Ashfield was accurate and complete at time of receipt; and to the extent that site access was available to us.
This review is not intended as legal advice, nor is it an exhaustive review of site conditions or facility environmental compliance. Ashfield makes no representations or warranties, expressed or implied, about the conditions of the site. If additional information or data becomes available, which may affect the opinions expressed in this report, Ashfield reserves the right to review such information and, if warranted, to modify the opinions accordingly. This report has a limited lifespan and may need updating to reflect continually evolving environmental legislation or changes to site activities.
Attention is drawn to the following specific limitations:

- **Asbestos** – this report does not constitute an *Asbestos Management Survey*, *Building Survey* or *Refurbishment Survey*; and should not be relied upon in any such capacity. However, where we believe asbestos to be present during a site inspection; or where it has been recorded in any supporting information, we have provided informative references herein.
- **Non-native invasive species (e.g. Japanese Knotweed)** – unless otherwise stated this report does not constitute a formal survey for invasive non-native species. However, where identified we have provided informative references and recommendations herein. The lack of any observed invasive species should not be interpreted as positive confirmation that invasive species are completely absent from the site; seasonality can affect the extent to which positive identification of non-native invasive species can be identified.
- **Storage Tank Integrity** – this report does not constitute any formal inspection of oil or fuel storage tanks and associated infrastructure in relation to the Control of Pollution (Oil Storage) Regulations, 2001. However, where identified we have included basic observations in relation to the condition of tanks, bunds, pipes and associated infrastructure, as well as any evidence of leaks and spills.
- **Ecology** – this report does not constitute a formal survey of ecological potential or existing habitats. Ecological surveys may be required to evaluate ecological potential and development constraints; such surveys usual need to be undertaken at specific times of the year.
- **Building Structural Integrity/Ground Stability** – this report does not constitute a full appraisal of the structural integrity of the site, built environment and natural geotechnical bearing properties of the soils underlying the site.
- **Environmental Permits** – records of compliance with environmental permits are not available as part of standard environmental data searches. Unless explicitly stated otherwise this report excludes any formal assessment of compliance with environmental permits and does not include any follow-up consultation with the regulatory authorities in relation to the operator's compliance with any environmental permits.

2 Site Environment

2.1 Site Setting

The area of the site is some 505 Sq.m of which 400 Sq.m is covered by the footprint of Lawnwood House. The site is accessed via Brixton road to the east which joins Lawnwood Road to the north. A summary of the physical site characteristics is present in Table 1. Surrounding land uses are summarised in Table 2.

Table 1 - Site Physical Characteristics

Terrain & Topography	The site is situated at from 23m above ordnance datum ("mAOD").
Ground Cover	The majority of the site is covered by impermeable cover comprising the footprint of Lawnwood House. A thin gravel border separates the western edge of the building from the footpath along Tyndall Road.

Table 2 - Surrounding Land Uses

North	The site is bound by Lawnwood Road with Iceland supermarket beyond. Further beyond the land use is predominantly residential with some commercial and light industrial usage
East	'Brixton Road' forms the site's eastern boundary. Beyond Brixton Road are residential properties, with a north to south trending railway line an estimated 90m east. The land use beyond the railway line is predominantly residential.
South	The site is bound by the side wall and rear garden of No. 32 Brixton Road, and 10 Tyndall Road. Residential terrace continues the length of Brixton Road until meeting Bristol and Bath Railway path 130m south. A builder's merchants are located an estimated 175m south.
West	Tyndall Road is located immediately West, with adjacent terraced houses. 50m west of the site is a bus depot occupied by 'First Group West of England'. An Esso Petrol Station is located 122m west of the site.

2.2 Site Tenants & Activities

The prior use of the building on-site is in was for commercial use and was leased by an Electrical Contractor, ETS (South West) Ltd, who occupied the premises since June 2003. It is understood that the premises is now vacant.

2.3 Current Site Condition

No site inspection was undertaken as part of this commission. In the absence of a site inspection, publicly accessible on-line aerial and street-view imagery, along with information supplied by the client (where available), were used to understand the likely site condition. Table 3 provides a summary of the current site condition and any environmental hazards associated with current activities.

Table 3 – Environmental Liabilities: Contemporary Site Activities and Condition

Land Contamination Hazards	
Above-ground tanks (ASTs)	None identified using available imagery or supplied information.
Below-ground tanks (USTs)	Unlikely based on past site use.
Chemical Storage*	None identified using available imagery or supplied information.
Evidence of oil/chemical spills/leaks	None identified using available imagery or supplied information.
Substations	None identified.
Waste Liabilities	
Waste Management Practices	None identified using available imagery or supplied information.
Fly Tipping	None identified using available imagery or supplied information.
Other Waste Observations	Unable to comment - no site inspection undertaken.
Other Environmental Liabilities & Observations	
Asbestos	No site inspection undertaken. Given the age of the buildings (See Section 2.4) it is possible that asbestos may be present in the building fabric. It is possible that asbestos is present as free fibres and/or fragments within made ground soils where present.
Site Operations	Based upon the profile of prior tenants and site usage, the potential for any associated environmental liabilities is Low.
Invasive Non-Native Species	The site is occupied by a building. Note that no formal survey of non-native invasive species has been undertaken as part of this commission.
EMF	None identified using available imagery or supplied information.
Ecology & Habitats	None identified.

*This includes small containers, drums and intermediate bulk containers (IBCs).

Key Points

Based on the evidence available to us we consider the potential for land contamination hazards associated with current site uses to be low. Section 4 provides further evaluation of the risks associated with any material hazards identified in the above table taking into consideration the sensitivity of the surrounding environment and land uses.

2.4 Historical Land Use

Historical maps and images (where available) have been reviewed to identify and draw attention to any potentially contaminative industrial practices or land uses that may have compromised the site's environmental quality in the past. A summary of the key findings of our independent historical map review is presented in Table 4.

Table 4 - Historical Land Use

Map or Image	Date	Description of Site
●	1882 - 1889	**On-site:** Two buildings encroach into the northeast of the site boundary. The majority of the site appears undeveloped with trees, potentially indicating a communal garden area.
		Off-site: To the north continuation of the two properties that encroach on to the site. The land use beyond comprises residential terraces with Easton Road located 35m north of the site. Beyond Easton Road to the north the land use is dominated by brick and tile works with clay pits and several brick kilns identified. Easton Colliery is 160m northwest of the site. The east is bound by Brixton Road which has residential terraced housing on the eastern side of the road extending an estimated 70m east before meeting a railway track. Beyond the railway track, 100m east of the site is a Brick Works. South of the site is a residential terrace which extends 90m before meeting the railway embankment. The predominant land use in the southeastern area is residential housing. 'Bristol Wagon Works' dominates the southwest and western areas, extending circa 330m before meeting further residential terraced housing.
●	1903 - 1904	**On-site:** There are no significant changes in land use.
		Off-site: Tyndall road now forms the site's western boundary, with terraced housing approximately 10m west of the site. Bristol Wagon Works remains present beyond this area. Areas once detailed as Brick and Tile Works to the north are now residential housing. Railway tracks are no longer present on the embankment 90m south.
●	1917 - 1918	**On-site:** There are no significant changes in land use.
		Off-site: Easton Colliery is now 'disused.' 'Tanks' are detailed 160m southwest of the site at the wagon works
●	1920 - 1921	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use.
●	1938	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use. The configuration of units located at the wagon works has changed.
●	1948-1951	**On-site:** There are no significant changes in land use. The eastern building encroaching on the site is named Brixton House.
		Off-site: The prior Wagon Works is now detailed as a Bus Depot & Construction Works. A 'Garage' is detailed 70m north, and A Metal Works is located approximately 100m north. The area where Easton Colliery previously was situated is now developed with two Warehouses and an Engineering Works. A Tank is detailed 55m southwest.
●	1950 - 1952	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use.
●	1965	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use.

●	1973 - 1976	**On-site:** The site is now occupied by what appears to be Lawnwood House in its contemporary configuration.
		Off-site: The buildings to the north have been demolished. Lawnwood Road now forms the site's northern boundary, 25m north of the site a commercial/industrial unit has been constructed, south of Easton Road.
●	1977 - 1991	**On-site:** There are no significant changes in land use.
		Off-site: The units southwest at the bus depot now match their contemporary configuration. Two further Tanks are detailed associated with the depot, 110m and 130m southwest.
●	1993 - 1994	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use.
●	2006	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use.
●	2016	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use.
●	2023	**On-site:** There are no significant changes in land use.
		Off-site: There are no significant changes in land use.

Notes: ● denotes full map coverage; ◖ denotes partial map coverage.

Key Findings

Our review indicates that the majority of the site was undeveloped and a possible communal garden space until the construction of Lawnwood House, Ca1973. The only historical development was two large residential properties that encroached onto the northern boundary. On this basis, the site is considered to have a low contamination source potential.

The land use immediately surrounding the site is predominantly residential in usage and on this basis, there is considered to be a low potential for off-site sources of contamination to affect the site. The wider area to the north has a history of clay extraction for brick works and the wider area to the east and southeast has a history of industry including large vehicle works and a bus depot. However, these features are not considered to have likely adversely impacted the site's condition due to their distance from the site.

Additional Information: Properties were demolished in the area of the adjacent site that needed "remediation" as noted by the CLO. However, this Historical Map review has established that this area was formerly residential, and not an obvious source of contamination that could affect the site

The historical presence of the Easton Colliery within proximity to the site provides the potential for underground coal workings beneath the site which is further discussed in Section 3.3.

2.5 Landfilling Activities

Table 5 provides a summary of available records of landfilling at the site based on Environment Agency public records and the Environmental Data Searches. This includes registered landfills, as well as historical records of informal landfilling activities, which may affect the site.

Table 5 – Landfilling Activities

Activity	Records within 250m of the site
Historic Landfill Sites (all available records)	1[1]
Other Potentially Infilled Land (e.g. infilled ponds, streams, embankments)	4[2]
Operational/Permitted Landfills	0

[1]. Historic Landfill Sites:
  [i]. Historical Landfill Site: Detailed 43m southeast of the site on 'Brixton Road'. The waste type is not supplied. Material input was undertaken between 31st December 1969 and 31st December 1970.

[2]. Other Potentially Infilled Land:
  [i]. Potentially Infilled Land (Non-Water): Unknown Filled Ground (Pit, quarry etc) is detailed 38m north, 109m east, 162m northwest and 203m southeast of the site, dated 1988.

Key Points

A Historical Landfill site has been indicated 43m south east of the site on Brixton Road, with material input dated between 1969-1970. However, from a review of historical map records no evidence of landfilling is shown in this location. The infilling of land can create a potential source of ground gas generation, this is further discussed in Section 3.4.

2.6 Regulatory Permits & Licences

Details of permitted or licensed activities, either on or within the vicinity of the site, can indicate whether there are environmental risks posed to the property, or whether previous licenced activities may have resulted in environmental impact at the site. Details of permits and licenses have been obtained from the Environmental Data Searches, as well as on-line Environment Agency public records. A summary is presented in Table 6.

Table 6 – Licenses and Permits

Activity	Entry within 250m of the site
Industrial sites holding licenses or authorisations*	2[1]
Sites with dangerous or hazardous substances**	0
Discharge consents	0
Sites determined as Contaminated Land under Part 2A of the Environmental Protection Act 1990	0
Petrol and fuel sites	1[2]

Gas pipelines	0
Groundwater/surface water/potable water abstraction licenses	0
Private Water Supply abstractions (unlicensed)***	0
Other waste sites such as treatment, transfer, or disposal (non-landfill)	0

*Including Environmental Permits, and Local Authority Pollution Prevention & Controls.
**Including Control of Major Hazard (COMAH); Historic records under the now revoked Notification of Installations Handling Hazardous Substances (NIHHS) Regulations, 1982 (and amendments); Explosives Sites; Planning Hazardous Substance Consents & Enforcements and registered radioactive substances.
***No further information supplied on Bristol City Council

[1]. Industrial sites holding licenses or authorisations:
  [i]. Local Authority Pollution Prevention and Controls: 'Europcar Rental' 58m north of the site has a permit for Local Authority Air Pollution Control as a 'PG1/14 Petrol filling station'. This entry is currently 'Authorised.'
  [ii]. Local Authority Pollution Prevention and Controls: 'Easton Service Station (Texaco)' 119m west of the site has a permit for Local Authority Air Pollution Control as a 'PG1/14 Petrol filling station'. Dated 31st December 1998. This entry is currently 'Permitted.'

[2]. Petrol and fuel sites:
  [i]. Fuel Station Entries: 'Easton Service Station' is an Esso Petrol Station located 122m west of the site.

Key Points

No regulatory permits or licences have been identified on-site. Based upon the review of environmental records, there are no permitted or licenced activities within the immediate vicinity of the site which are likely to adversely impact the environmental condition of the site.

2.7 Pollution Incidents

There are no recorded pollution incidents to controlled waters within a radius of 100m of the site.

2.8 Designated Protected Sites

Sensitive land uses include areas designated by the Environment Agency as Sites of Special Scientific Interest ("SSSI"), Local Nature Reserves, RAMSAR sites and Special Areas of Conservation ("SAC") etc. There are none of these features recorded within a radius of 1km of the site.

Key Points

There are no designated Protected Sites within the vicinity of the property which are likely to be impacted by current or future site activities.

2.9 Hydrology & Site Drainage

The 'River Frome' is situated circa 810m northwest of the site boundary. The 'River Avon' is detailed approximately 1.1km south.

In the absence of any third-party drainage surveys, it is not possible to comment on the connectivity of the site's drainage systems with off-site drainage infrastructure and/or surface waters. However, connectivity with the identified surface water features is unlikely given their distance from the site.

2.10 Flood Risk Screen

Information on the sites susceptibility to flooding has been obtained from public flood mapping provided by the Environment Agency as well as information contained within the environmental data searches.

A summary of the findings is provided in Table 7 and a screening-level assessment of flood risk follows.

Table 7 - Flood Risk Screening (England)

Flood Risk Scenario	Flood Risk[a]
Flood Risk Zone (Flood Map for Planning - England) without defences	Zone 1 (Low Probability)
Risk of Flooding from Rivers and the Sea (RoFRaS) incorporating defences	Very Low Risk
Risk of Flooding from Surface Water	Medium Risk
Is the site within the extent of flooding from a nearby reservoir?	No
BGS Groundwater Flooding Susceptibility	Limited potential for groundwater flooding to occur

[a]Based on maximum risk rating within the site boundary. The resolution of national datasets can infer a higher degree of risk than is actually present. Surface water risk may be highly localised within certain parts of a site. England: [Flood Map for Planning https://flood-map-for-planning.service.gov.uk/] [Long Term Flood Risk https://flood-warning-information.service.gov.uk/long-term-flood-risk/].

Preliminary Flood Risk Observations

The site is situated in 'Zone 1 (Low Probability)', this mapping is based upon the potential for flooding without defences. The long-term flood risk accounting for the presence of flood defences shows the site to be at Very Low Risk and this is considered to be the most appropriate flood hazard mapping for operational site usage. Overall, the risk of flooding from fluvial and coastal sources at the site is therefore considered to be very low.

A medium risk of surface water flooding is shown on the mapping on the sites eastern boundary. However, this is not shown to encroach upon any of the buildings. The EA surface water flood map for the site location is based on national scale mapping and is therefore unlikely to have considered local detail, such as below ground surface water drainage networks. Therefore, the overall risk of surface water flooding is considered to be Low.

The site is not located within the extent of flooding from a nearby reservoir

The site is situated in an area with a limited potential for groundwater flooding to occur.

3 Subsurface Site Environment

3.1 Geology

An overview of the site geology has been inferred from British Geological Survey ("BGS") 1:50,000-scale mapping for artificial, superficial and bedrock deposits. Where available and relevant we have also included additional information from BGS archive borehole records and the findings of third-party reports.

	BGS Description	Additional Information
Artificial Deposits	There are no artificial deposits mapped beneath the site.	No relevant additional information available.
Superficial	There are no superficial deposits mapped beneath the site.	No relevant additional information available.
Bedrock	The bedrock geology beneath the site is the 'Redcliffe Sandstone Member' - Sandstone.	No relevant additional information available.

3.2 Groundwater Resources & Hydrogeology

The presence and status of any known groundwater bodies beneath or within proximity to the site, are presented below.

Superficial Geology	These deposits are classified as Unproductive Strata - these are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.
Bedrock Geology	These deposits are classified as a Secondary (A) Aquifer - these aquifers are capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

The intrinsic groundwater vulnerability beneath the site is classified by the EA as Medium - this means groundwater is regarded as a medium priority resource benefitting from some natural protection.[4] This risk category takes into consideration the likelihood of a pollutant reaching the groundwater, the type of aquifers present (e.g. superficial or bedrock) and the sensitivity of those aquifers. The classification is precautionary and provides the most vulnerable class from either the superficial or bedrock aquifer within a 1km^2 area.

The site is not located within a groundwater Source Protection Zone (SPZ).

[4] Based on the *simplified* groundwater vulnerability mapping. Note that the maps provide intrinsic vulnerability and therefore the vulnerability classification does not take into account any site-specific information such as current or intended activities or the specific characteristics of pollutants which may be present. The vulnerability assessment is based on how pollutants released **at the soil surface** by an activity are transported down to the water table taking into account protective layers and properties; the assessments do not consider the release or existing presence of pollutants beneath the soil surface.

Key Points

The bedrock beneath the site is underlain by a 'Secondary (A) Aquifer' capable of supporting water supplies at a local rather than strategic scale. The site is not situated within a SPZ and there are no nearby groundwater abstractions. Given the historical and contemporary industrial usage of the surrounding area local water quality is likely to have been compromised. Overall, the site is not considered to be located within a sensitive setting with respect to groundwater resources.

3.3 Ground Stability Hazards

Important Note: The following information does not constitute a full appraisal of the geotechnical bearing properties of the soils underlying the site. In the event of any future development taking place on the site the developer would be responsible for undertaking the necessary investigation so satisfy themselves and the regulatory authorities that the ground conditions and foundation solutions being proposed are fit for purpose.

Natural Subsidence Susceptibility

Natural subsidence hazards reported within the Environmental Data Searches are summarised in Table 8.

Table 8 - Natural Subsidence Hazards

Subsidence Mechanism	Hazard Potential
Collapsible deposits	Very Low
Compressible soils	Negligible (No Hazard)
Dissolution	Low
Slope instability	Very Low
Sand wash-out	Low
Shrink-swell clays	**Negligible (No Hazard)**
All other mechanisms	**Low**

Key Points

The main cause of subsidence in the UK is the shrinkage in dry weather of clay soils which expand and contract with changes in their moisture content. The BGS natural subsidence hazard data indicates that the property is in an area of Negligible (No Hazard) susceptibility to shrink-swell subsidence.

The highest hazard rating for all other natural subsidence hazards within the vicinity of the site is Low.

Mining Related Subsidence

Coal Mining

Reference to the Coal Authority Interactive Map View indicates that the site is within a coal mining reported area.

In support of the planning application for the proposed redevelopment of the site a Coal Mining Risk Assessment has been undertaken at the request of the Coal Authority. The report was undertaken by 'GRM Development Solutions Ltd', dated 21st September 2017.

The following sources of information were used to inform the assessment:

- Coal Authority Mining Report
- Coal Authority Consultants Report
- BGS Geological Mapping at a scale of 1:10000
- BGS Borehole Records

A summary of the pertinent findings of the Coal Mining Risk Assessment is provided below:

- Recorded Workings: Negligible
- Un-Recorded Shallow Workings: Negligible
- Recorded Mine Entries: Negligible
- Un-Recorded Mine Entries: Low
- Opencast Workings: Negligible
- Mine Gas Emissions: Negligible
- Spontaneous Combustion: Negligible

The risk assessment was submitted to the Coal Authority who following their review provided the following response dated 13th May 2020.

"the content and conclusions of the Coal Mining Risk Assessment Report are sufficient for the purposes of the planning system in demonstrating that the application site is safe and stable for the proposed development. The Coal Authority therefore has no objection to the proposed development."

Other Mining and Quarrying
There are no active BGS Recorded Mineral Sites within 250m of the site.

> **Key Points**
>
> The site is within a coal mining reported area. However, a Coal Mining Risk Assessment has been undertaken for the site which has concluded a low risk from historical mining related risks and the Coal Authority has confirmed no objection to the proposed development. On this basis, the site is not at risk from any other form of mining and quarrying.

3.4 Ground Gas

Common sources of hazardous ground gases include:[5]

- Made ground
- Infilled ponds
- Underlying natural strata (e.g. alluvial peat, chalk, worked coal measures)
- Off-site landfills

There is evidence of typical ground-gas generating sources within the vicinity of the site in the form of coal mining, off-site landfilling and potentially infilled land.

With respect to historical coal mining, the Coal Mining Risk Assessment concluded that the risk of mine gas emissions is 'negligible,' and it is understood the Coal Authority have raised no objection to this classification.

As noted within section 2.5 there is a historical landfill identified 43m to the south east of the site, with material input recorded as Ca.1969-1970. However, with a recorded filling date in excess of 50 years gas generation will be at residual to very low levels. The source potential can therefore be considered as low[6]. It is also noted that development has since occurred on the area of the landfill and any ground gas issues would likely have been raised as a concern during this time.

Based upon the available information the ground gas generation potential on the site is therefore estimated to be Low.[7]

> **Key Points**
>
> Considering the available information, the potential for ground gas generation on the site is estimated to be low.

3.5 Radon Potential

The potential for Radon hazard at the property has been assessed using the Definitive Radon Potential Map for Great Britain and Northern Ireland, created jointly by Public Health England (PHE) and the BGS. The map uses long-term radon measurements made in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological map data. Although the radon data used in production of the indicative atlas comes from measurements in homes, the maps indicate the likely extent of the local radon hazard in all buildings. The information in this atlas is therefore relevant to ongoing commercial property uses.

The site is not within a Radon Affected Area and is at low risk from Radon gas (less than 1% of properties are above the Action Level). No radon protection measures are required by Building Regulations (England & Wales).

[5] Wilson, et al. 2007. Assessing Risks Posed by Hazardous Ground Gases to Buildings. CIRIA C665.
[6] Ground Gas Information Sheet No 3. (Wilson) Screening approach for landfill gas migration around landfill sites (Paper 1.0 5/9/2018)
[7] BS8576:2013 Figure 6 – Decision Matrix for Initial Monitoring.

3.6 Unexploded Ordnance

Ashfield has consulted the online ZeticaUXO Unexploded Bomb (UXB) risk maps. The maps provide a high-level indication of the potential for UXB to be present as a result of World War Two (WWII) bombing and is intended to help inform whether further, more detailed research, by a UXO specialist is required. The database used for the mapping includes records from the central government (National Archives), local authority archives, the Ministry of Defence, and the German Luftwaffe.
The site is situated within a high-risk region (bombing density >50 per 1,000 acres) with abundant potential WWII targets. Further action to mitigate risk is recommended for ground works and any future redevelopment activities.

4 Preliminary Risk Assessment

4.1 Introduction

This section provides a preliminary risk assessment for potential land contamination present at the site. The assessment of risk from land contamination in the United Kingdom is based around the development of a Conceptual Site Model (CSM). Where no ground investigation information is available for a site, the CSM is usually limited to basic desk-based information. The aim of the initial, or outline, CSM is to support the identification of plausible relationships between potential contaminants at a site, pathways by which those contaminants may migrate, and receptors which may be impacted by contaminants (such as people or sensitive groundwater). All three components must be present for there to be a viable contaminated land risk: a Contaminant, a Pathway and a Receptor.

- Contaminant – Contamination that has the potential to impact human health and/or the environment;
- Pathway – The route by which the contaminant may come into contact with human health or the environment; and
- Receptor – Receptors are typically humans or the environment (e.g. water resources) that could be affected by the contamination.

If a plausible CPR linkage is present, then the degree of risk is assessed using a tiered risk-based approach. A Preliminary Risk Assessment (PRA) defines whether there are plausible pollutant (CPR) linkages present; and uses a qualitative approach to evaluate whether there is a potential risk which may require further investigation or mitigation. At the PRA stage, subjective terms (e.g. low to high) are used to describe the estimation of risk.

> Note: There is no statutory definition of what constitutes, for example, a low or high risk – these are subjective terms and different stakeholders may have different perceptions of risk.

Where a PRA has determined that further works are required, this normally comprises one or more phases of intrusive site investigation followed by additional tiers of generic- and detailed-quantitative risk assessment.

It is important to note that the overall risk assessment process is often an iterative one – more detailed assessment may raise issues that require earlier tiers to be revisited. The process within each tier may also be iterative, especially when information is evaluated, and gaps are identified in the knowledge needed to make a particular decision. In this case, approaches taken earlier within the tier may need to be reappraised.

In this assessment, a PRA has been undertaken using qualitative approaches to establish the overall risk posed by the site in the context of a proposed residential (with gardens) end-use.

4.2 Pollutant Linkage Assessment

The context of our assessment is that the site is to continue being used in its current form. In our pollutant linkage assessment we have considered specific areas of the site where contamination may be present as well as more 'general' conditions, typical of brownfield or industrial sites.

Potential Contamination Sources	
On-site	CONTEMPORARY: Based upon the profile of prior tenants and site usage, the contaminant source potential of the site is considered to be low. HISTORICAL: The historical map information indicates that the site was predominantly a garden / open space area encroached in the north by two residential buildings until development of Lawnwood House Ca. 1965. On this basis, the site is considered to have a low historical contamination source potential.
Off-site	CONTEMPORARY: The immediately surrounding area is largely terrace housing. A bus depot is located approximately 40m west. The potential for current day, off site sources of contamination to impact the site is low. HISTORICAL: Beyond the immediately surrounding residential properties, the surrounding area has had an extensive history of industry, including brick works and a large vehicle works to the southwest, alongside historical landfilling. Despite this, the potential for historical off-site sources of contamination to impact the site is considered to be low

Potential Receptors	
Human Health	Site Occupiers – Future occupants of proposed dwellings in existing building following its conversion. Note: only a small soft cover (landscaped area) to be provided. Third Parties (i.e. neighbours). Maintenance and construction workers.
Controlled Waters	Groundwater Resources - The bedrock aquifer is classed as 'Secondary (A).' There are no recorded licensed water abstractions within the vicinity of the site. The site does not fall within a groundwater Source Protection Zone (SPZ). Surface Water - The 'River Frome' is situated circa 810m northwest of the site boundary. The 'River Avon' is detailed an approximate 1.10km south.
Built Environment	Buildings and buried services.
Ecological Systems	None identified.

Potential Pathways & Pathway Viability	
Human Health	Low to moderate potential for ingestion, inhalation and/or dermal contact from contaminated soil and dust. Negligible potential for ingestion of vegetables and soils attached to homegrown produce. Negligible to low potential for permeation of potable water supplies. Low potential for inhalation of vapours from contaminated soils or groundwater.

Controlled Waters	Groundwater as receptor – Low potential for leaching from contaminated soils and migration to underlying groundwater; migration to wider aquifer and to abstractions where present. Surface Waters & Dependent Ecosystems – Low potential for migration of groundwater contamination to identified surface waters including prior leaching from contaminated soils.
Built Environment	Low potential for preferential pathways along existing or abandoned services, drains, conduits, boreholes, etc. Low potential for damage via contact with building materials.

4.3 Preliminary Risk Classification

The overall land contamination risk estimation in the context of the proposed redevelopment of the site is Low.

The likelihood of the site reaching the statutory tests for designation as "Contaminated Land," under Part 2A of the Environmental Protection Act 1990, is considered to be Very Low.

This overall classification is based upon the following key factors:

- Overall, the potential for significant contamination sources beneath the site is considered to be low.
- The site is being repurposed and the existing building will remain, resulting in limited potential for exposure to site occupiers.
- Based on the proposed scheme there is likely to be limited soft landscaping; however where landscaping is proposed the level of exposure to any potential contamination is still likely to remain low.
- The site is underlain by a Secondary (A) Aquifer. The intrinsic groundwater vulnerability beneath the site is classified by the EA as Medium. The site is not within an SPZ, and there are no local groundwater abstractions. The risk to groundwater resources is considered to be low.
- No permitted or licenced activities with the potential to adversely impact the environmental condition of the site have been identified.
- No pollution incidents have been identified on or within the immediate vicinity of the site with the potential to impact the environmental quality of the site.
- The potential for ground gas generation on the site is estimated to be low.

4.4 Recommendations

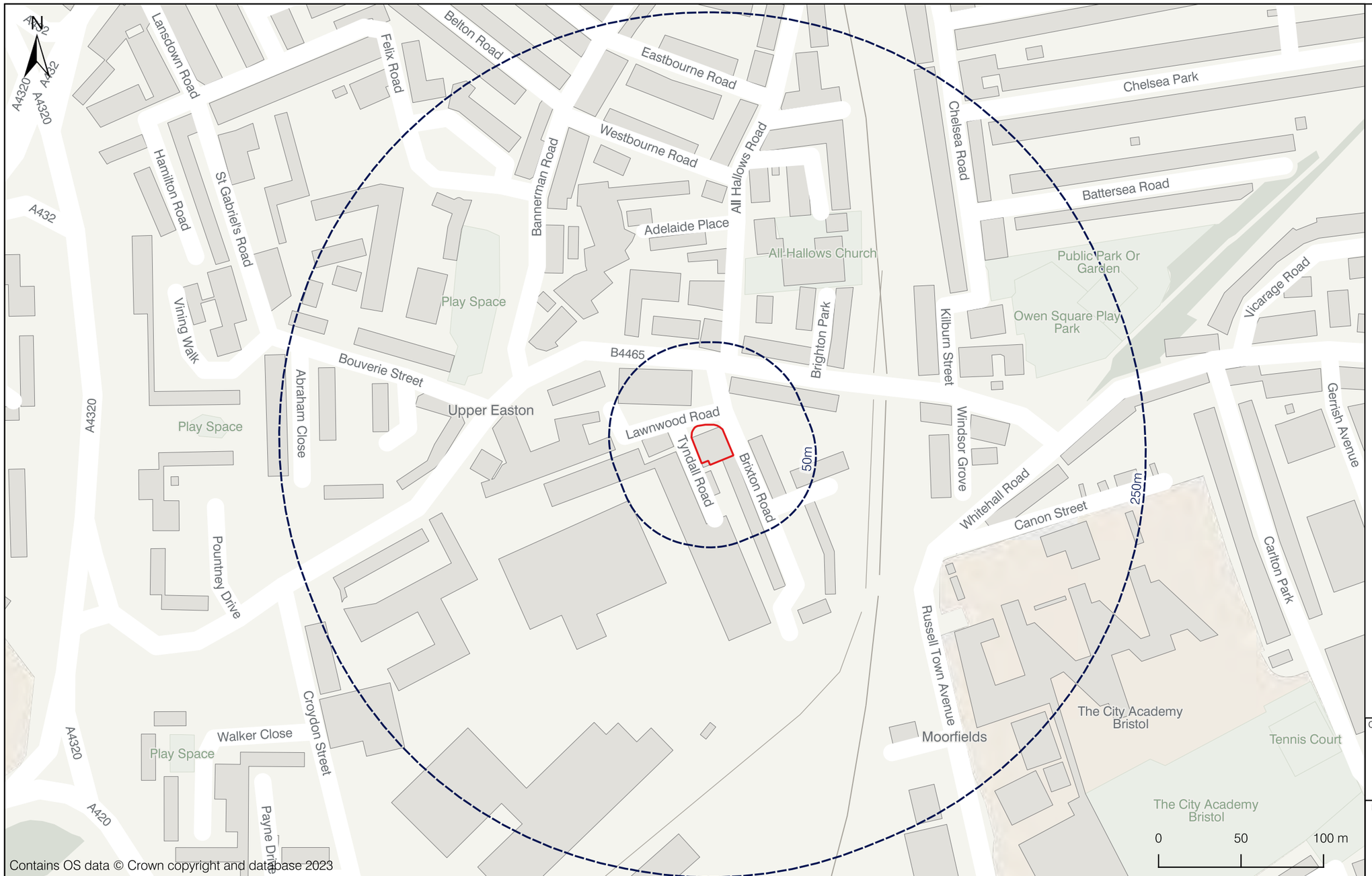
Based on the findings of the PRA (Section 4.3), Ashfield recommends that the following actions be considered to manage the identified potential land contamination risks associated with the development of the site:

- Targeted, soil sampling restricted to surficial shallow soils in proposed soft cover areas to demonstrate that the materials are suitable for their intended use. In the instance that the sampling exercise identifies potentially unacceptable contaminant concentrations in soft cover areas, then risk mitigation comprising a localised shallow "scrape" of soil with replacement with imported clean topsoil is considered the most viable form of mitigation at this stage.
- Where any intrusive groundwork (i.e. excavation) is required, we recommend that a contamination watching brief is adopted as a matter of good practice on previously developed

land. Adequate records of encountered ground conditions (including photos) should be maintained to demonstrate the absence of contamination. A suitable plan of action if "unexpected contamination" is encountered should be developed and implemented, as necessary.

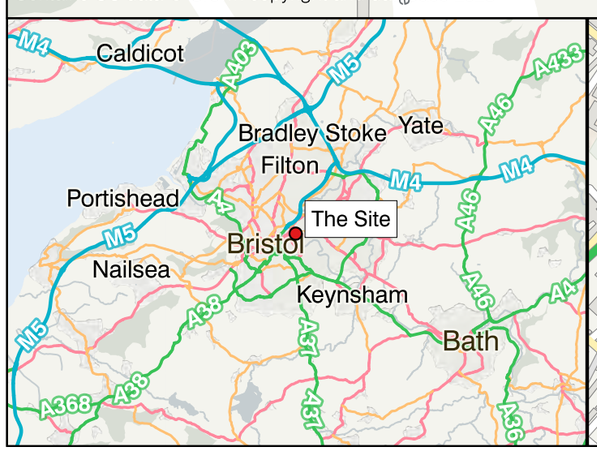
- Given the age of the building(s), it is possible that asbestos containing material is present within the building fabric. An asbestos survey should be undertaken prior to the conversion of the building.

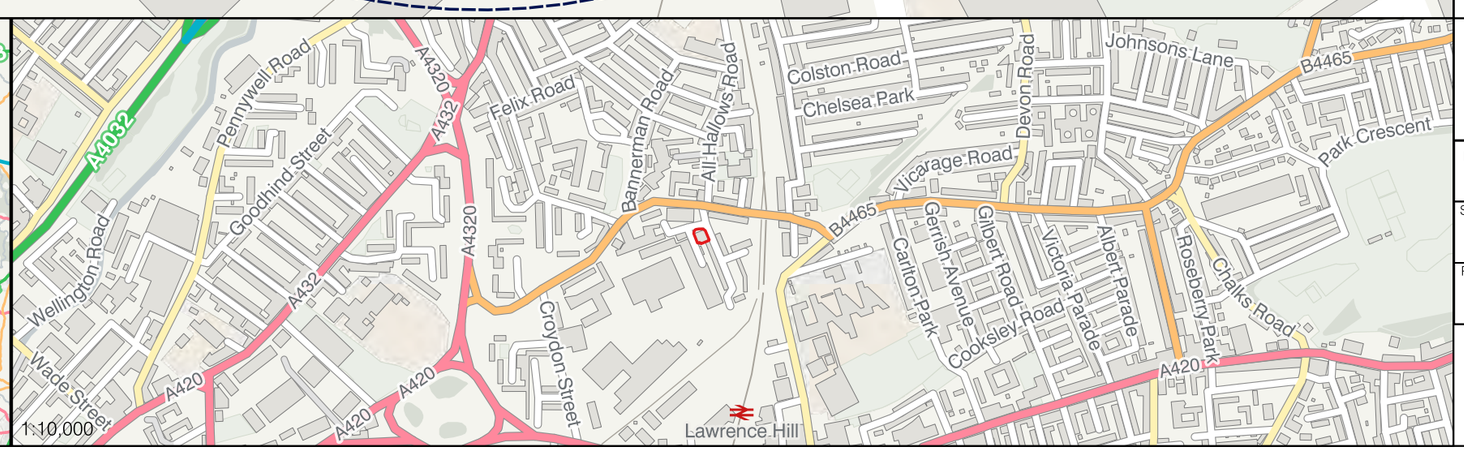
Drawings



Legend

- Indicative Site Boundary
- Site Boundary Buffer (50 & 250m)
- Site Location





Client: Hadfield + Noblin

Project: 20-020 Lawnwood House Lawnwood Road, Easton, Bristol BS5 0EF

Title: Site Location Plan

Report No.	Drawing No.	Revision
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Scale	**Date**	**Frame Size**
1:2,500	15/11/2023	A3
Produced by	**Drawn by**	**Approved by**
LC	LC	COB

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Legend

Indicative Site Boundary

Client

Hadfield + Noblin

Project

20-020 Lawnwood House Lawnwood Road, Easton, Bristol BS5 0EF

Title

Site Layout

Report No.	Drawing No.	Revision
186723-S01	02	-
Scale	**Date**	**Frame Size**
1:500	15/11/2023	A3
Produced by	**Drawn by**	**Approved by**
LC	LC	COB

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Appendices

Appendix A

Environmental Data Reports

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

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

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	TFD	Tidal Flat Deposits	Clay and Silt	Not Supplied - Holocene
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary
	RTD1	River Terrace Deposits, 1	Sand and Gravel	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	RLS	Rugby Limestone Member	Limestone and Mudstone, Interbedded	Not Supplied - Hettangian
	WBCT	Westbury Formation and Cotham Member (Undifferentiated)	Mudstone and Limestone, Interbedded	Not Supplied - Rhaetian
	LPMB	Langport Member	Limestone	Not Supplied - Rhaetian
	WCT	Wilmcote Limestone Member	Limestone and Mudstone, Interbedded	Not Supplied - Rhaetian
	SASH	Saltford Shale Member	Mudstone	Not Supplied - Rhaetian
	BAN	Blue Anchor Formation	Mudstone	Not Supplied - Norian
	MMG	Mercia Mudstone Group	Mudstone and Halite-stone	Not Supplied - Early Triassic
	MMG	Mercia Mudstone Group	Sandstone	Not Supplied - Early Triassic
	RESA	REDCLIFFE SANDSTONE MEMBER	Sandstone	Not Supplied - Triassic
	FABR	Farrington Member and Barren Red Member (Undifferentiated)	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	FABR	Farrington Member and Barren Red Member (Undifferentiated)	Sandstone	Not Supplied - Westphalian
	DN	Downend Member	Mudstone	Not Supplied - Westphalian
	DN	Downend Member	Sandstone	Not Supplied - Westphalian
	MGF	Mangotsfield Member	Sandstone	Not Supplied - Westphalian
	MGF	Mangotsfield Member	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	SWMCM	South Wales Middle Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	SWMCM	South Wales Middle Coal Measures Formation	Sandstone	Not Supplied - Westphalian
		Rock Segments		
		Faults		

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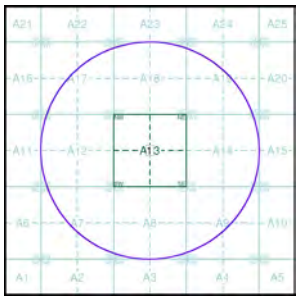
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**264**
Map Name:	**Bristol**
Map Date:	**2004**
Bedrock Geology:	**Available**
Superficial Geology:	**Available**
Artificial Geology:	**Available**
Faults:	**Not Supplied**
Landslip:	**Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A



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National Grid Reference:	360840, 173740
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Site Area (Ha):	0.05
Search Buffer (m):	1000

Site Details:

E T S (S W) Ltd, Lawnwood House, Lawnwood Road Industrial Estate, Lawnwood Road, BRISTOL, BS5 0EF

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Tel: 0844 844 9952
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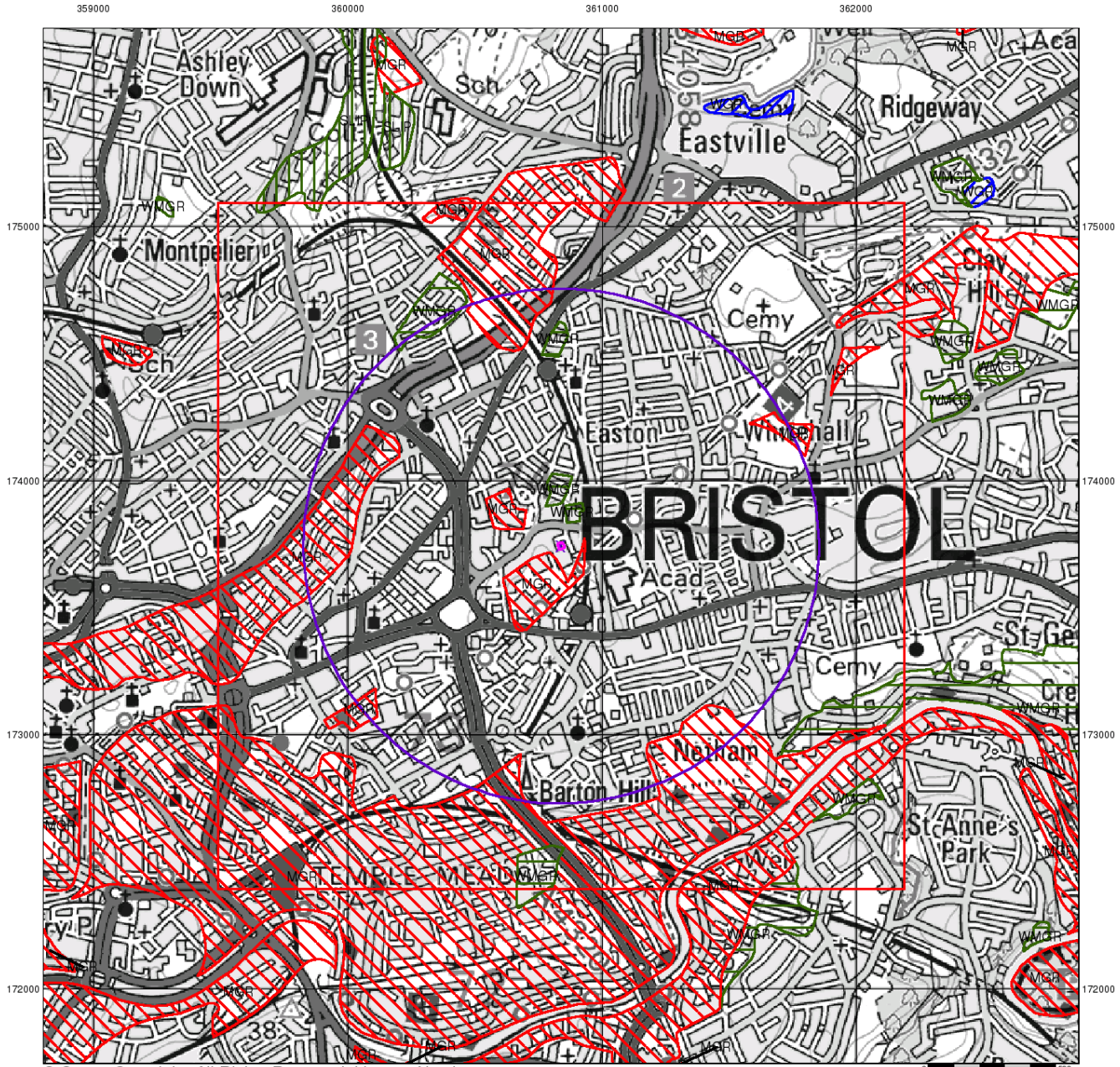

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Artificial Ground and Landslip

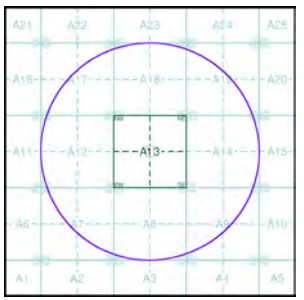
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions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

Artificial ground includes:

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

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

Artificial Ground and Landslip Map - Slice A



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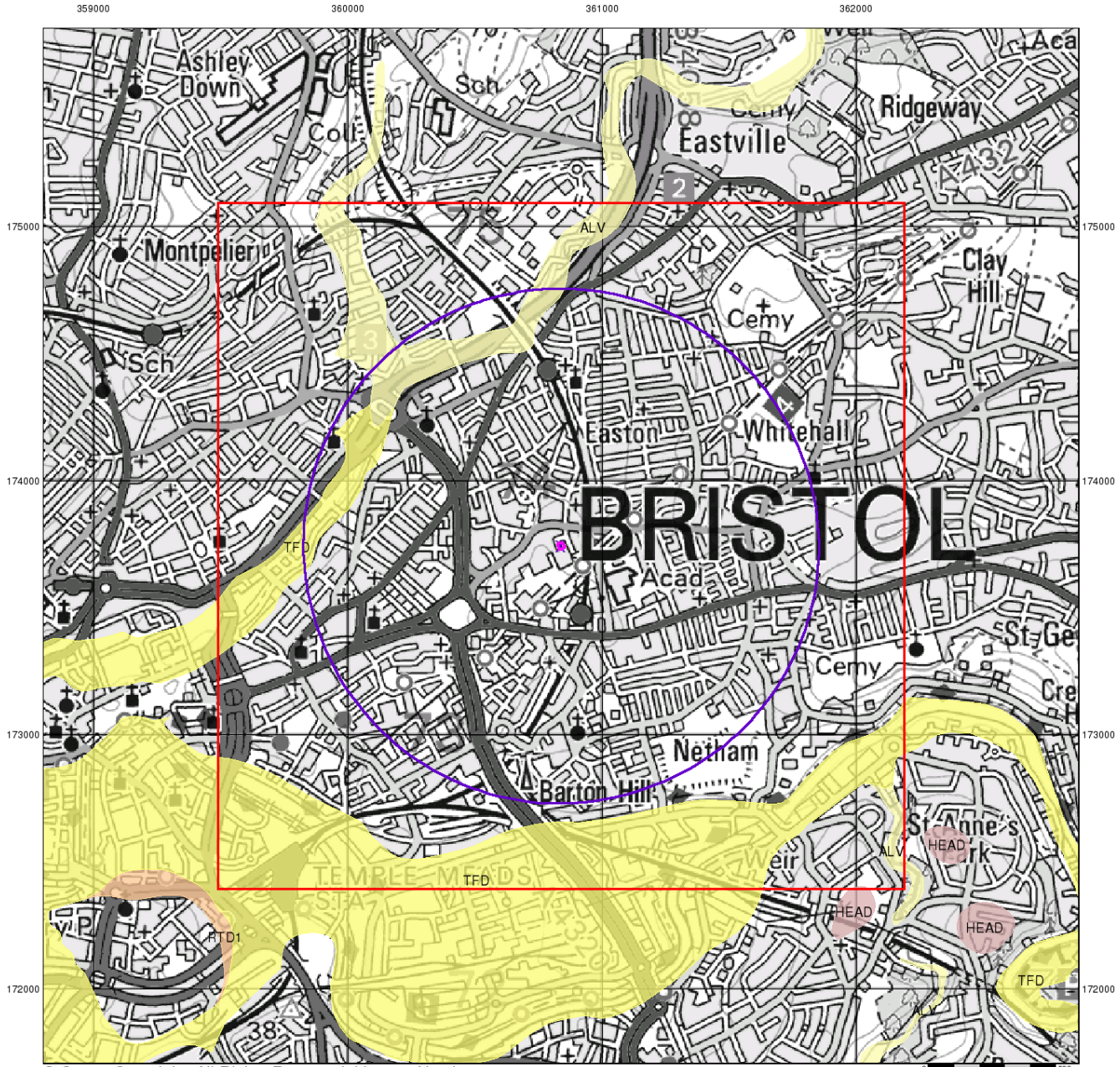

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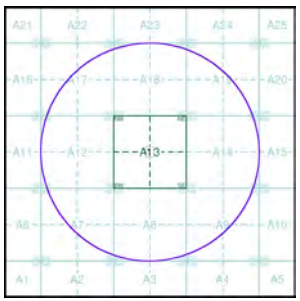
Superficial Geology

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

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

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

Superficial Geology Map - Slice A



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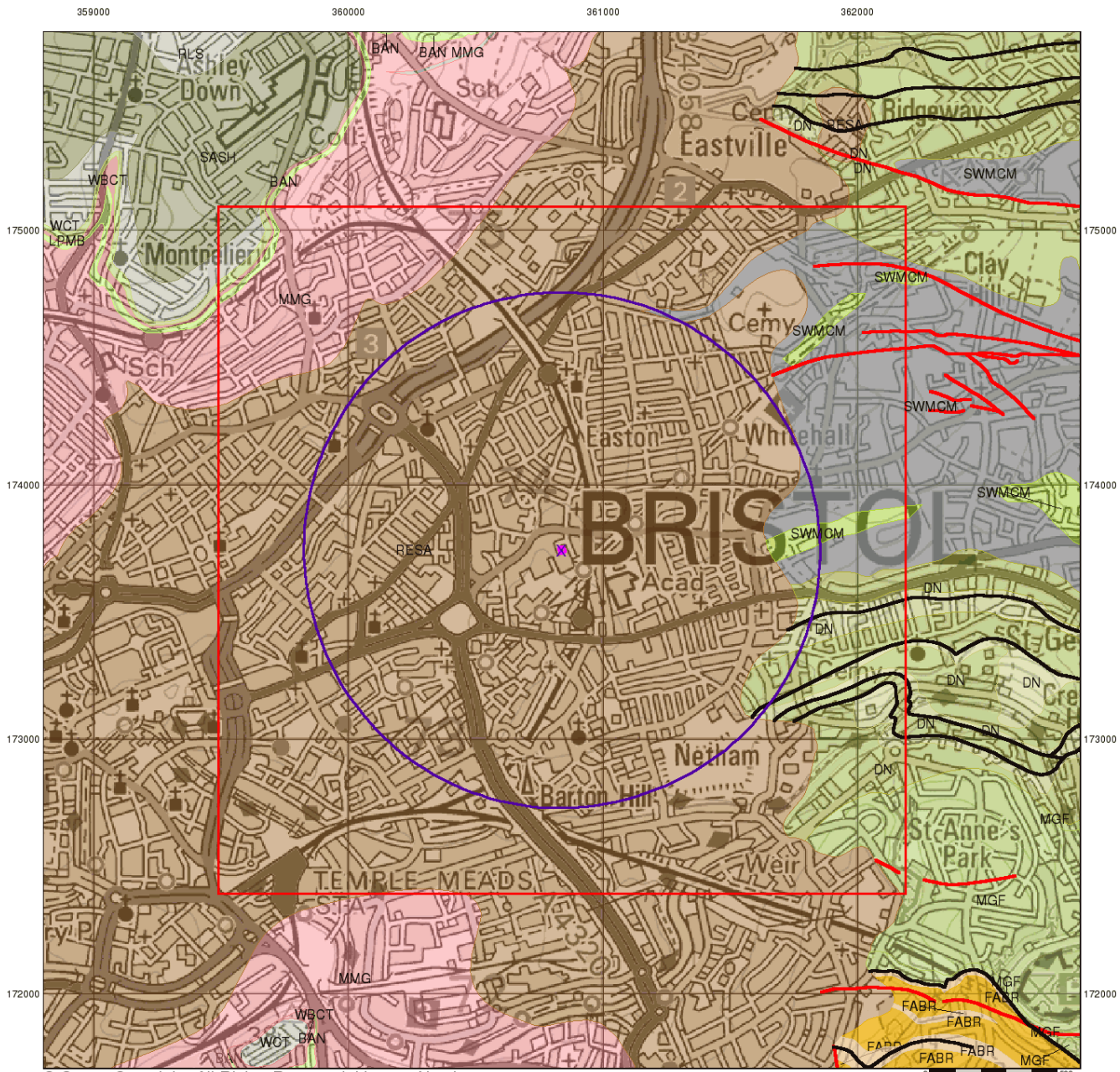

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Bedrock and Faults

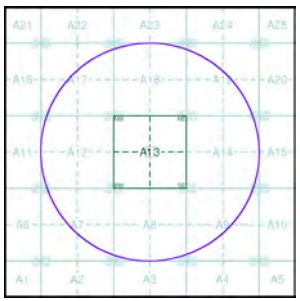
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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

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

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

Bedrock and Faults Map - Slice A



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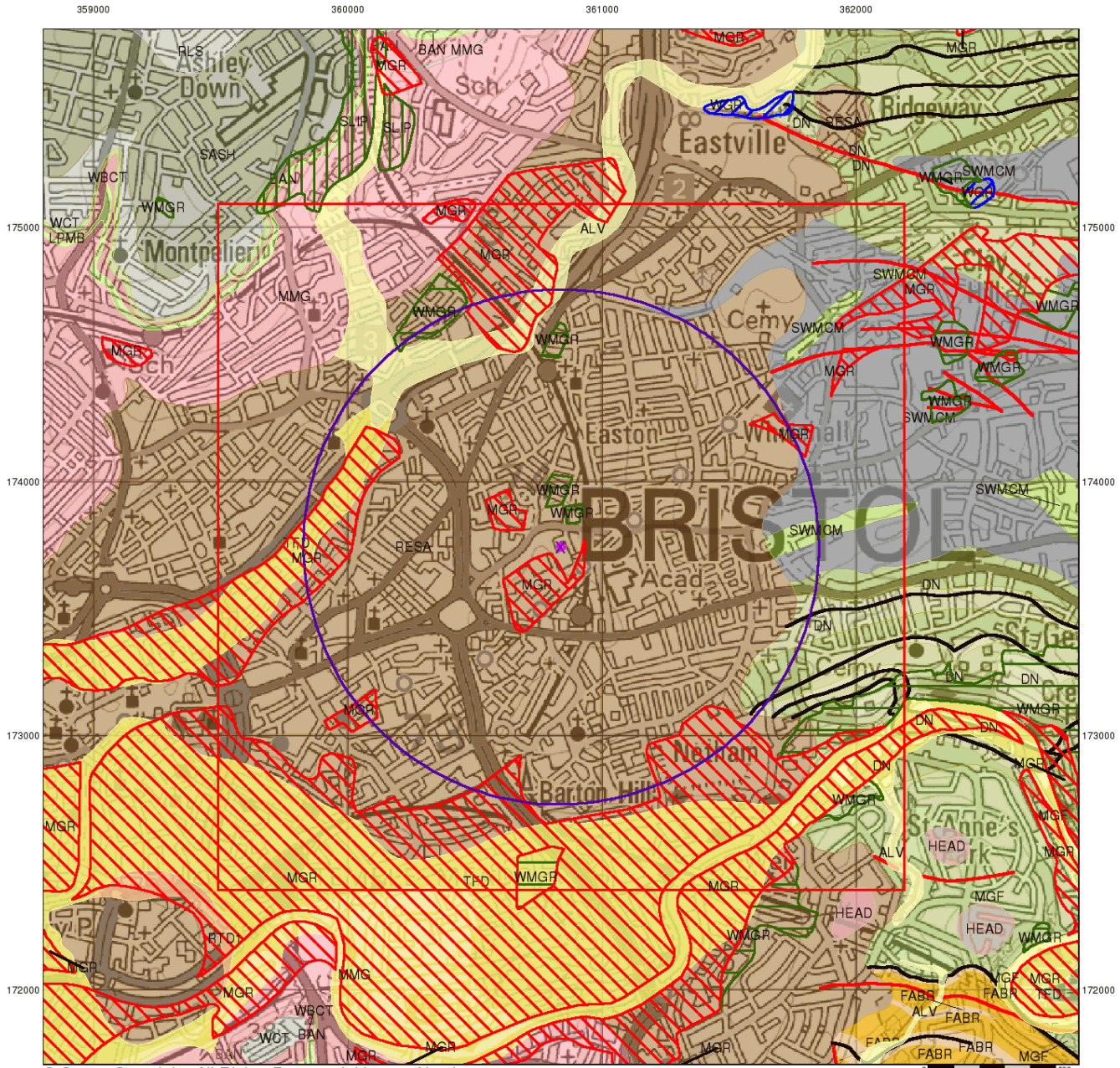

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Combined Surface Geology

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

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

Additional Information

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

Contact

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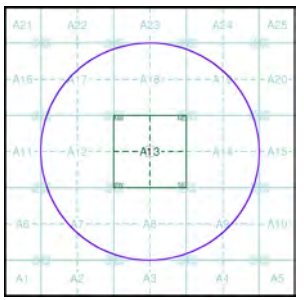
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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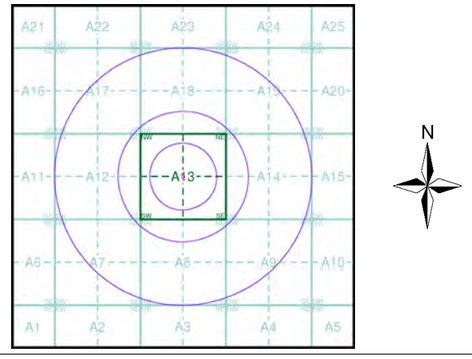
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Somerset	1:10,560	1884	3
Gloucestershire	1:10,560	1887	4
Gloucestershire	1:10,560	1904	5
Somerset	1:10,560	1905	6
Gloucestershire	1:10,560	1920 - 1921	7
Somerset	1:10,560	1921	8
Somerset	1:10,560	1933	9
Gloucestershire	1:10,560	1938	10
Somerset	1:10,560	1938	11
Somerset	1:10,560	1938	12
Gloucestershire	1:10,560	1938	13
Gloucestershire	1:10,560	1946	14
Ordnance Survey Plan	1:10,000	1955	15
Ordnance Survey Plan	1:10,000	1965	16
Bristol	1:10,000	1972	17
Ordnance Survey Plan	1:10,000	1973 - 1976	18
Ordnance Survey Plan	1:10,000	1981 - 1988	19
Ordnance Survey Plan	1:10,000	1991 - 1992	20
10K Raster Mapping	1:10,000	1999	21
10K Raster Mapping	1:10,000	2006	22
VectorMap Local	1:10,000	2023	23

Historical Map - Slice A



Order Details

Order Number: 324823969_1_1
Customer Ref: PO-AS-128
National Grid Reference: 360840, 173740
Slice: A
Site Area (Ha): 0.05
Search Buffer (m): 1000

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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

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 (–)
Д д (D)	Л л (L)	У у (U)	ы (Y)
Е е (E)	М м (M)	Ф ф (F)	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
- Main Highway
- Highway under Construction
- Improved Dirt Road (former truck road)
- Double-track Railroad with First Class Station
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment
- 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

ST67SW_Bristol

No.	Description
19	Factory (Gas)
30	Factory (Metals)
47	Coach Park
83	Railway Station (Freight)
117	Factory (Textiles)

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Somerset	1:10,560	1884	3
Gloucestershire	1:10,560	1887	4
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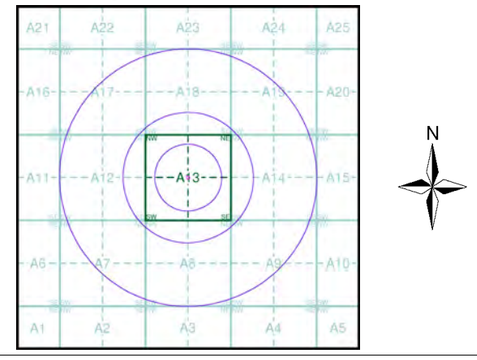
Ordnance Survey Plan	1:10,000	1991 - 1992	20
10K Raster Mapping	1:10,000	1999	21
10K Raster Mapping	1:10,000	2006	22
VectorMap Local	1:10,000	2023	23

Russian Map - Slice A



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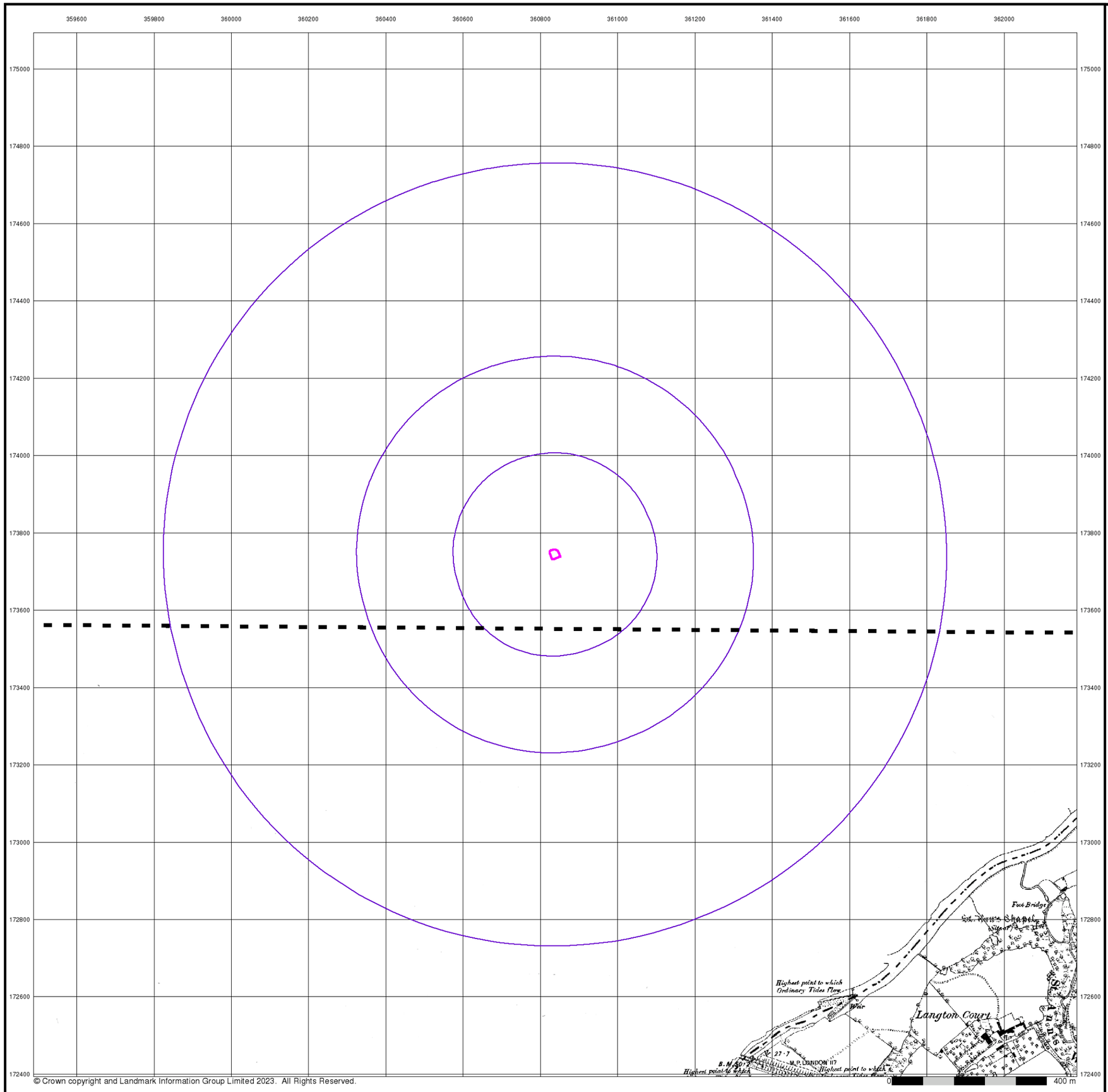

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Somerset

Published 1884

Source map scale - 1:10,560

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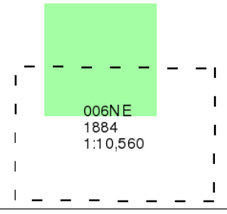
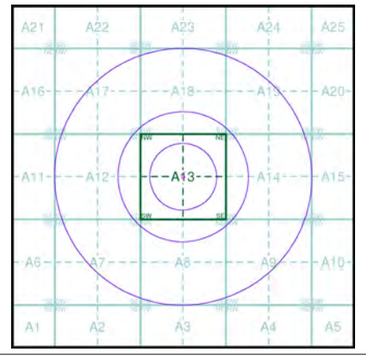
Map Name(s) and Date(s)



Historical Map - Slice A



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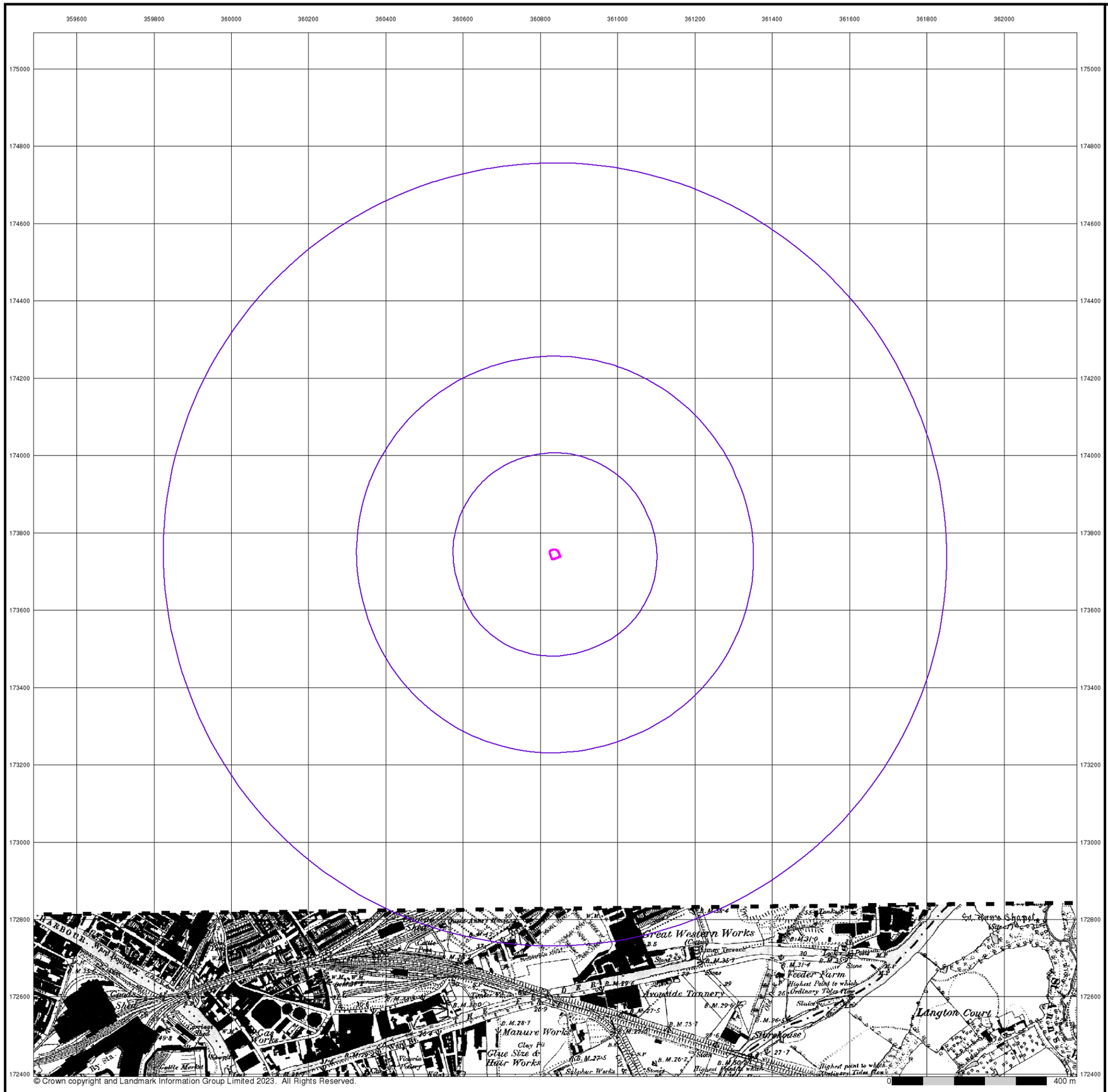

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Gloucestershire

Published 1887

Source map scale - 1:10,560

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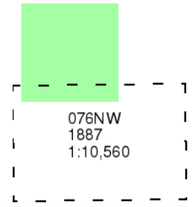
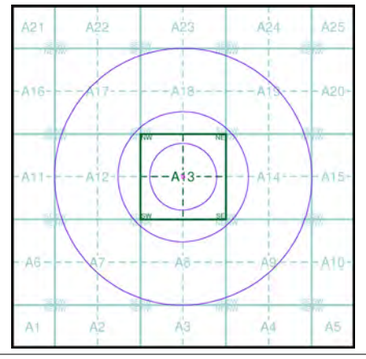


Historical Map - Slice A



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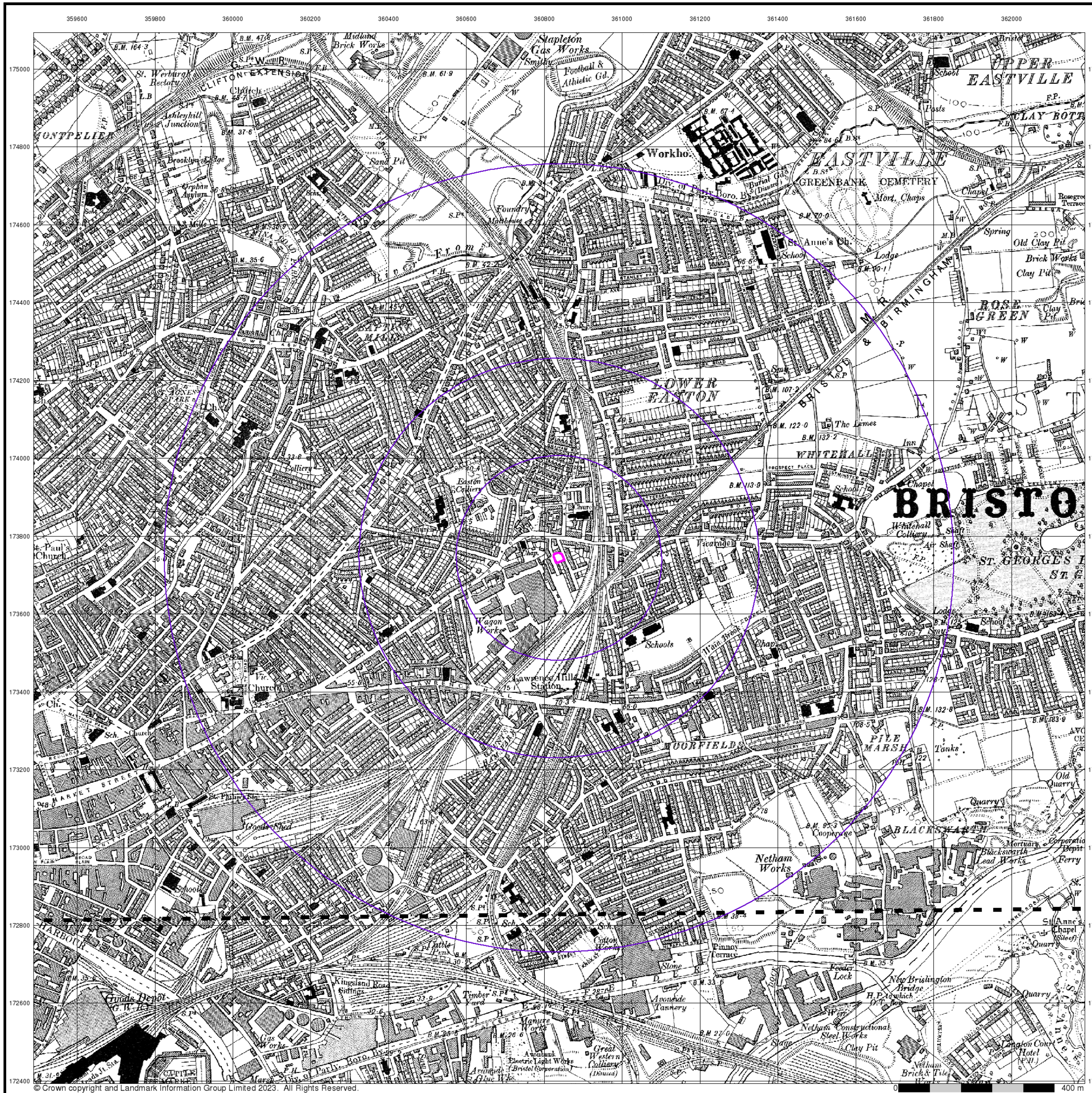

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Gloucestershire

Published 1904

Source map scale - 1:10,560

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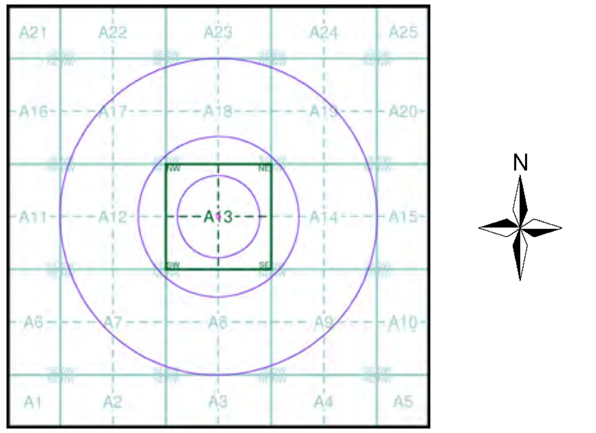
Map Name(s) and Date(s)

072SW
1904
1:10,560

076NW
1904
1:10,560

Historical Map - Slice A



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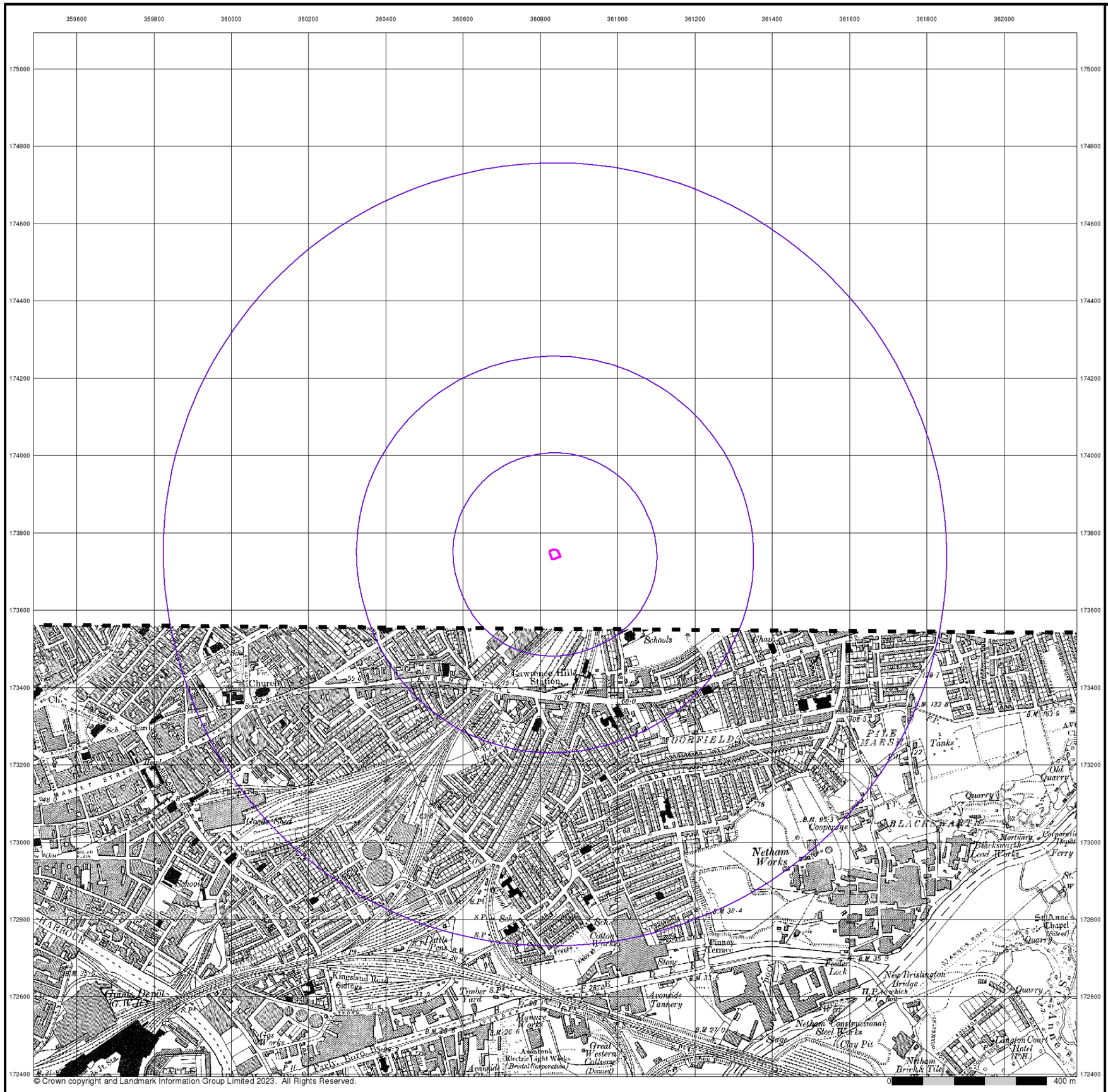

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Somerset

Published 1905

Source map scale - 1:10,560

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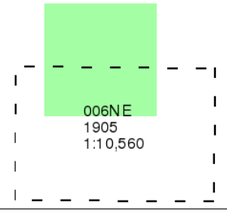
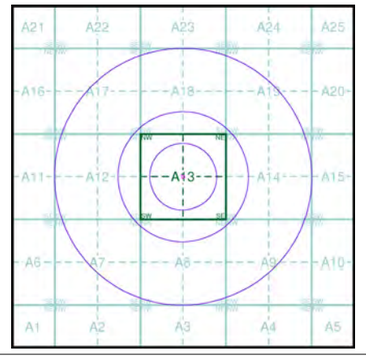
Map Name(s) and Date(s)



Historical Map - Slice A



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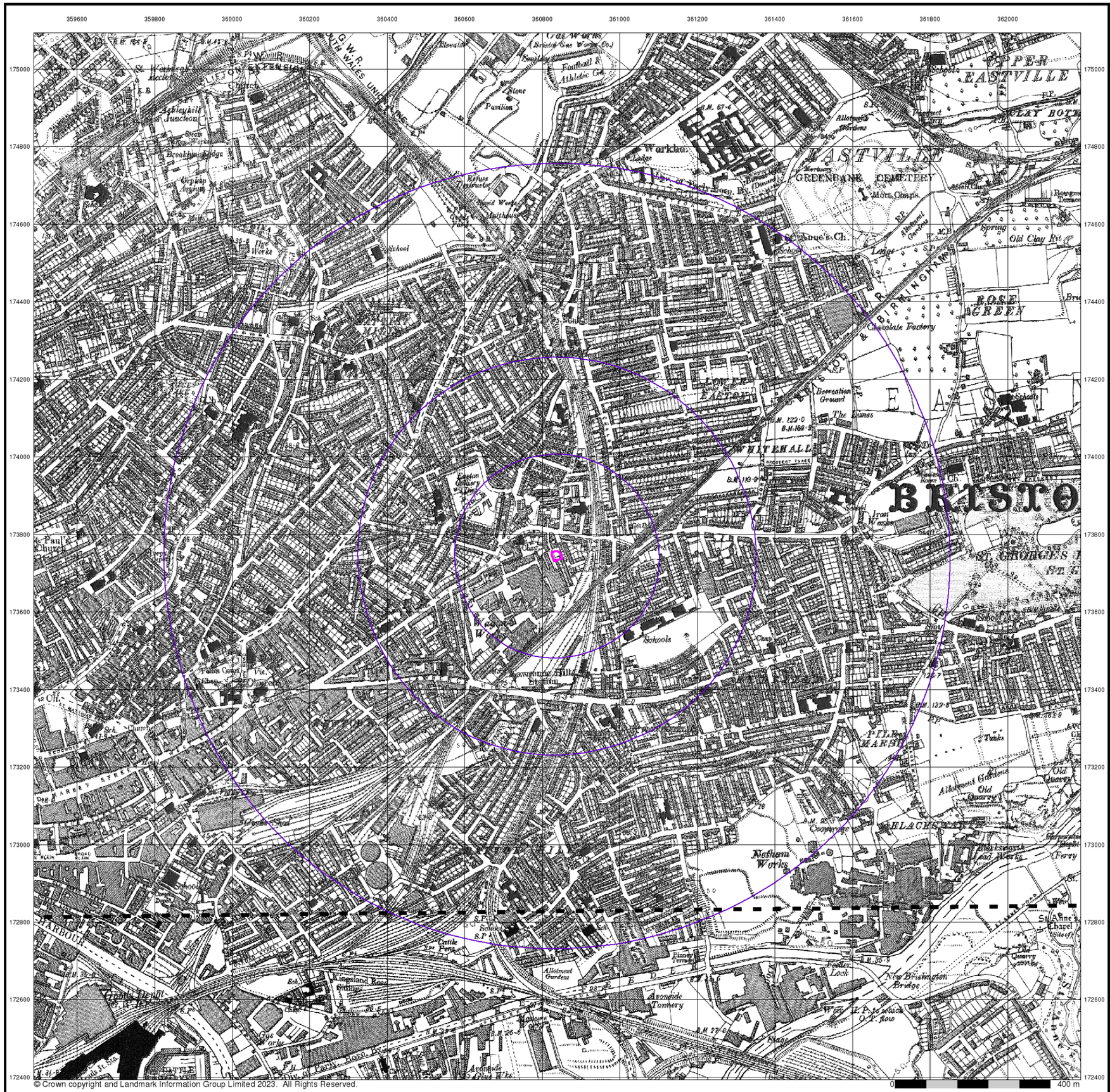

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Gloucestershire

Published 1920 - 1921

Source map scale - 1:10,560

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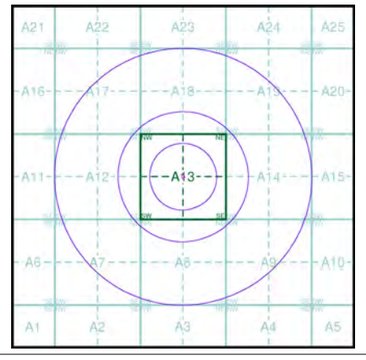
Map Name(s) and Date(s)

072SW
1921
1:10,560

076NW
1920
1:10,560

Historical Map - Slice A



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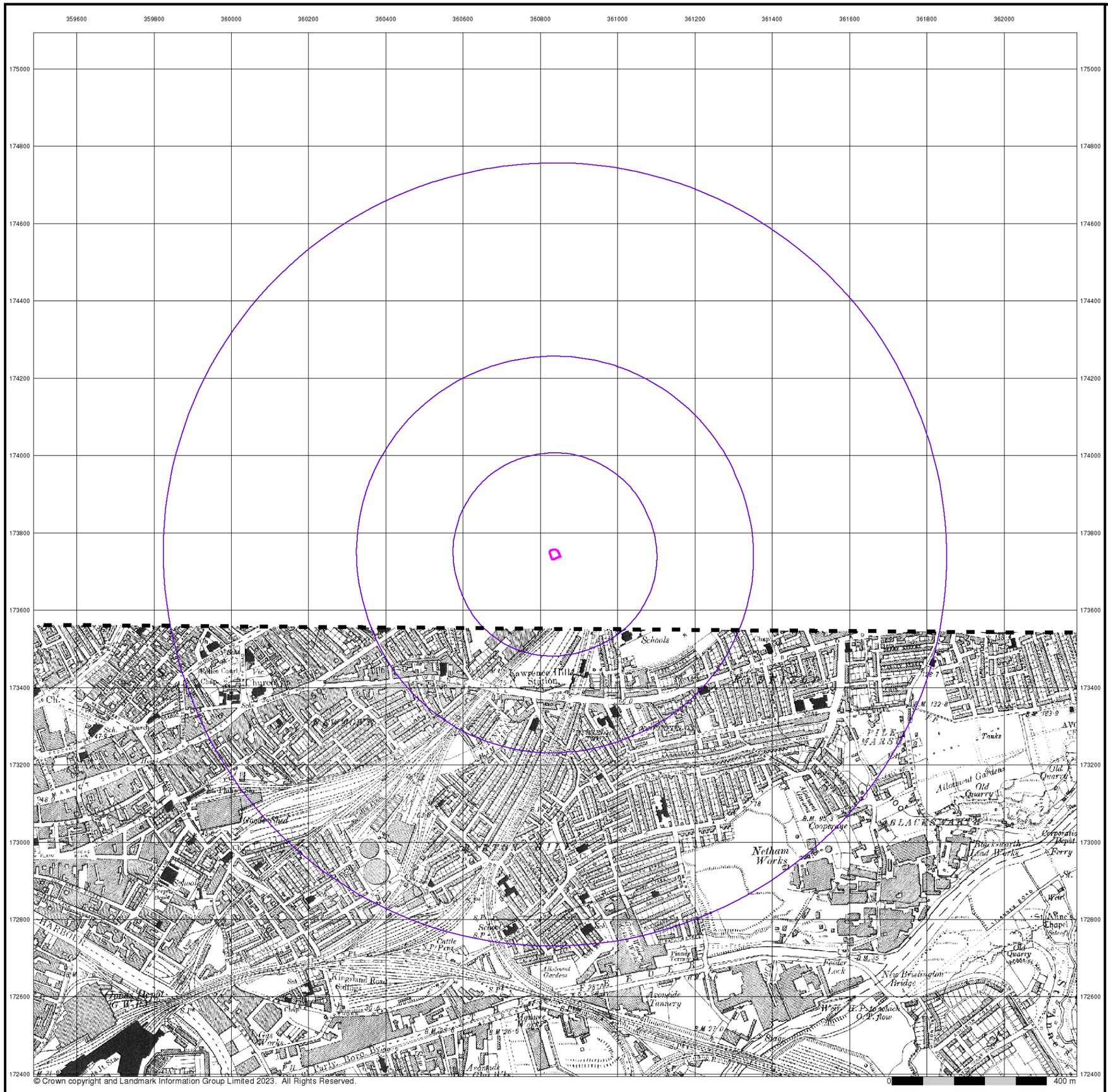

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Somerset

Published 1921

Source map scale - 1:10,560

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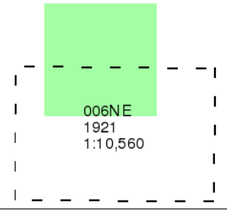
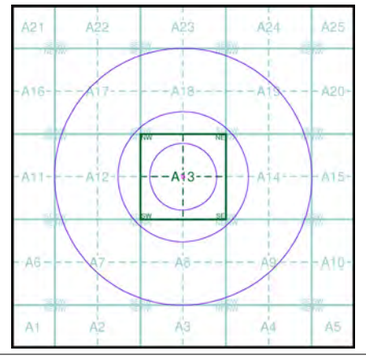
Map Name(s) and Date(s)



Historical Map - Slice A



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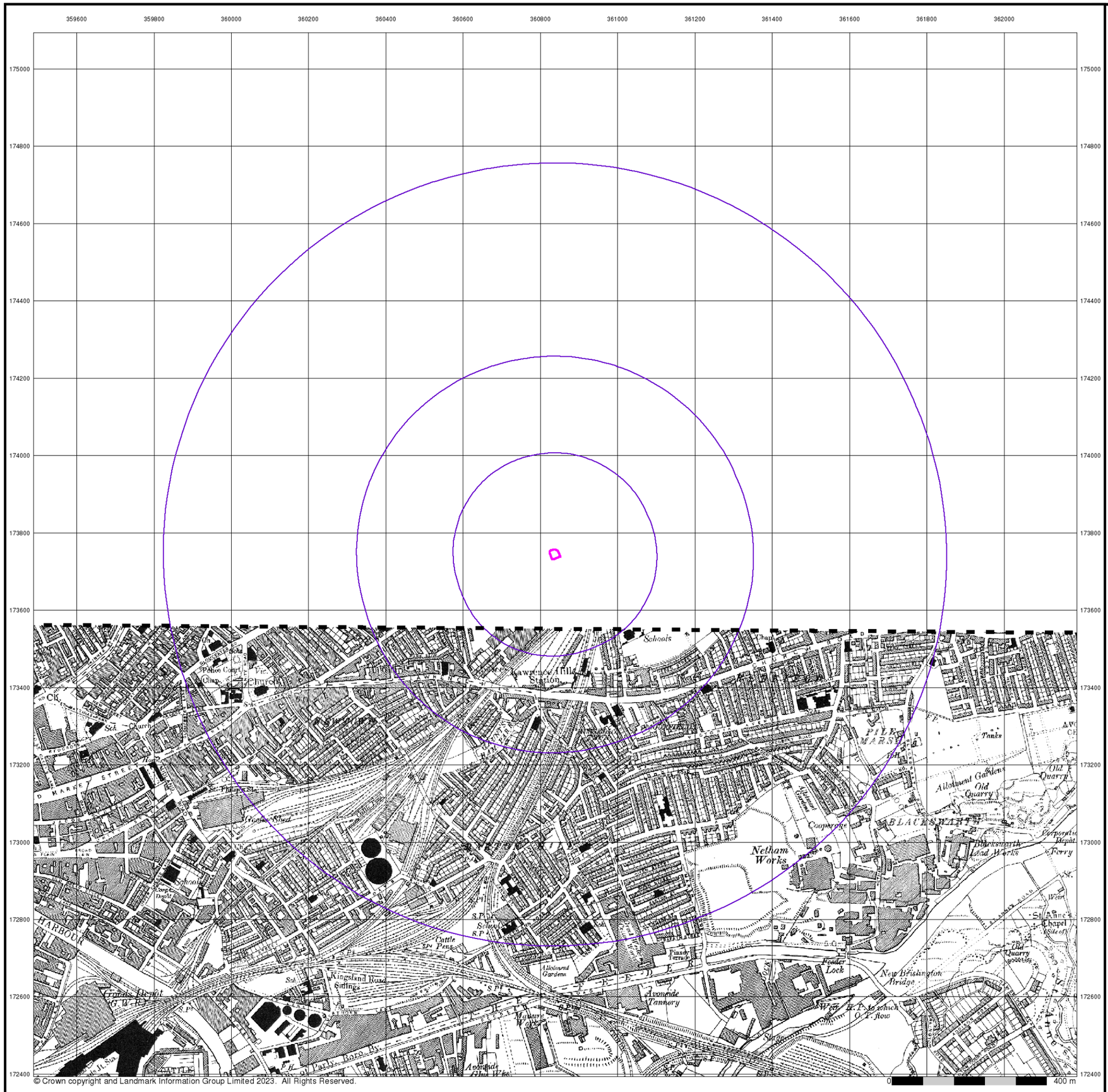

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Somerset

Published 1933

Source map scale - 1:10,560

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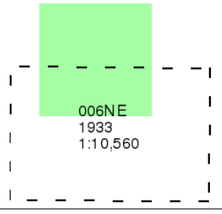
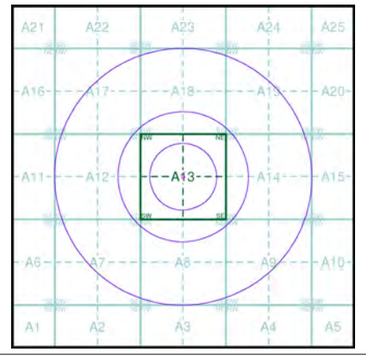


Historical Map - Slice A



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Gloucestershire

Published 1938

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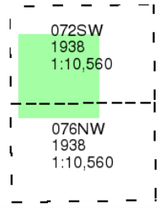
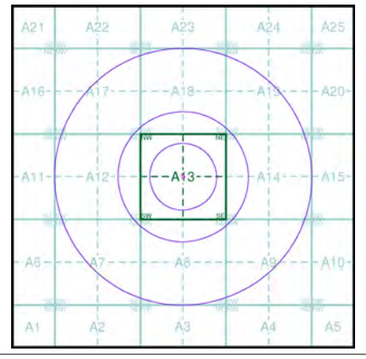
Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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Customer Ref:	PO-AS-128
National Grid Reference:	360840, 173740
Slice:	A
Site Area (Ha):	0.05
Search Buffer (m):	1000

Site Details

E T S (S W) Ltd, Lawnwood House, Lawnwood Road Industrial Estate, Lawnwood Road, BRISTOL, BS5 0EF

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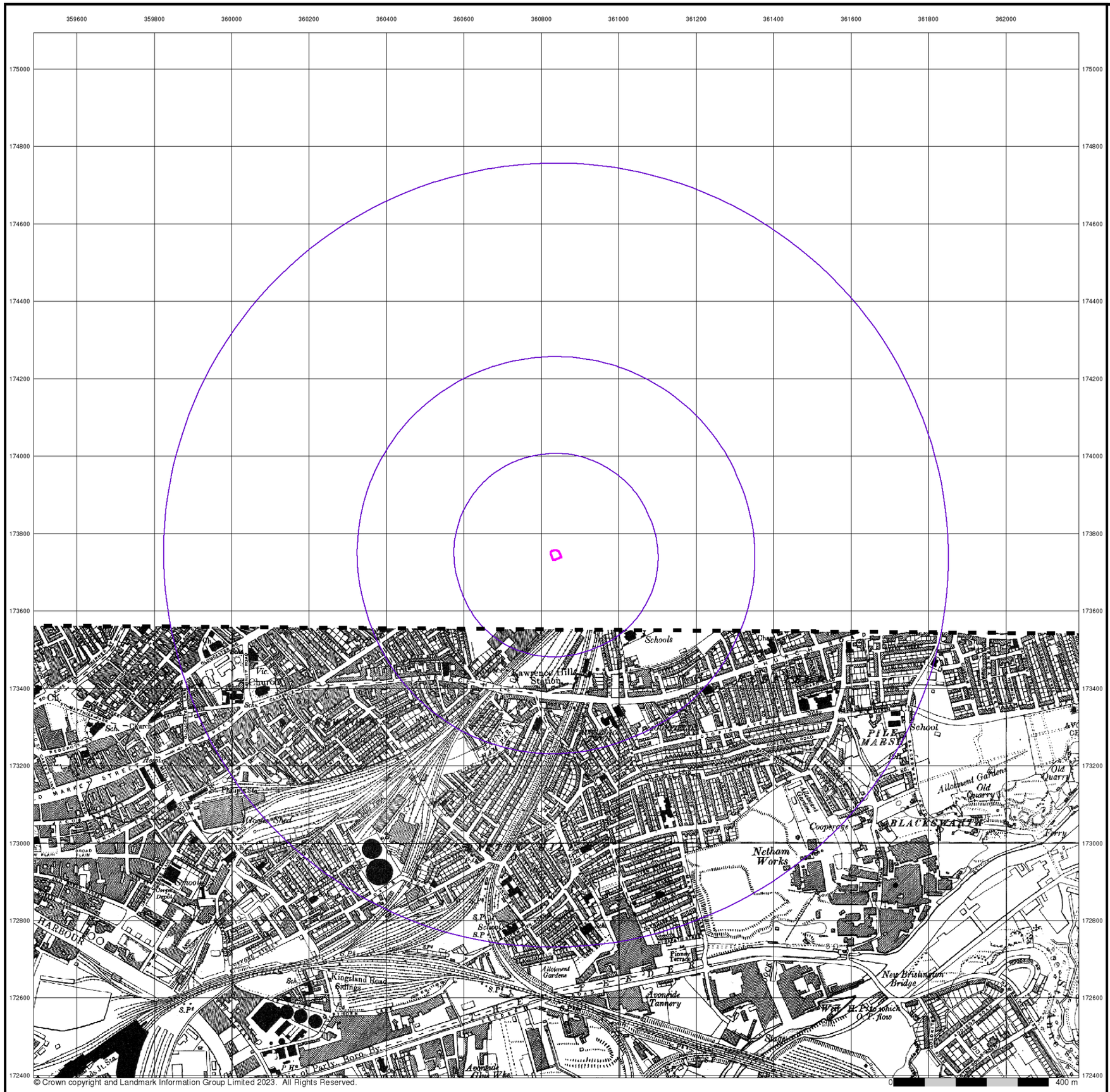

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Source map scale - 1:10,560

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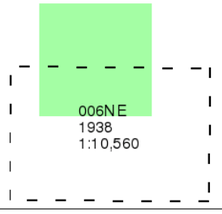
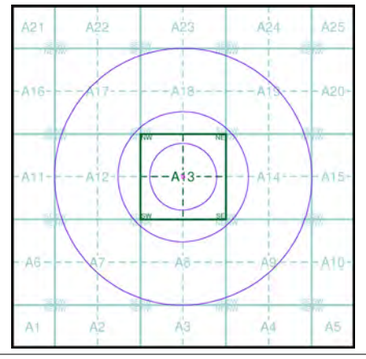


Historical Map - Slice A



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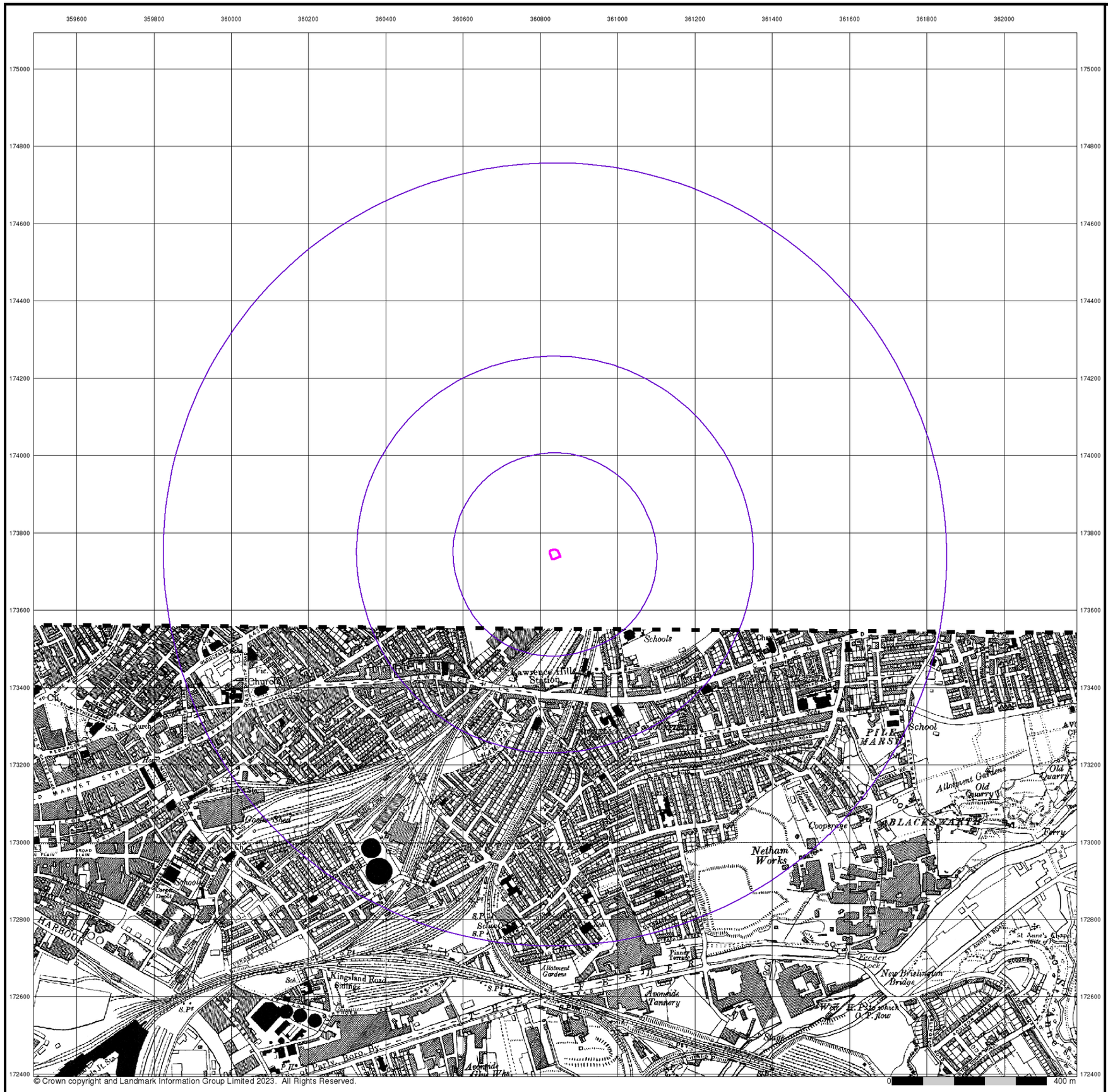

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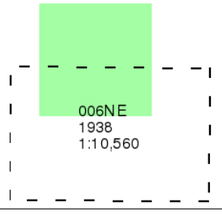

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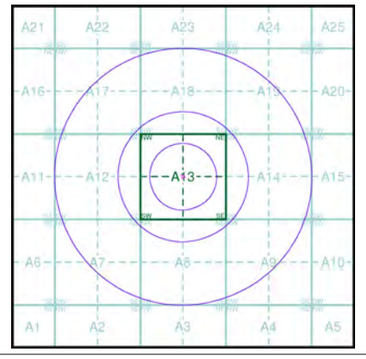

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