


TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE LAND AT ATKINS ROAD, CLAPHAM, SW12 0AW


Geotechnical and Geo-Environmental Desk Study


FEBRUARY 2019

Land at Atkins Road, Clapham, SW12 0AW

Geotechnical and Geo-Environmental Desk Study

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VERSION CONTROL

Version	Date	Author	Changes
01	February 2019	Rimjhim Singh	N/A

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1 INTRODUCTION

1.1 Terms of Reference

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for a site at Atkins Road, London ('the Site').

TfL is aiming to divest a number of small sites to enable positive regeneration. The objective of this review is to identify potential development constraints due to geotechnical and geo-environmental conditions on Site based on the findings of this desk study.

The objectives of this review are to:

- Review geo-environmental information regarding the Site and its surrounding area; and
- Provide outline information on potential geo-environmental and geotechnical constraints which may impact on the land value or redevelopment potential for the site.

The site location is shown in Figure 1 below.

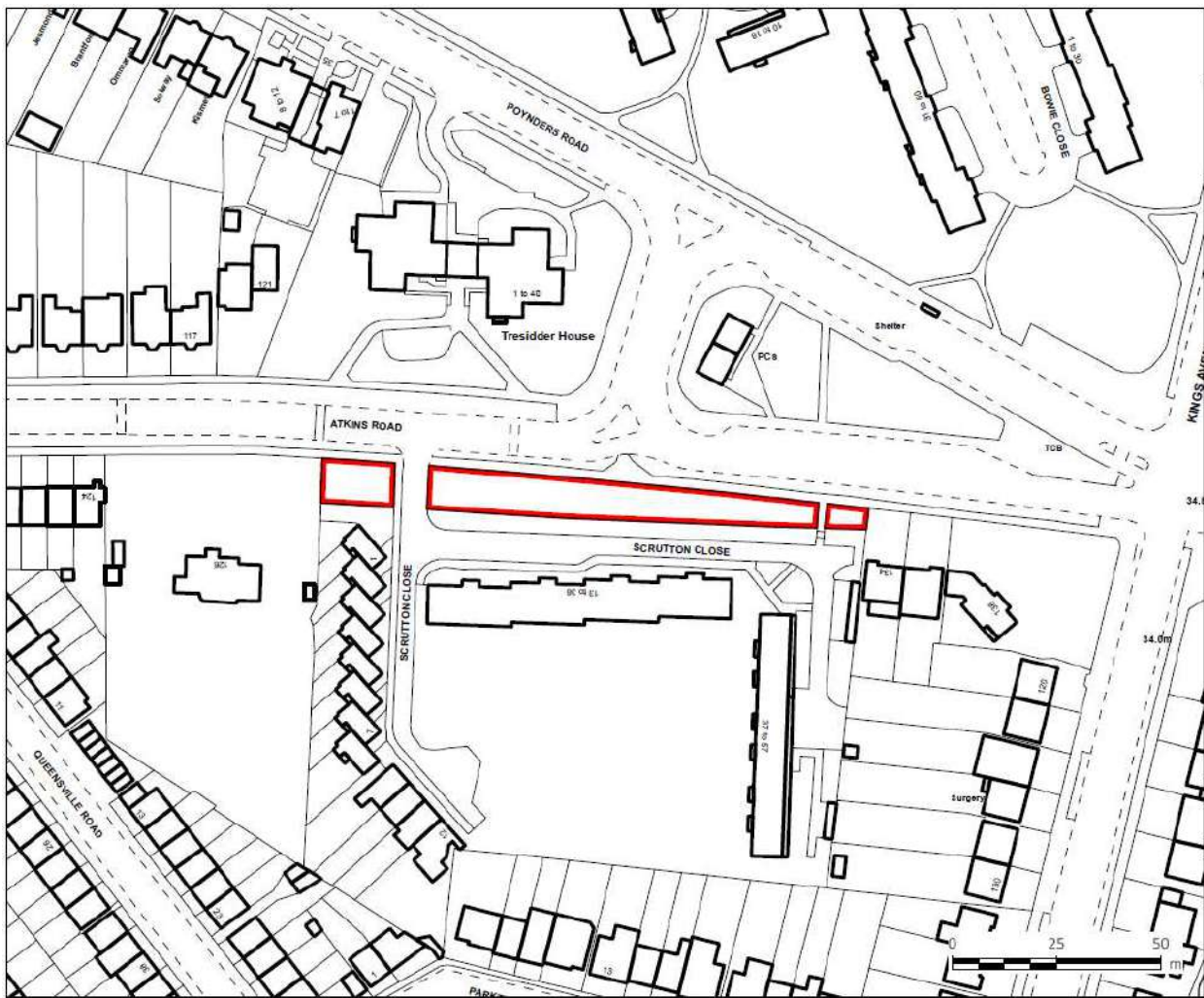


Figure 1: Site Location Plan provided by TfL

1.2 Sources of Information

As part of this desk study report various sources of information have been used and are detailed below:

- The on-line British Geological Survey (BGS) Geology of Britain Map Viewer (Ref. 1);
- Historical borehole records available through BGS website (above) (Ref. 1);
- Historical Ordnance Survey maps obtained from Landmark Envirocheck (included in Appendix A);
- Environmental Information from Landmark Envirocheck Datasheet (Appendix B);
- Current publicly available aerial images and maps from Google maps (Ref. 2);
- Zetica Regional Unexploded Ordnance Map and Pre- Desk Study Assessment (Appendix C); and
- Unexploded Ordnance data obtained from Bomb Sight National Archives website (Ref. 3).

1.3 Limitations and Expectations

This report has been prepared for the Client in accordance with the terms and conditions of appointment. Arcadis cannot accept any responsibility for any use of or reliance on the contents of this report by any third party. The copyright of this document, including the electronic format shall remain the property of Arcadis.

This report has been compiled from a number of sources, which Arcadis believes to be trustworthy. However, Arcadis is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time. Consequently, there is a potential for further information to become available, which may change this report's conclusion and for which Arcadis cannot be responsible.

2 SITE SETTING AND HISTORY

2.1 Site Location

Table 2.1: Details relating to Site Location

Site Location / Address	Atkins Road, London, SW12 0AW
National Grid Reference	529770, 173740
Approximate Site Area	The Site comprises three rectangular parcels of land with a combined area of approximately 0.11 hectares. The three land parcels have been assessed as a single site due to their close proximity to each other.
Description of Site	<p>The site comprises a thin strip (approximately 13m wide) of public open space/ amenity grassland with mature trees. The site is bisected by Sutton Close at the western end and a paved footpath at the eastern end. The site is bound by brick wall to the north adjacent to paved/grassed pathway that separates the site from Atkins Road. Wheelie bins for domestic waste were noted in the eastern corner of the site.</p> <p>Evidence of electricity services (street lighting) were observed along the northern boundary of the site and man-hole covers were present in the western end of the site. Cars were observed to be parked along the south boundary of the site.</p>
Topography	The Topography of the site is generally flat and at approximately 30 m Above Ordnance Datum (AOD). The immediately surrounding area is generally flat, with the local topography sloping very gently down from the south east to north west towards the River Thames.
Surrounding Area	The surrounding land use is predominantly residential housing and flats with areas of public open space. Atkins Road (A205) is adjacent to the north.

2.2 Site History

A review of the available historical Ordnance Survey maps (Appendix A) has been undertaken to assess the historical development of the Site and surrounding areas.

It is not the intention of this report to provide a full history, but to identify those past uses on and within the vicinity of the Site that could have resulted in contamination of the soils and/or waters. Significant changes to the land use of the Site and surrounding areas are summarised in Table 2.2 below.

Table 2.2 History of Site and Surrounding Area

Date	Historical Development (Site and Surrounding Area)
1874-1896	<p>The Site comprises the driveways and the front gardens of large residential houses.</p> <p>The surrounding area comprises large residential houses with gardens. A pond is present approximately 270m north west of the site in Agnes Riley Gardens.</p>
1916	No significant changes are noted on site or the surrounding area
1948 - 1951	<p>No significant changes are noted on site.</p> <p>Several 'Ruins' present within 100m of the site, which could be bomb damage from WWII. Electricity substation approximately 250m south east.</p>

Date	Historical Development (Site and Surrounding Area)
1955	<p>The driveways and gardens on site are no longer present and the site appears to be undeveloped.</p> <p>The residential houses adjacent to the south are demolished. Residential flats are developed approximately 100m north in place of former houses and ruins. Electricity substations are present approximately 110m north and 250m to the north and south. The pond approximately 270m west is changed in size and shape (potentially infilled).</p>
1960 - 1976	<p>The site is developed into its present layout comprising three areas of undeveloped public open space (grassland).</p> <p>Scrutton Close (road) is developed adjacent to the south of the site with a residential block of flats approximately 10m south. Adjacent to the west of the site is a school.</p>
1991 - 2006	<p>No significant changes are noted on site.</p> <p>Increased residential development surrounding the site.</p>
2019	No significant change to the site or the surrounding area.

2.2.1 Summary of Site History

The site was used as driveways and gardens of several large houses until circa 1955 when the houses were demolished. The site was developed into public amenity grassland for the adjacent flats which were constructed from circa 1960 and has remained relatively unchanged since. Limited Made Ground and contamination is expected to be present as no significant development has been identified on the site itself.

Several 'ruins' were identified within 150m of the site from the 1940' which are suspected to be bomb damaged buildings from WWII.

Several historic electricity substations have been identified within approximately 250m of the site, however based on their distance the potential for contamination to have impacted the site is considered to be unlikely.

There is a man-made pond approximately 250m west which may have been partially infilled. However, this is down gradient and at such a distance that it is considered unlikely to have significantly impacted the site.

2.3 Unexploded Ordnance

With reference to the Zetica Unexploded Bomb Risk report for the site (Appendix C), the Site is designated as lying within an area denoted as "Moderate" bomb risk. Further reference has been made to the Bomb Sight National Archives (Ref. 3) which indicates that three High Explosive bombs were dropped within approximately 100m around the Site.

A pre-desk study assessment (PDSA) was obtained from Zetica (Appendix C) which states that during World War II the Site was in the Municipal Borough of Wandsworth, which officially recorded 1480 High Explosive bombs with a bombing density of 162.5 per 405 hectares. Records indicate that several High Explosive bombs fell in close proximity to the Site. This corroborates the evidence of several 'ruins' in the surrounding area being bomb damaged buildings (identified by the historical mapping described above).

The PDSA recommends that a detailed desk study needs to be commissioned to assess, and potentially zone, the UXO hazard level on the Site.

Data type	Description	Distance (m) and Direction
	radon area as less than 1% of properties are above the Action Level.	
Discharge Consents	None recorded within a 250m radius of the site	N/A
Pollution Incident to controlled waters	No incidents are recorded within 250m of the site.	N/A
Landfill sites (current and historical)	No current or historic landfill sites are recorded within 250m of the site.	N/A
Potentially Infilled Land	No potentially infilled land (water and non-water) recorded within 250m of the site.	N/A
Local Authority pollution prevention and controls	None recorded within a 250m radius of the site.	N/A
Contemporary Trade Directory	Domestic Cleaning Services-Inactive	23 m south of the site
	Commercial Cleaning Services – Active	107 m northeast of the site
	Air Conditioning Equipment & System-Inactive	152 m west of the site
	Air Conditioning & Refrigeration Contractors-Inactive	185 m south of the site.
	Ironing & Home Laundry Services-Active	207 m north of the site
	Domestic Cleaning Services--Active	209 m south west of the site
	Domestic Cleaning Services -Inactive	211 m south of the site
	Commercial Cleaning Services-Inactive	217 m north east of the site
	Hardware-Inactive	224 m north west of the site
	Refrigeration Equipment – Commercial-Inactive	238 m south east of the site
Fuel Station Entries	No Fuel station recorded within a 250m radius of the site.	N/A

The majority of the above Contemporary Trade Directory Entries are inactive and are not directly up hydraulic gradient from the site so it is considered unlikely that they would have impacted the Site. The entries to the south/ south west are residential addresses rather than commercial premises, therefore the storage of waste and materials is less likely to be undertaken at these locations. Therefore, it is considered unlikely that these would have significantly impacted the site.

4 PRELIMINARY CONCEPTUAL MODEL

Geo-environmental assessments are required in accordance with current regulatory guidance (CIRIA C552 - Ref. 4 and CLR11 – Ref. 5) to consider the significance of potential contamination in terms of plausible source-pathway-receptor contaminants linkages. As part of this process, it is necessary to develop a conceptual model of these potential contaminant linkages by identifying the potential contamination sources, sensitive receptors and any potential exposure pathways. A risk assessment is then undertaken to determine the likelihood that these potential contaminant linkages are complete.

4.1 Potential Contaminant Sources

Based on the information obtained from the historical and environmental research, the following potential sources of contamination have been identified on site and within the surrounding area (Table 4.1).

It should be noted that it is considered unlikely that all these substances would be present at significant concentrations within the site.

Table 4.1: Potential sources of contamination on site

Source	Potential Contaminants
On Site	
Limited Made Ground may be present from the former driveways of residential houses (demolished circa 1955) and nearby demolished buildings.	Asbestos, metals, Polycyclic Aromatic Hydrocarbons (PAH), hydrocarbons, ground gas
London Clay underlying the site	Sulphates (aggressive ground conditions)

4.2 Potential Receptors

The proposed form of the development is currently unknown. As a precautionary approach the potential receptors detailed below take into consideration the proposed future land use as residential properties with private gardens and landscaped areas. It is considered possible that any potential contamination within the soils may be disturbed during the construction phase, or during gardening or landscaping undertaken by any future site users.

4.2.1 Human Health

- Future site users (residents, visitors, maintenance workers and contractors)

Contamination risks to construction workers are not appraised by chronic (long term) exposure human health risk assessments. There are no appropriate published criteria applicable to the assessment of potential risks to construction workers. The potential risks should be addressed by a site-specific construction workers risk assessment and implementation of appropriate health and safety measures, to adequately mitigate any potential risks. All works should be conducted in accordance with the CDM regulations 2015 (Ref. 6) or any other relevant guidance. Construction workers are not considered further as human health receptors.

4.2.2 Controlled Waters

- Secondary Undifferentiated Aquifer within superficial deposits (Head) underlying the eastern part of the site.
- Groundwater Source Protection Zone (SPZ) (Zone II) underlying the site.
- The pond 270m west is likely to be man-made and therefore is not considered to be a receptor.

4.2.3 Buildings

- Underground/ structures/services (water pipes, concrete, foundations) including sulphate attack.
- Proposed buildings.

4.3 Potential Pathways

Potential pathways are the routes that link the receptor to the contamination. The potential pathways for this site are summarised in the table below.

Table 4.2: Potential Contaminative Pathways

Receptor	Description
Human health (future site users/residentials, visitors, maintenance workers and contractors)	Accidental ingestion of contaminants within soil, water and dust. Inhalation of dust, vapours and ground gases Dermal contact with contaminants within soil, water and dust. Ingestion of contaminated vegetables and soil attached to vegetables.
Controlled Waters (Secondary Undifferentiated Aquifer and Zone II Groundwater SPZ)	Leaching of potential contaminants in soil or Made Ground into groundwater. Vertical migration of soluble contaminants through the unsaturated zone into groundwater beneath the site.
Buildings	Direct contact of building services or foundations with contaminants in the soil and Made Ground. Gas and / or vapour accumulation in confined and poorly ventilated spaces. Sulphate attack on buried concrete (direct contact).

4.4 Preliminary Qualitative Risk Assessment

Made Ground may be present from the former use of the site as driveways and demolition of the nearby residential houses, however as the site and surrounding area has not been previously developed for commercial or industrial use, such Made Ground (if present) would be expected to be limited in extent and unlikely to contain significant contamination.

If present, future site users may be at risk from contaminants within the Made Ground if exposure occurs in gardens or soft landscaped areas, especially if soils are disturbed by activities such as digging / gardening. However this is considered to be unlikely, based on the previous site use.

Gross hydrocarbon contamination capable of impacting the built environment is not expected to be present based on the previous site use.

If significant depths of Made Ground are present, and this contains putrescible matter/organic contamination, ground gas / vapours could be generated which could accumulate in confined spaces/buildings and pose risk to future site users. However, this is considered to be unlikely.

Potential contaminants within the Made Ground could be a potential source of contamination and it is possible contaminants could migrate into the underlying groundwater. If contamination is disturbed during the development, rainfall derived leaching could be exacerbated causing contamination of the underlying groundwater. However, the potential to encounter significant contamination is considered to be unlikely.

The London Clay is a source of naturally occurring sulphates which could impact below ground concrete.

This risk will need to be further understood through intrusive investigation into the ground conditions and potential contaminants present. If the site is found to be contaminated, mitigation measures will be required to break the source-pathway-receptor linkages. The scope of Site Investigation required is expected to be limited given that the potential risk of the site is considered to be low.

Services may be present beneath the site which may require removal/ relocating prior to redevelopment.

At this stage, conventional shallow foundations are likely to be appropriate for the site, but this would depend on the thickness of the Made Ground and the underlying ground conditions. Deeper trench fill may be possible although the maximum practical extent of this type of foundation is in the region of 2-2.5 m. If any areas of deeper Made Ground are encountered, or where deeper soft / loose bands are recorded, either piling or ground treatment e.g. vibro-stone columns should provide a suitable foundation solution which would be emplaced within the London Clay formation. The advice of a specialist ground improvement contractor should be sought to verify the suitability of the ground for treatment.

Consideration will need to be given to the presence of existing trees that are removed, retained or the planting of future trees when considering the depths of the foundations. In addition, the risks associated with the London Clay include high plasticity clay which are subject to shrinkage and swelling, sulphate attack and should be considered during the investigation / design.

7 Conclusions and Recommendations

The site is currently an undeveloped public amenity space. An intrusive site investigation has not been undertaken at this stage. The site was previously used for the private driveways and gardens of residential housing which was demolished, therefore there is the potential for Made Ground to be present. However Made Ground is expected to be limited in extent and significant contamination is considered unlikely to be present.

Potential receptors are considered to be future Site users, proposed buildings and underground structures / services and groundwater beneath the site.

Potential geo-environmental constraints have been identified that may impact on the future development. Whilst contamination may be present within the underlying soils, mitigation of risks to Site end users may be delivered by the appropriate design of the development itself (i.e. the use of hardstanding to limit the pathway for human exposure) rather than large scale removal of materials.

7.1 Design Considerations

Potential risks to human health, controlled waters and the built environment have been identified. It is recommended that an intrusive site investigation should be undertaken prior to redevelopment to quantify these risks. This should include for chemical testing of soils, groundwater monitoring (if present) and gas monitoring in accordance with the recommendations in CIRIA C665 (Ref. 7) and CLR 11 (Ref. 5) and consideration of shrinkage and swelling, compressible ground stability and sulphate attack to below ground concrete.

7.2 Construction Considerations

During construction, a watching brief should be undertaken to identify the presence of any unforeseen contamination. If contamination is encountered, all works should cease until the advice of a suitably qualified professional can be sought.

Construction / demolition workers should use appropriate PPE and follow the site-specific contractors risk assessment which should include risks to human health from potential contamination.

Good site management practices should be adopted during the construction phase such as covering stockpiles to minimise surface runoff/dust creation.

The site is located within an area that was impacted by WWII bombing and therefore there is a potential risk from UXO. It is recommended that a site-specific detailed desk study is undertaken prior to any intrusive investigations or earthworks. A watching brief from a UXO specialist may be required.

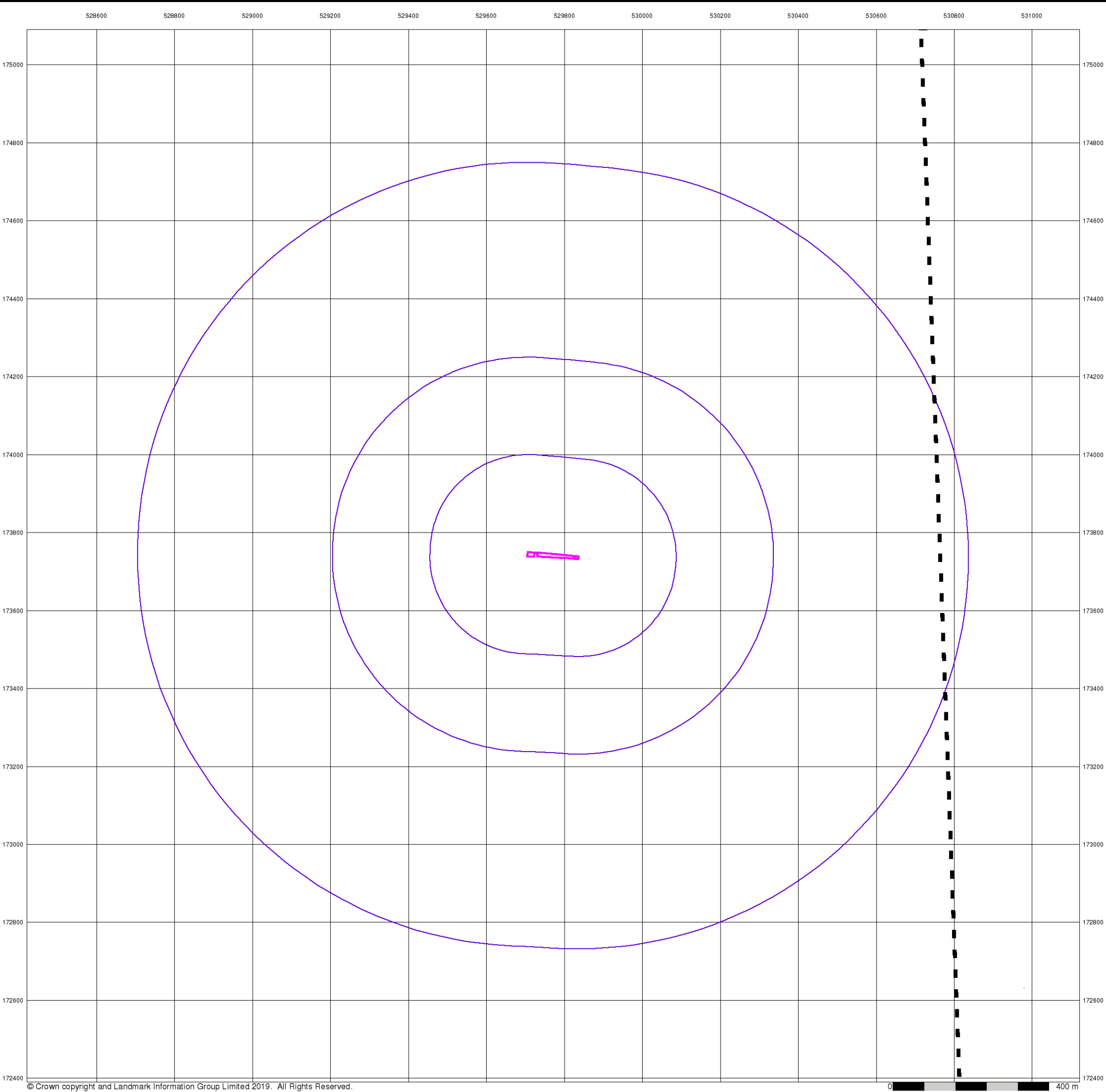
Underground services may be present which will need to be taken into consideration during the proposed development.

8 References

1. British Geological Survey (BGS) [online]. <https://mapapps.bgs.ac.uk/geologyofbritain/home.html> Accessed February 2019.
2. Google maps [online]. Available at <https://www.google.co.uk/maps>. Accessed February 2019.
3. Bomb Sight National Archives [on-line]. Available at: <http://bombsight.org>. Accessed February 2019
4. CIRIA C552 (2001) Contaminated land risk assessment. A guide to good practice.
5. DEFRA and the Environment Agency, 2004. Model Procedures for the Management of Land Contamination, Guidelines for Environmental Risk Assessment and Management, Contaminated Land Report 11 (CLR11).
6. The Construction (Design and Management) Regulations 2015.
7. CIRIA C665 (2007) Assessing risks posed by hazardous ground gases to buildings (revised).

APPENDIX A

Historical Ordnance Survey Maps



Envirocheck®

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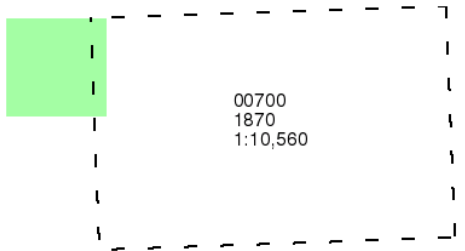
Kent

Published 1870

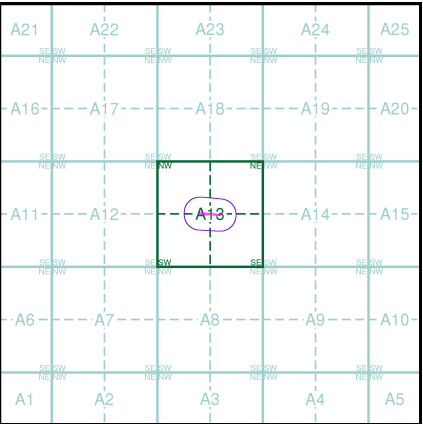
Source map scale - 1:10,560

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: 193642086_1_1
Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details

, 17, Scrutton Close, London, SW12 0AW

Landmark®
LANDMARK INFORMATION GROUP

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

APPENDIX B

Envirocheck Data Sheets and Site Sensitivity Maps

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	April 2018	Bi-Annually
Explosive Sites Health and Safety Executive	March 2017	Variable
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements London Borough of Lewisham - Planning Services London Borough of Bromley London Borough of Croydon London Borough of Lambeth - Planning Department London Borough of Merton London Borough of Southwark - Regeneration Department London Borough of Sutton London Borough of Wandsworth - Technical Services Royal Borough of Kensington And Chelsea Westminster City Council London Port Health Authority - Environmental Services London Borough of Hammersmith And Fulham - Environmental Protection	April 2015 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 January 2008 September 2014	Variable Variable Variable Variable Variable Variable Variable Variable Variable Variable Annual Rolling Update Variable
Planning Hazardous Substance Consents London Borough of Lewisham - Planning Services London Borough of Hammersmith And Fulham - Environmental Protection London Borough of Bromley London Borough of Croydon London Borough of Lambeth - Planning Department London Borough of Merton London Borough of Southwark - Regeneration Department London Borough of Sutton London Borough of Wandsworth - Technical Services Royal Borough of Kensington And Chelsea Westminster City Council London Port Health Authority - Environmental Services	April 2015 August 2015 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 February 2016 January 2008	Variable Variable Variable Variable Variable Variable Variable Variable Variable Variable Variable Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2018	Bi-Annually
BGS Urban Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	Annually
BGS Urban Soil Chemistry Averages British Geological Survey - National Geoscience Information Service	October 2015	Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	Annually

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	January 2019	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2018	Quarterly
Gas Pipelines National Grid	July 2014	
Points of Interest - Commercial Services PointX	September 2018	Quarterly
Points of Interest - Education and Health PointX	September 2018	Quarterly
Points of Interest - Manufacturing and Production PointX	September 2018	Quarterly
Points of Interest - Public Infrastructure PointX	September 2018	Quarterly
Points of Interest - Recreational and Environmental PointX	September 2018	Quarterly
Underground Electrical Cables National Grid	December 2015	

Sensitive Land Use	Version	Update Cycle
Ancient Woodland Natural England	August 2018	Bi-Annually
Areas of Adopted Green Belt London Borough of Bromley London Borough of Croydon London Borough of Sutton	August 2018 August 2018 August 2018	As notified As notified As notified
Areas of Unadopted Green Belt London Borough of Bromley London Borough of Croydon London Borough of Sutton	August 2018 August 2018 August 2018	As notified As notified As notified
Areas of Outstanding Natural Beauty Natural England	August 2018	Bi-Annually
Environmentally Sensitive Areas Natural England	January 2017	
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	August 2018	Bi-Annually
Marine Nature Reserves Natural England	January 2018	Bi-Annually
National Nature Reserves Natural England	August 2018	Bi-Annually
National Parks Natural England	April 2017	Bi-Annually
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	October 2015	
Ramsar Sites Natural England	August 2018	Bi-Annually
Sites of Special Scientific Interest Natural England	October 2018	Bi-Annually
Special Areas of Conservation Natural England	August 2018	Bi-Annually
Special Protection Areas Natural England	August 2018	Bi-Annually

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	 Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Contact	Name and Address	Contact Details
1	British Geological Survey - Enquiry Service British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	London Borough of Lambeth - Environmental Health Department 2, Herne Hill Road, London, SE24 0AU	Telephone: 020 7926 6131 Fax: 020 7926 7155 Website: www.lambeth.gov.uk
4	London Borough of Wandsworth - Environmental Health Department Technical Services Department, Environmental Services Division, PO Box 47095, London, SW18 9AQ	Telephone: 020 8871 7874 Fax: 0181 871 6003 Website: www.wandsworth.gov.uk
5	Environment Agency - Head Office Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
6	PointX 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
-	Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	Landmark Information Group Limited Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



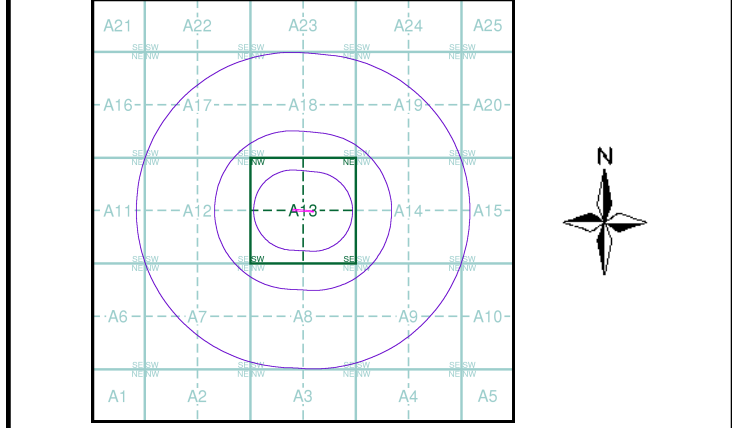
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- General**
 - Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - Map ID
 - Several of Type at Location
- Agency and Hydrological**
 - Contaminated Land Register Entry or Notice (Location)
 - Contaminated Land Register Entry or Notice
 - Discharge Consent
 - Enforcement or Prohibition Notice
 - Integrated Pollution Control
 - Integrated Pollution Prevention Control
 - Local Authority Integrated Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control Enforcement
 - Pollution Incident to Controlled Waters
 - Prosecution Relating to Authorised Processes
 - Prosecution Relating to Controlled Waters
 - Registered Radioactive Substance
 - River Network or Water Feature
 - River Quality Sampling Point
 - Substantiated Pollution Incident Register
 - Water Abstraction
 - Water Industry Act Referral
- Waste**
 - BGS Recorded Landfill Site (Location)
 - BGS Recorded Landfill Site
 - EA Historic Landfill (Buffered Point)
 - EA Historic Landfill (Polygon)
 - Integrated Pollution Control Registered Waste Site
 - Licensed Waste Management Facility (Landfill Boundary)
 - Licensed Waste Management Facility (Location)
 - Local Authority Recorded Landfill Site (Location)
 - Local Authority Recorded Landfill Site
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Registered Landfill Site (Location)
 - Registered Landfill Site (Point Buffered to 100m)
 - Registered Landfill Site (Point Buffered to 250m)
 - Registered Waste Transfer Site (Location)
 - Registered Waste Transfer Site
 - Registered Waste Treatment or Disposal Site (Location)
 - Registered Waste Treatment or Disposal Site
- Hazardous Substances**
 - COMAH Site
 - Explosive Site
 - NIHHS Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
 - BGS Recorded Mineral Site
- Geological**
 - BGS Recorded Mineral Site

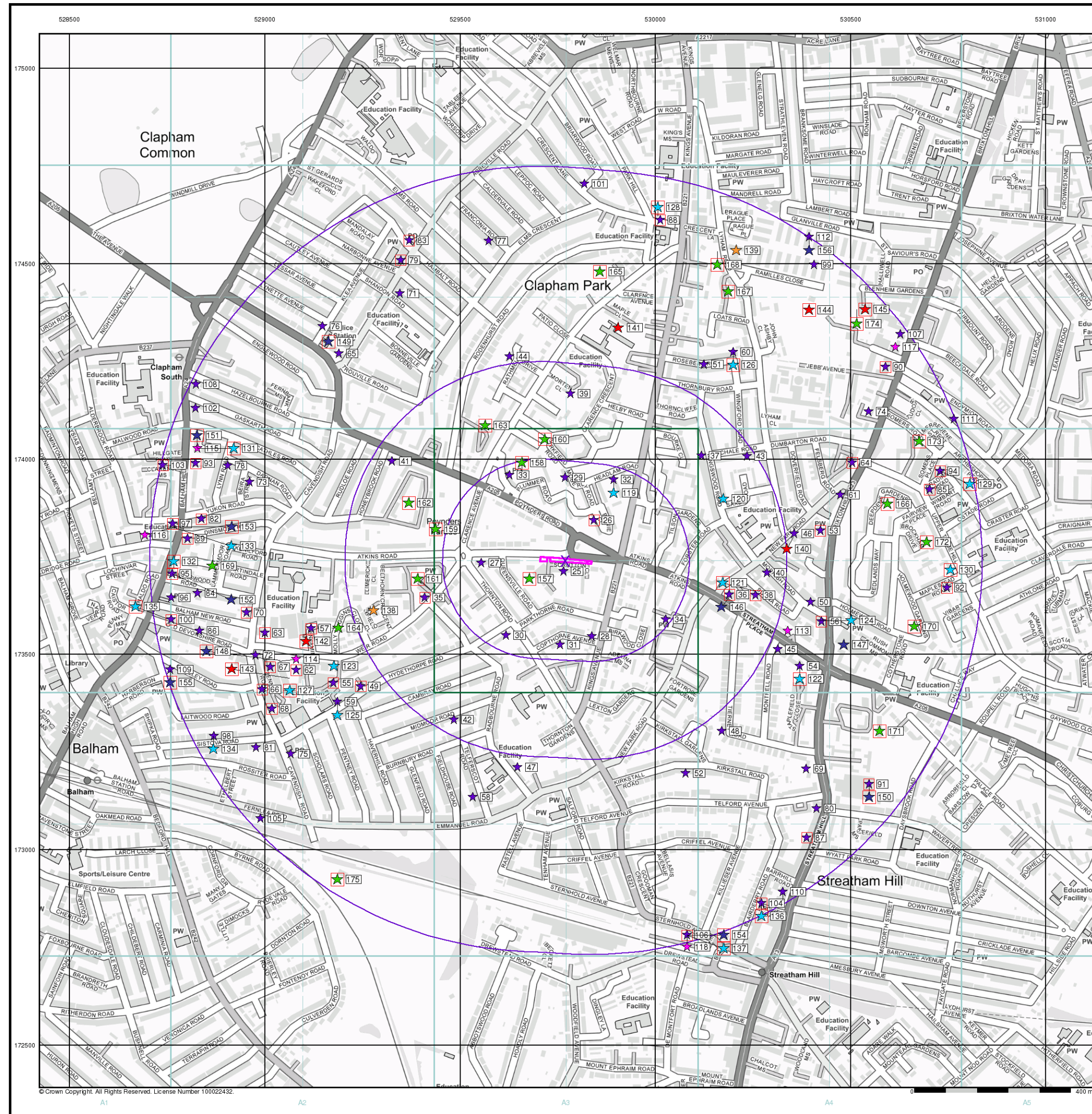
Site Sensitivity Map - Slice A



Order Details
Order Number: 193642086_1_1
Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details
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Industrial Land Use Map

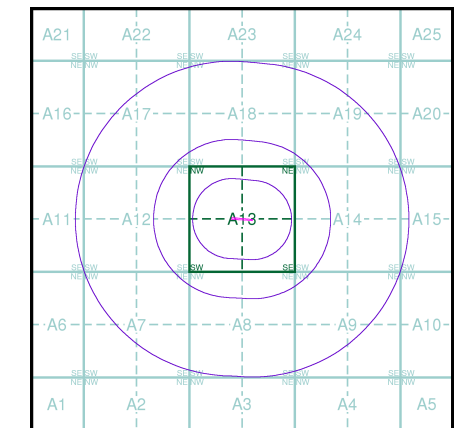
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

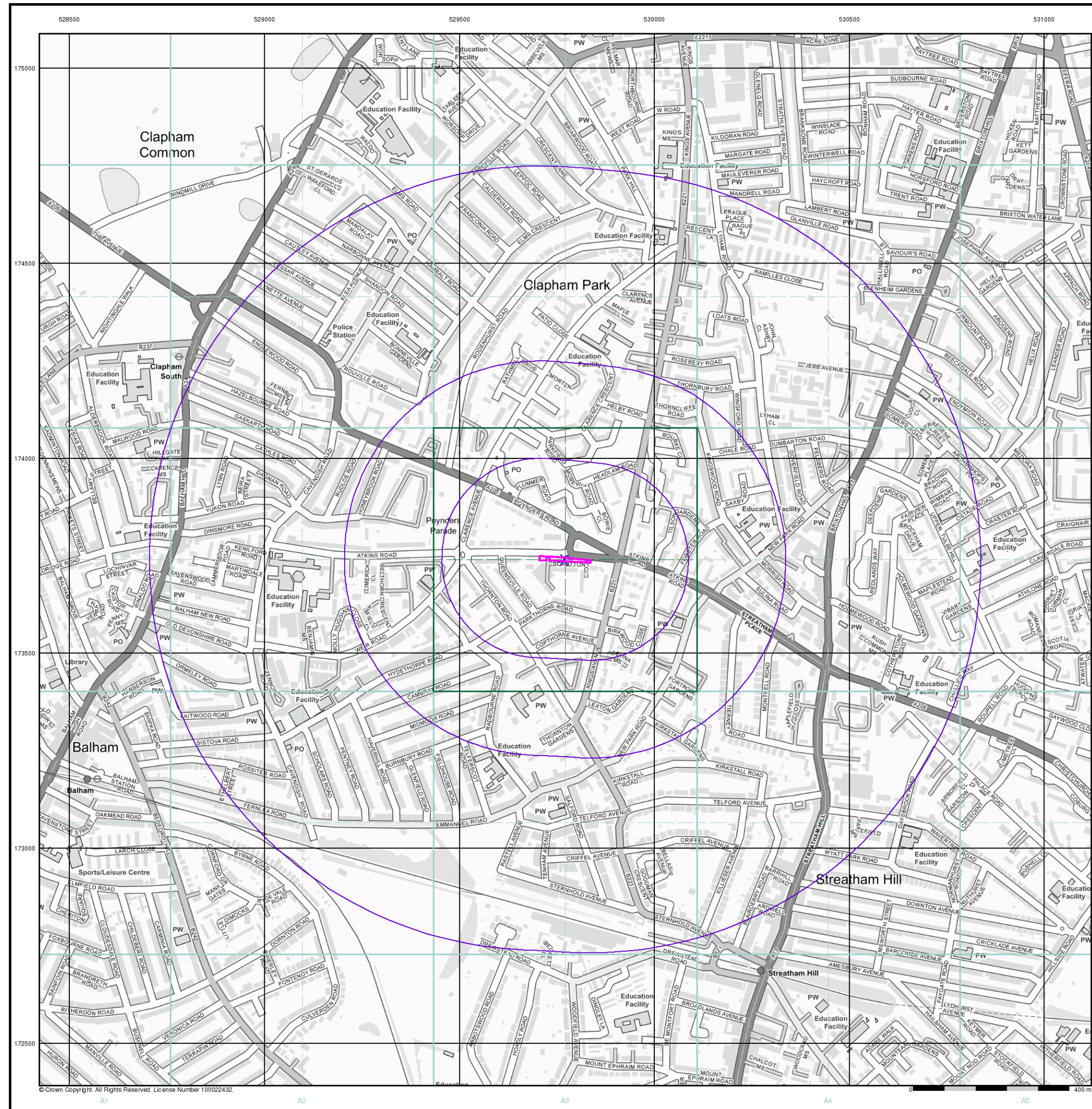
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Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details

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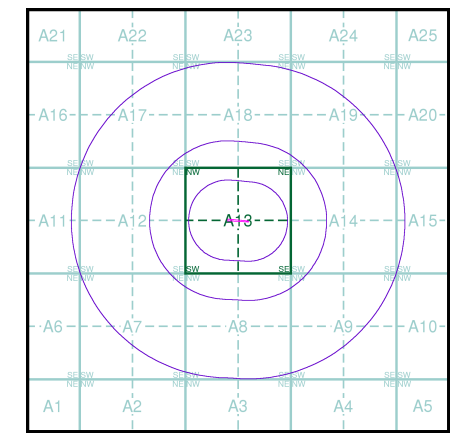
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A

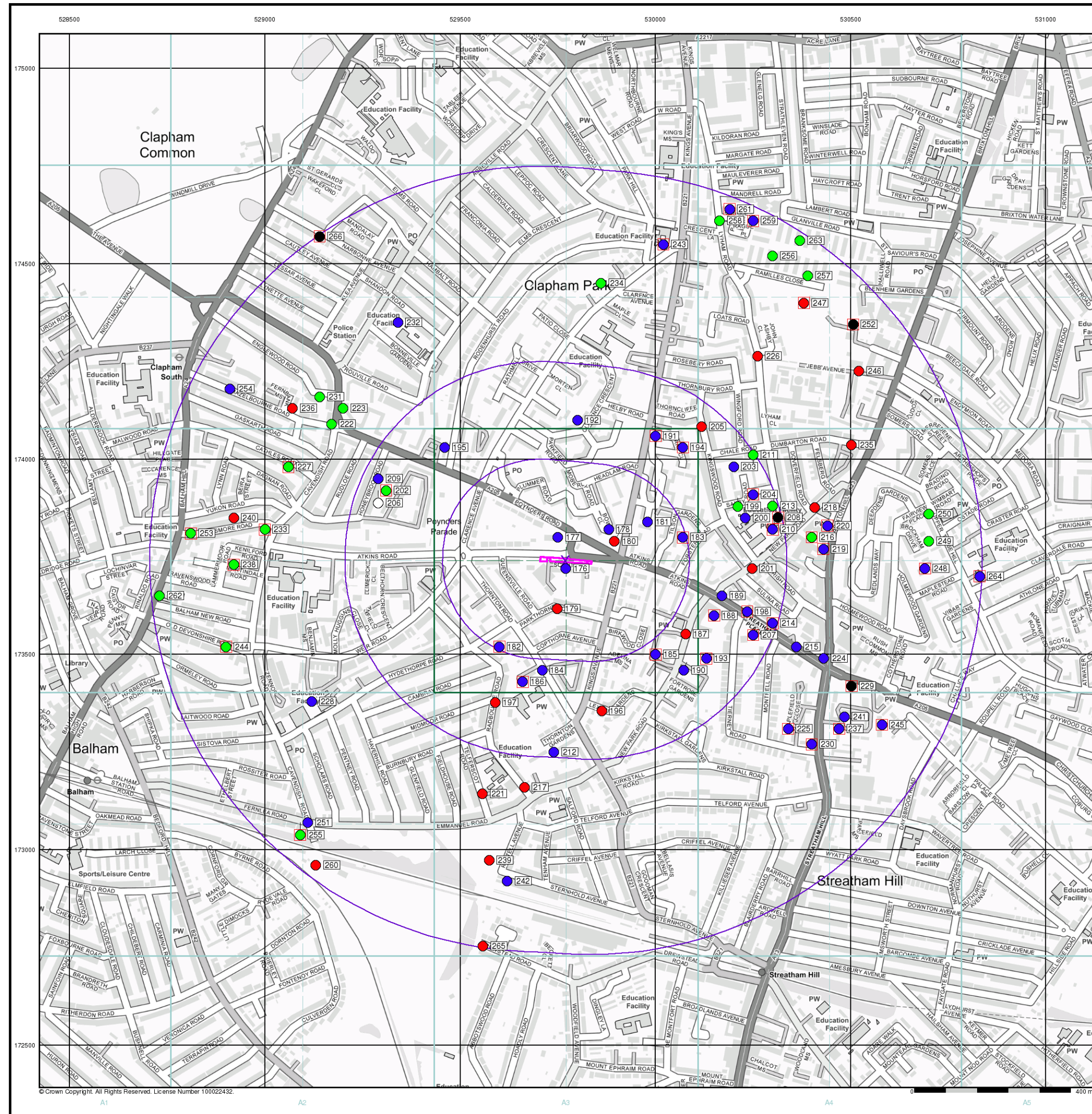


Order Details

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Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details

, 17, Scrutton Close, London, SW12 0AW



General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

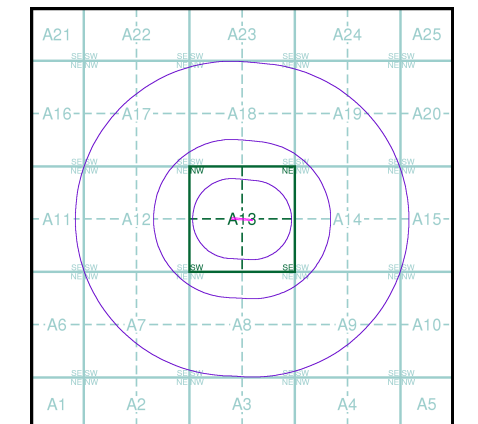
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A

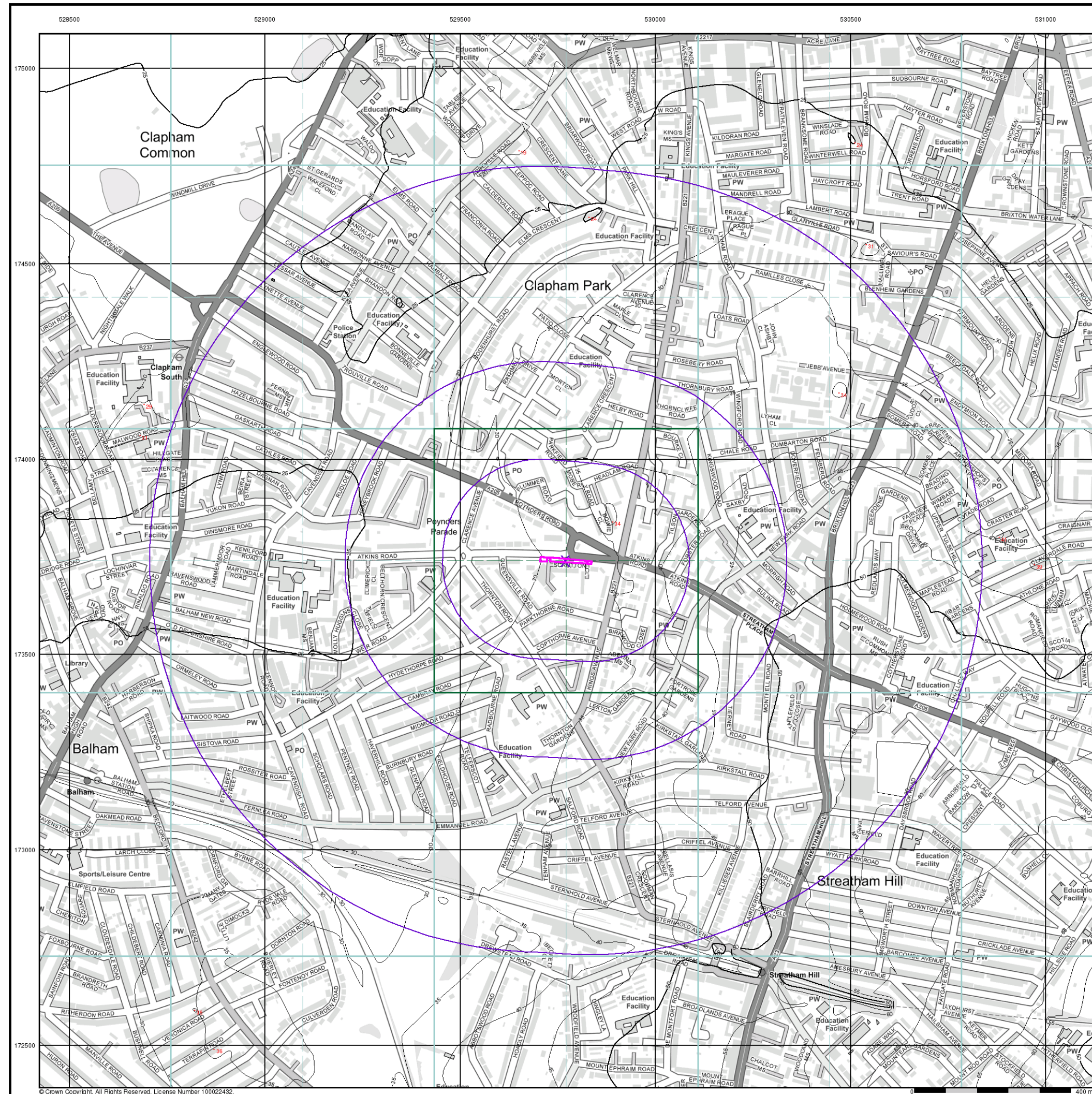


Order Details

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Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

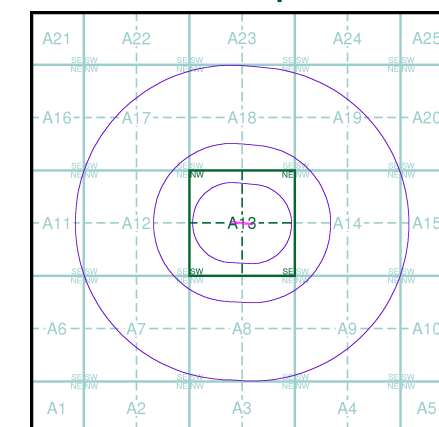
OS Water Network Data

- | | |
|--------------|-------------------------|
| Canal | Drain |
| Reservoir | Other |
| Foreshore | Lake |
| Marsh | Transfer |
| Tidal River | Lock Or Flight Of Locks |
| Inland River | Sea |

Contours (height in meters)

- Standard Contour 105 100 95
- Master Contour
- Spot Height 167.3
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



Order Details

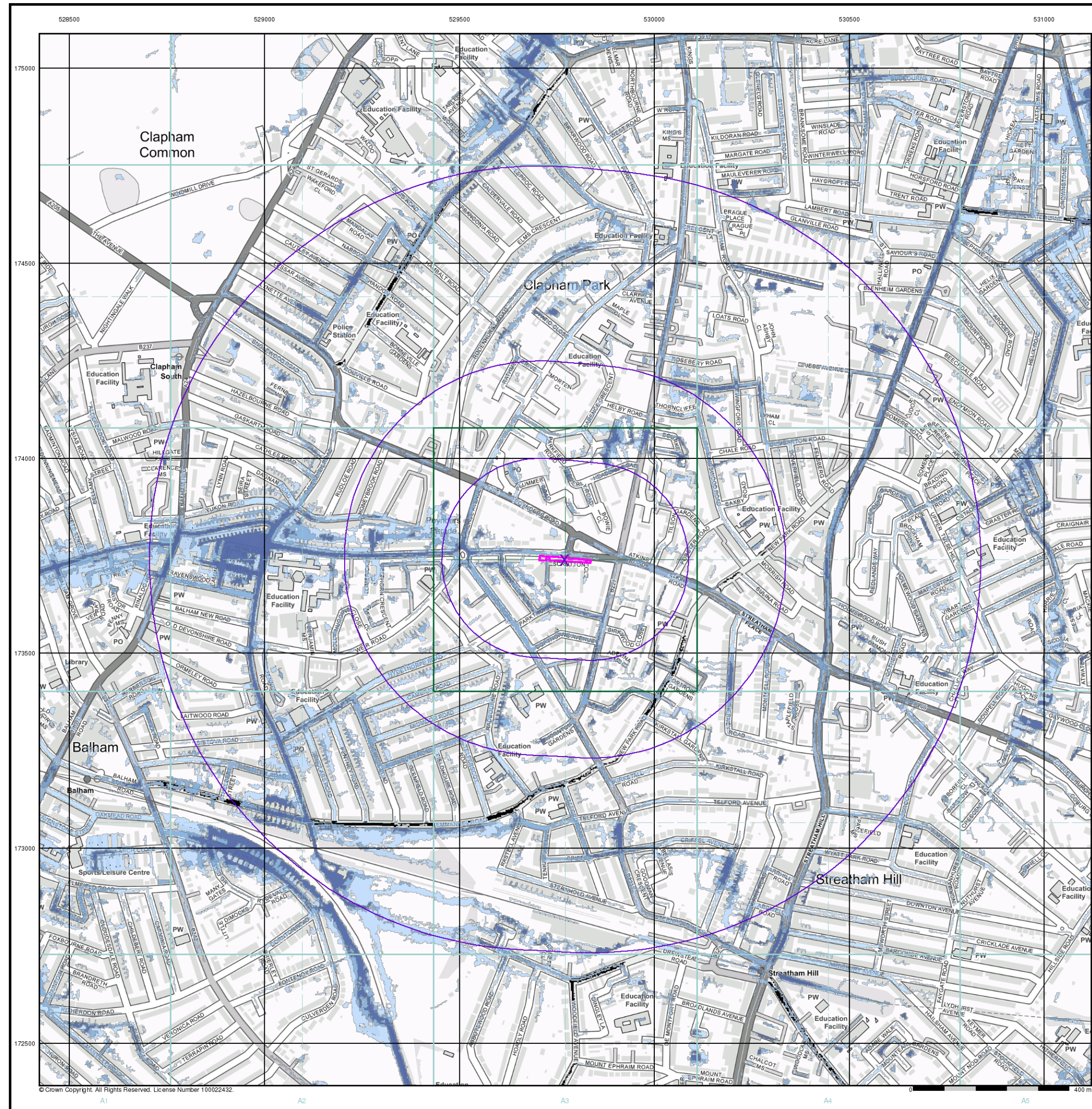
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Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Risk of Flooding from Surface Water

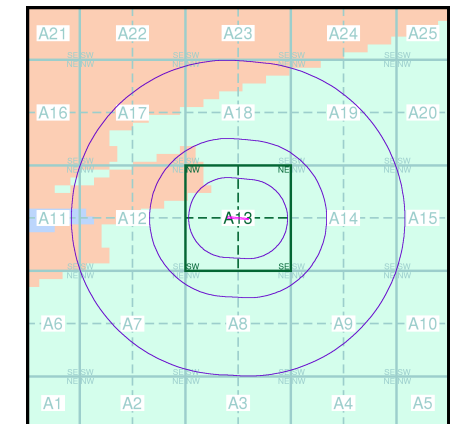
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EANRW Suitability Map - Slice A



Order Details

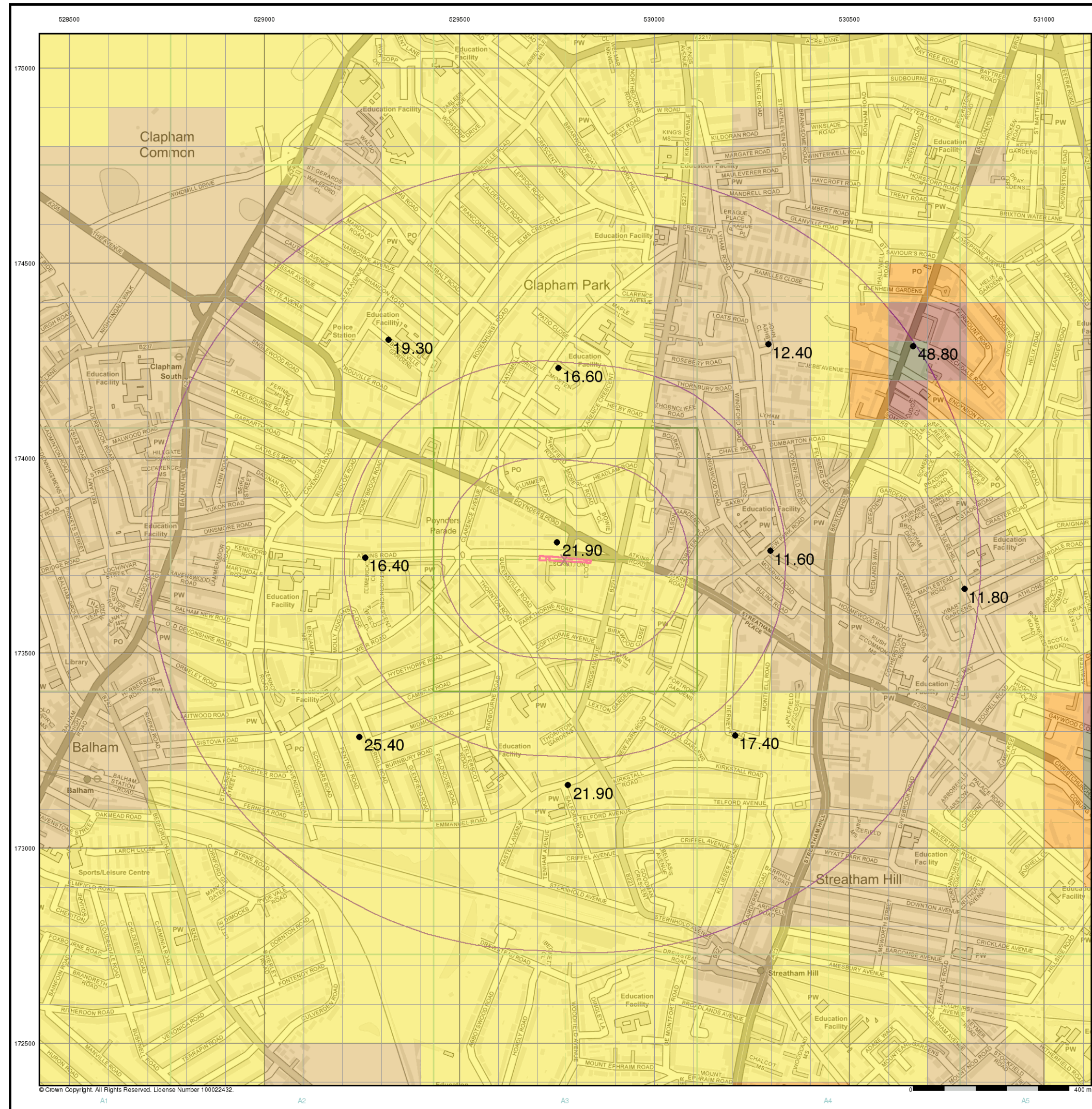
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Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details

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General

Specified Site Specified Buffer(s) Bearing Reference Point

Urban Soil Chemistry Arsenic

BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Arsenic Concentrations mg/kg

< 15
15 - 25
25 - 35
35 - 45
45 - 60
60 - 120
> 120

Urban Soil Chemistry Arsenic - Slice A

Order Details

Order Details:	193642086_1_1
Customer Ref:	14021871
National Grid Reference:	529770, 173740
Slice:	A
Site Area (Ha)	0.11
Search Buffer (m)	1000

Site Details

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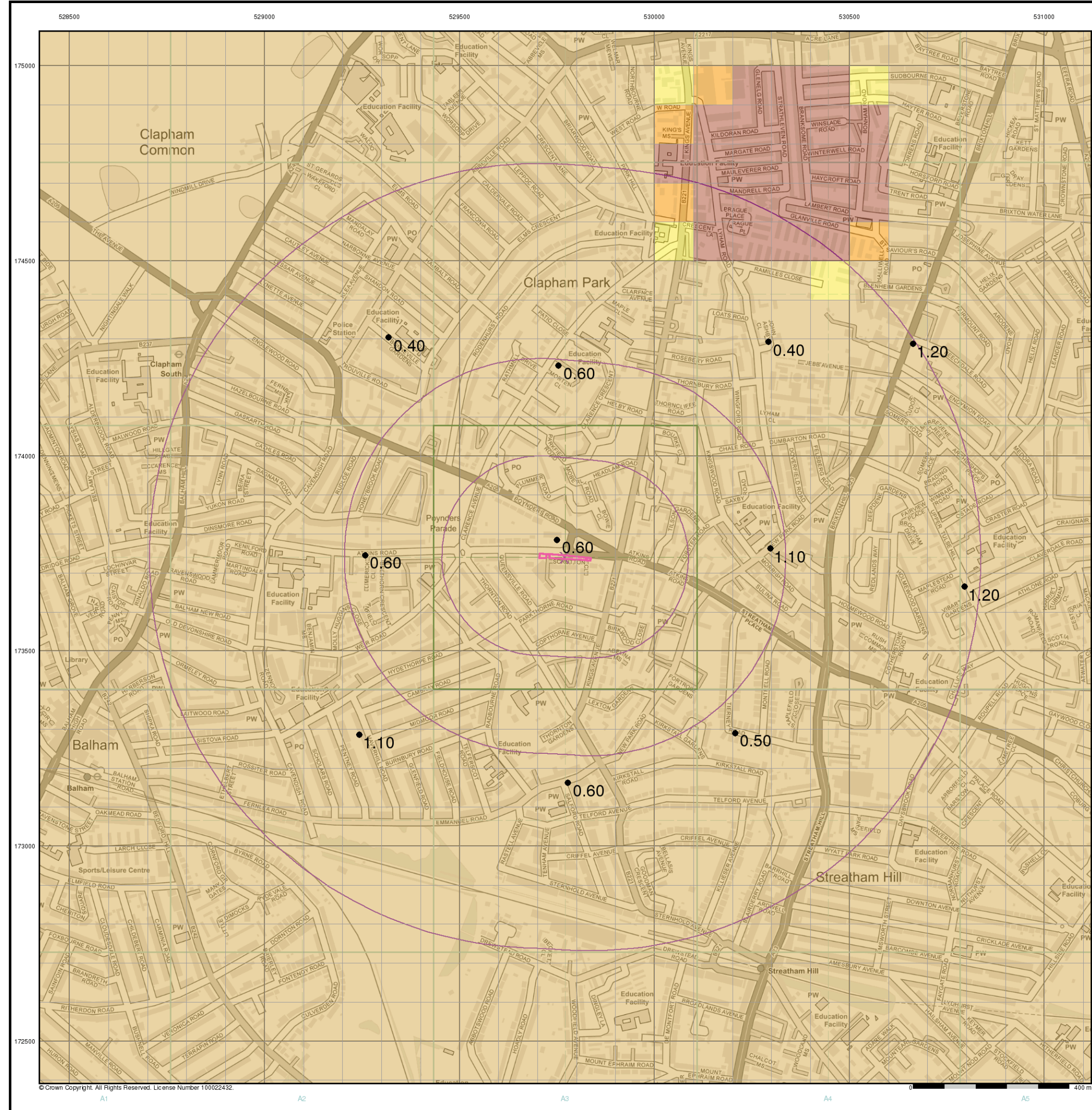
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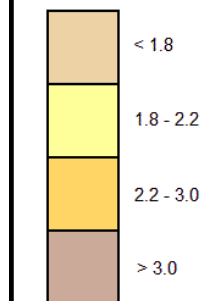
General

Specified Site Specified Buffer(s) Bearing Reference Point

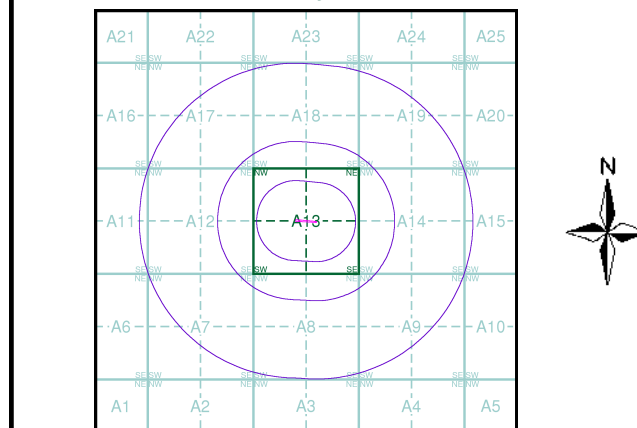
Urban Soil Chemistry Cadmium

BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Cadmium Concentrations mg/kg



Urban Soil Chemistry Cadmium - Slice A

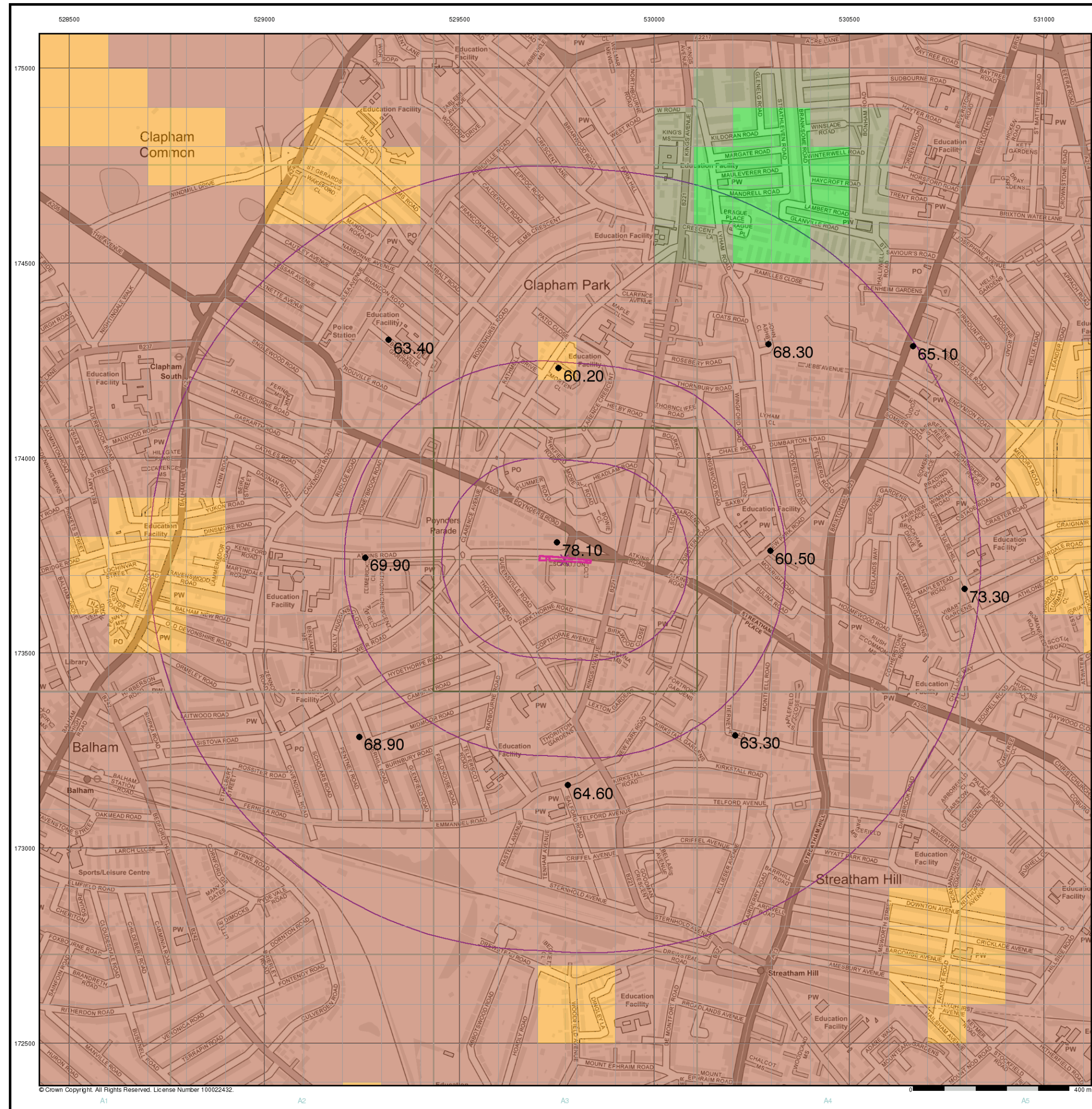


Order Details

Order Details: 193642086_1_1
Customer Ref: 14021871
National Grid Reference: 529770, 173740
Slice: A
Site Area (Ha): 0.11
Search Buffer (m): 1000

Site Details

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General

● Specified Site ● Specified Buffer(s) X Bearing Reference Point

Urban Soil Chemistry Chromium

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Chromium Concentrations mg/kg

< 20
20 - 40
40 - 60
60 - 90
90 - 120
120 - 180
> 180

Urban Soil Chemistry Chromium - Slice A

Order Details

Order Details:	193642086_1_1
Customer Ref:	14021871
National Grid Reference:	529770, 173740
Slice:	A
Site Area (Ha)	0.11
Search Buffer (m)	1000

Site Details

, 17, Scrutton Close, London, SW12 0AW

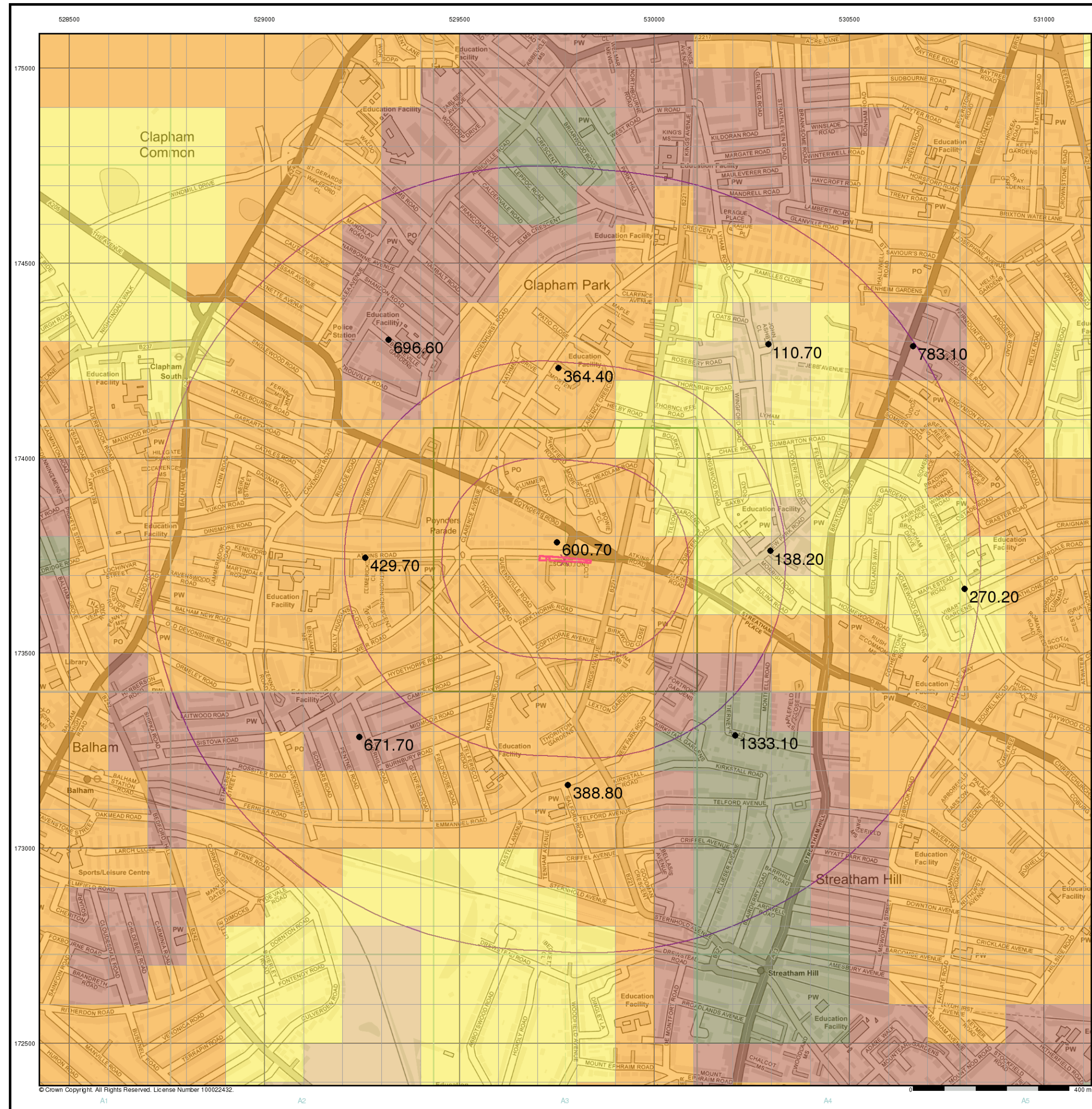
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General

● Specified Site ● Specified Buffer(s) X Bearing Reference Point

Urban Soil Chemistry Lead

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Lead Concentrations mg/kg

< 150
150 - 300
300 - 600
600 - 900
> 900

Urban Soil Chemistry Lead - Slice A

Order Details

Order Details:	193642086_1_1
Customer Ref:	14021871
National Grid Reference:	529770, 173740
Slice:	A
Site Area (Ha)	0.11
Search Buffer (m)	1000

Site Details

, 17, Scrutton Close, London, SW12 0AW

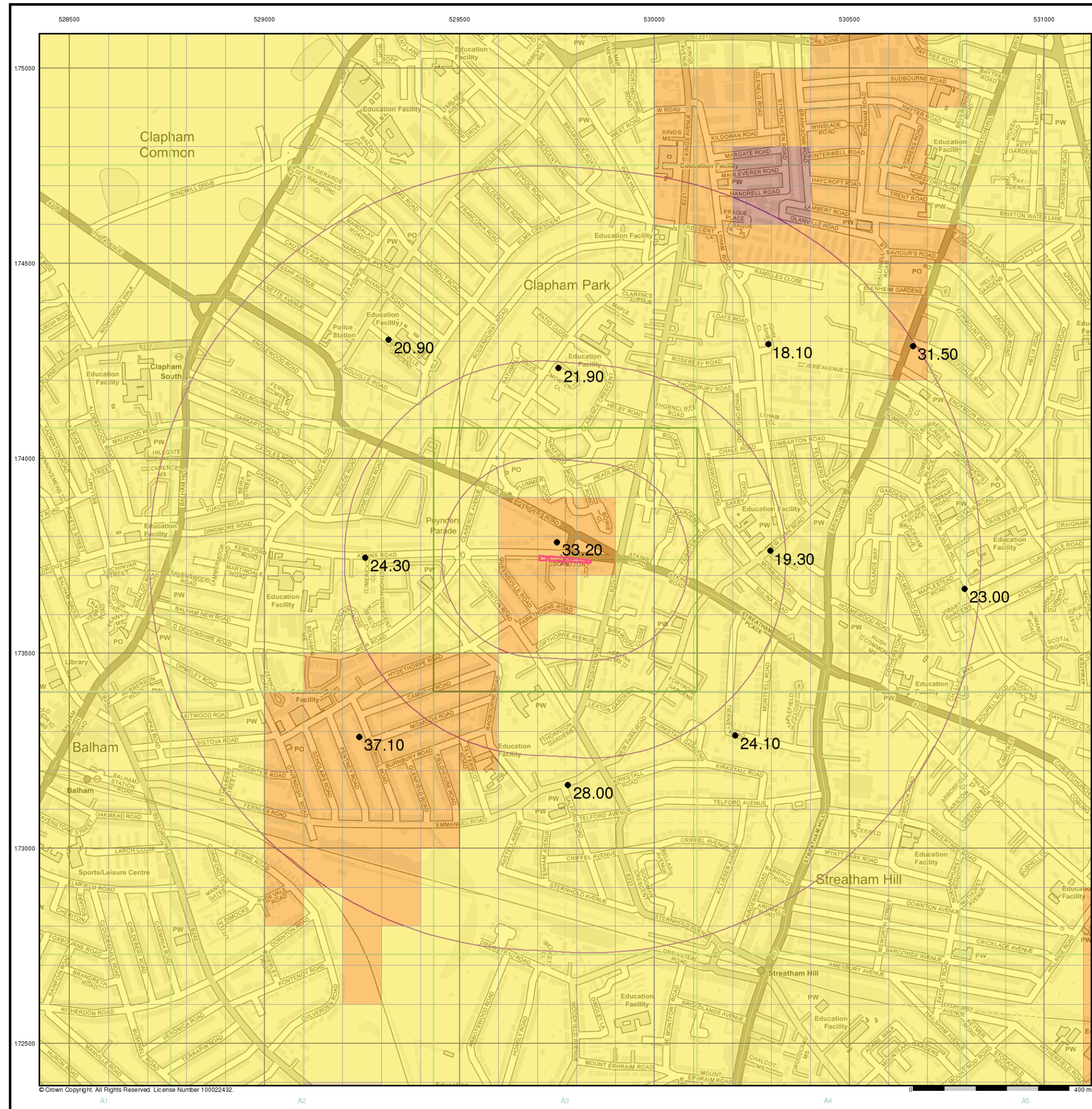
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General

Specified Site Specified Buffer(s) Bearing Reference Point

Urban Soil Chemistry Nickel

BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Nickel Concentrations mg/kg

< 15
15 - 30
30 - 45
45 - 60
60 - 80
80 - 100
> 100

Urban Soil Chemistry Nickel - Slice A

Order Details

Order Details:	193642086_1_1
Customer Ref:	14021871
National Grid Reference:	529770, 173740
Slice:	A
Site Area (Ha)	0.11
Search Buffer (m)	1000

Site Details

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APPENDIX C

Zetica UXO Map and Pre-Desk Study Assessment

Pre-Desk Study Assessment

Site:	Atkins Road, Lambeth, London
Client:	Arcadis
Contact:	Rimjhim Singh
Date:	29 th January 2019
Pre-WWI Military Activity on or Affecting the Site	None identified.
WWI Military Activity on or Affecting the Site	None identified.
WWI Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: <ul style="list-style-type: none"> ■ Industry important to the war effort, including engineering works. ■ Military barracks. ■ Transport infrastructure and public utilities. ■ Anti-aircraft (AA) guns.
WWI Bombing	None identified on the Site.
Interwar Military Activity on or Affecting the Site	None identified.
WWII Military Activity on or Affecting the Site	None identified.
WWII Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: <ul style="list-style-type: none"> ■ Industry important to the war effort, including aircraft manufacturing and engineering works. ■ Military barracks and camps. ■ Transport infrastructure and public utilities. ■ AA and anti-invasion defences.
WWII Bombing Decoys (within 5km of Site)	None identified.
WWII Bombing	During WWII the Site was located in the Municipal Borough (MB) of Wandsworth which officially recorded 1,480 No. High Explosive (HE) bombs with a bombing density of 162.5 bombs per hectares (ha). Readily available records have been found to indicate that several HE bombs fell in close proximity to the Site.
Post-WWII Military Activity on or Affecting the Site	None identified.
Recommendation	It is recommended that a detailed desk study is commissioned to assess, and potentially zone, the Unexploded Ordnance (UXO) hazard level on the Site.

This summary is based on a cursory review of readily available records. Caution is advised if you plan to action work based on this summary.

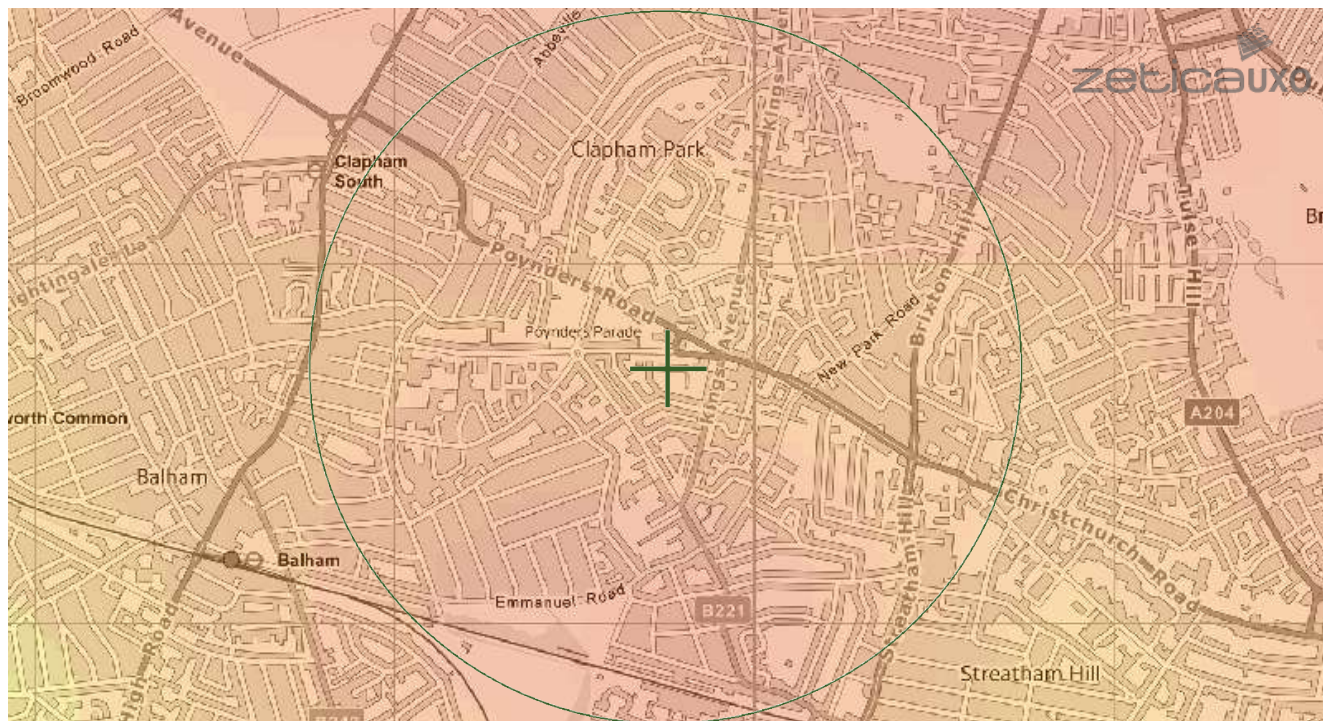
It should be noted that where a potentially significant source of UXO hazard has been identified on the Site, the requirement for a detailed desk study and risk assessment has been confirmed and no further research will be undertaken at this stage. It is possible that further in-depth research as part of a detailed UXO desk study and risk assessment may identify other potential sources of UXO hazard on the Site.

UNEXPLODED BOMB RISK MAP



SITE LOCATION

Location: SW12 0AW,
Map Centre: 529765,173713



LEGEND

London Bomb Risk



How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

Relative UXB risk across London

The relative risk for the London area is established by plotting the recorded bombing densities.

These are represented as counts of high explosive bombs in km2 area. The areas coloured green represent a record of less than 10 bombs per km2.

Compared to other areas of the UK, this still represents a significant density. However, this is much lower than parts of Central London, where the red colouration indicates in excess of 150 bombs falling per km2, representing a very significant bombing density.

What do I do if my site is in a moderate or high density area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites with a moderate or high bombing density.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: +44 (0) 1993 886682

email: uxo@zetica.com

web: www.zeticauxo.com

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

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It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

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