PHASE I GEOENVIRONMENTAL SITE ASSESSMENT

Site:	Buzz Bingo, Manchester
References:	18-376-R1-1
Date:	24 November 2025
Client:	Kellen Homes Limited



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QUALITY ASSURANCE

Report references	18-376-R1-1

REV REF	DESCRIPTION	DATE
01	First issue	21st October 2025

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EXECUTIVE SUMMARY

SITE DESCRIPTION AND HISTORY

Site Address	Buzz Bingo, Kirkmanshulme Lane, Manchester, M18 7BA
Grid Reference	E 387762, N 396230
Site Area	2.09 Ha
Proposed Development	Kellen Homes Ltd intends to construct a low-rise residential development comprising a combination of low-rise dwellings and apartment blocks, with associated gardens, estate roads and infrastructure.
Current Site Use	The subject site is an irregular-shaped parcel of land located east of Belle Vue, Manchester, and is currently occupied by a disused bingo hall, two hardstanding car parks, and localised landscaping. The bingo hall is located in the northwestern corner of the site. The car parks occupy the northeastern and southwestern corners of the site. The southwest car park (MCC Land) is bordered by a 1.5—2.0 m high metal fence, separating it from the rest of the site (land proposed for redevelopment by Kellen Homes). The south of the site is occupied by an access road from Kirkmanshulme Lane. A row of storage containers is located along the western site boundary. An area of landscaping comprising grasses, low shrubs and semi-mature to mature trees, is present along the northern boundary. Additionally, a grassed embankment is present between the northern boundary and the hardstand area, sloping downhill to the south. Sporadic semi-mature and mature trees are present along the eastern, western and southern boundary, with a more densely vegetated area along the southwest boundary to the MCC parcel. Sapling trees and scrub vegetation are noted to be growing through former surface drainage grids and cracks/areas of poorly conditioned hardstanding across the central and eastern areas.
Site History	Historical mapping suggests the site was formerly agricultural land c. 1848, comprising three fields split by tree-lined field boundaries and two ponds. By 1893, the site was excavated and recorded as a boating lake as part of the Belle Vue Zoological Gardens. A clock tower was recorded within the boating lake in c. 1923 and c. 1961 a miniature railway was noted through the south and southwest of the site. By c. 1978, the boating lake was infilled with a bowling alley constructed in the northwest. The site layout has remained largely unchanged since circa 1978, with only minor changes occurring with the extent of the car park in the northeast.

ENVIRONMENTAL SETTING

Geology	**Superficial Geology**	Glacial Till – Diamicton (CLAY, SAND, SILT, GRAVEL).
	Solid Geology	Chester Formation – SANDSTONE.
	Faults	There are no faults identified within a 250 m radius of the site.

Geomorphology	Based on the historical development recorded on-site, the site in its current condition is not representative of natural geomorphology. It is likely that extensive Made Ground fill deposits were used to infill the boating lake and create a site-level plateau before the development of the bowling alley and car parks. Made Ground fill may have also been used when there were minor changes to the soft-standing landscaped areas on-site between c. 1978 and c. 2003.
Hydrogeology	The site is underlain by a secondary undifferentiated superficial aquifer and a principal bedrock aquifer in the bedrock. The site is not located within Groundwater Source Protection Zone or a Drinking Water Safeguard Zone. In addition, there are no active groundwater, surface water, or potable abstraction points within a 2 km radius of the site.
Hydrology	There are no watercourses within 50 m of the subject site. The site is situated in Flood Risk Zone 1, and, as such, is considered to have a very low risk of fluvial flooding each year. There are localised areas subject to a low (0.1 – 1%) to high (>3.3%) risk of surface water flooding each year. The Groundsure report states there is a moderate-high risk of groundwater flooding at the site.
Utility Locations	A formal utilities survey has not been provided to E3P for review; however, multiple service indicators have been noted during the desk study. These include lampposts/CCTV cameras, cable boxes, manhole covers, surface water drains, and ground scarring within the site boundary. Directly outside the northern site boundary, a marker peg, an electrical pylon, and overhead cables have been noted.
Landfill Sites and Waste Sites	There are no active landfills within a 2 km radius of the site boundary, there is, however, one historical landfill recorded by the EA within 250 m of the site. There are no active licensed waste sites within a 2 km radius, and no historic waste sites within a 250 m radius of the site. No Waste Exemptions or Environmental Permits have been identified in the environmental database for the site.
Radon	The BGS report records indicates the site is situated in an area where less than 1% of homes are above the "Action Level". Therefore, full radon protective measures are not necessary for the construction of new dwellings or extensions, and as such, no further assessment is required.
Unexploded Ordnance	The site is situated within a Moderate Risk UXO area, with munition storage and military use recorded on the adjacent site. A detailed UXO risk assessment should be undertaken to confirm the hazard level on site.
Hazardous Installations	No hazardous installations precluding the redevelopment of the site have been identified.

PRELIMINARY CONTAMINATED LAND ASSESSMENT

Potential Contamination Sources	The site was agricultural before the development of the boating lake in circa 1893, that was subsequently infilled; therefore, this area of the site may comprise Made Ground fill deposits. Made Ground may be a potential source of heavy metals, TPHs, PAHs, and ACMs. There is an additional minor potential source of heavy metals, TPHs, and PAHs from the miniature railway. Off-site sources of potential contamination include the tramway, unspecified tanks, electrical substations/pylons, and a speedway stadium all within 100m of the site. These uses are a potential source of TPH, PAH, heavy metals, PCB and SVOCs.

Human Health Risk Assessment	Deep Made Ground is anticipated site wide and could pose a potential source of non-volatile contamination. It is likely that areas of proposed soft standing will require clean cover systems to sever the contamination pathway and mitigate any risk to future end users. Low risk associated with off-site historical industrial land uses due to the low mobility of the contaminates identified and presence of low permeability superficial deposits in wider area that will significantly reduce migration potential. An intrusive investigation and assessment are required to determine the full extent of Made Ground and identify if any contamination is present.
Controlled Waters Risk Assessment	Made Ground deposits associated with historical development are a potential source of mobile contamination. However, there are no surface water features within influencing distance of the site, and although the site is underlain by a principal aquifer, the underlying low permeability deposits will limit vertical migration and protect the underlying aquifer. As such, the risk to controlled water An intrusive investigation will be required to assess ground conditions and composition, groundwater levels, and levels of any mobile contamination on-site.
Ground Gas Risk Assessment	Deep Made Ground deposits associated with historical infilling of the lake may be potential sources of ground gas. The accumulation of ground gases in confined spaces (dwellings) presents future risks to the proposed residential developments and future site users. It is recommended that an intrusive investigation in conjunction with a period of ground gas monitoring is completed to determine the gas regime for the development.
Potable Water Infrastructure	Hydrocarbon compounds may be present in concentrations exceeding PE thresholds. An intrusive investigation, including a water pipeline risk assessment is recommended to assess appropriate water pipeline classification for the proposed development.

PRELIMINARY GEOTECHNICAL ASSESSMENT

Initial Geotechnical Assessment	Based on the desk-study information, the following geotechnical assessment has been made: • It is likely there will be deep Made Ground fill deposits across the entire site. Histroic upfill has been completed to an unknown specification. An investigation will be required to assess these fill deposits and undertake in-situ geotechnical testing to determine the potential foundation solution for plots in these areas, however, it is likely an engineered foundation will be required across the site. • Existing buildings will require demolition, with all relict foundations grubbing out before the proposed development's construction. • Two ponds were noted on historical mapping within the site boundary prior to the construction of the boating lake. These will presumably have been drained and dug out during construction of the lake; however, they are potential sources of alluvial deposits, silts and possible organic peat deposits. • The retaining wall across the northern boundary should be considered in any proposed designs. • Where cohesive soils are present within the vicinity of trees, foundations may require local deepening or heave precautions.

	• Minor cut-and-fill operations may be required to create a level development platform to construct low-rise residential development.
Brine Workings	The site is not located within the Cheshire Brine Compensation Board District, and as such no further assessment is required.
Coal Mining	Very Low Risk.
Civil And Structural Constraints	Any foundations associated with the disused bingo hall will require grubbing out prior to the redevelopment of the site. Areas of deep Made Ground and residential plots within influencing distance of trees will require deeper foundations. As the site is likely underlain by granular Made Ground shoring mis likely to b required to open excavations.
Abnormal Foundations	Areas of deep Made Ground may require engineered deeper foundations.

RECOMMENDATIONS

Based on the findings of the geoenvironmental site assessment and the various conclusions drawn, the following additional works are recommended to be completed in due course.

- Intrusive investigation to determine the chemical and geotechnical properties of the underlying ground, refine the initial conceptual site model and provide recommendations for whether any future mitigation or remedial works are required.
- Detailed UXO risk assessment.
- An asbestos survey is required prior to any demolition of the building on-site.

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DRAWING LIST

18-375-001 - Site Location Plan

18-375-002 - Proposed Development Plan

18-375-003 - Historical Features Plan

18-375-004 - Site Features Plan

1. INTRODUCTION

1.1. BACKGROUND

Kellen Homes Ltd (the client) commissioned E3P to undertake a Phase I Geoenvironmental Site Assessment at Buzz Bingo, Kirkmanshulme Lane, Manchester, M18 7BA.

This report is required to determine potential contaminated land and geotechnical liabilities for the proposed site redevelopment.

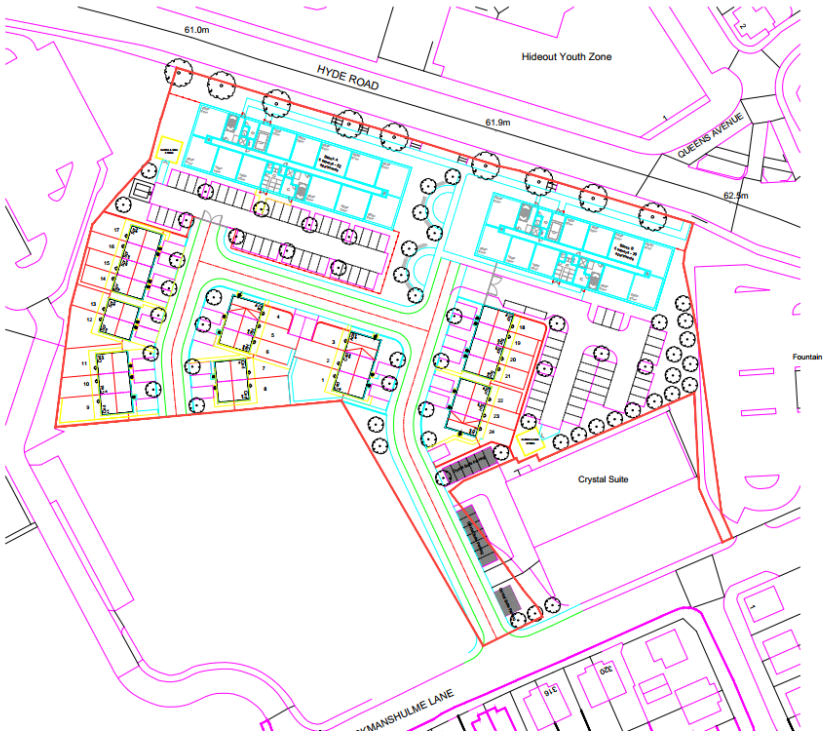
The adjacent parcel to the immediate southwest of the site boundary (referred to as the Manchester City Council [MMC] parcel) has been included in the searches and the site summary. It is understood that the proposed development only pertains to the redline boundary shown in Figure 1 at this stage; however, it is understood that the adjacent MCC parcel may be part of a future land and redevelopment purchase.

1.2. PROPOSED DEVELOPMENT

Kellen Homes Ltd intends to construct a low-rise residential development comprising a combination of low-rise dwellings and apartment blocks, with associated gardens, estate roads and infrastructure. Drawing 18-376-002 (APPENDIX IV) identifies the proposed development layout.

A snapshot of the proposed development layout is indicated in Figure 1.1.

Figure 1.1 Proposed Development Layout



1.3. OBJECTIVES

The objectives of the geoenvironmental investigation are as follows:

- Review historical plans, geology, hydrogeology, site sensitivity, floodplain issues, mining records and any local authority information available to complete a desk study in line with Environment Agency (EA) document Land Contamination: Risk Management (LCRM) (updated June 2025).
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site concerning the site's future use and in relation to off-site receptors.
- Assess the desk study information and, where possible, provide preliminary recommendations concerning foundations, pavement construction, general geotechnical issues, floor slabs and coal mining-related issues.
- Provide recommendations regarding future works required.

1.4. SCOPE OF WORKS

The scope of works includes the elements included in Table 1.1.

Table 1.1 Scope of Works

Preliminary Reporting	Phase 1 Geoenvironmental Assessment
Assessment and Reporting	Factual and interpretative reporting Contamination risk assessment and conceptual site model Geotechnical assessment and interpretation

1.5. LIMITATIONS

The limitations of this report are presented in APPENDIX I.

1.6. RISK CLASSIFICATION

The description of risk classification and the likely action required as set out in CIRIA C552 are included in APPENDIX III.

1.7. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed or with whom an assignment has been agreed. Should any third party wish to use or rely upon the report's contents, written approval must be sought from E3P; a charge may be levied against such consent.

2. SITE DESCRIPTION

2.1. SITE DETAILS

Table 2.1 Site Details

Site Address	Buzz Bingo, Kirkmanshulme Lane, Manchester, M18 7BA.
National Grid Reference	E 387762, N 396230
Site Area	2.09 Ha

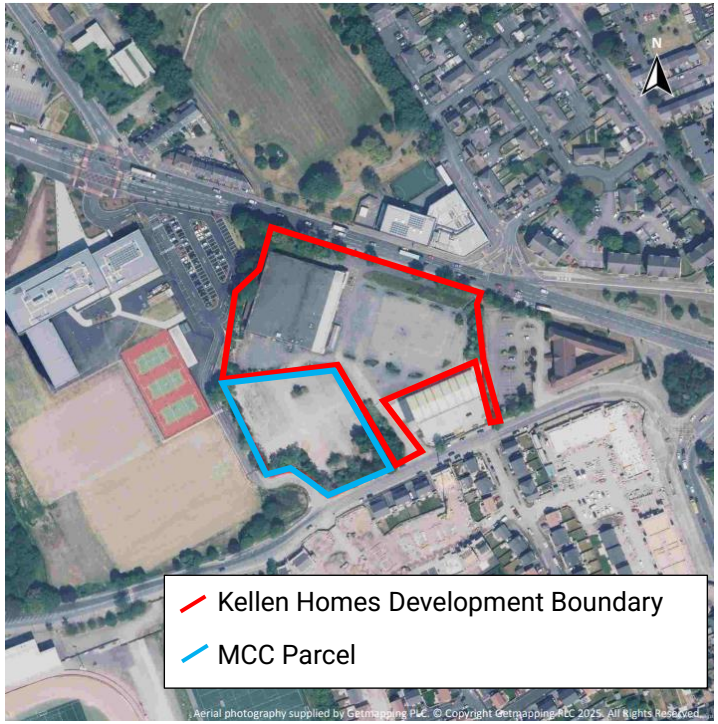
The Glossary presented in APPENDIX II defines all acronyms used within the report.

A site location map is presented in APPENDIX IV as Drawing 18-376-001.

2.2. CURRENT SITE USE

The full details of the site in its current form are included in Table 2.2.

Table 2.2 Site Description

FEATURE	DESCRIPTION	PHOTOGRAPHIC RECORD
Occupancy/Use	The subject site is an irregular-shaped parcel of land located east of Belle Vue, Manchester, and is currently occupied by a disused bingo hall, two hardstanding car parks, and localised landscaping. The bingo hall occupies the northwestern corner of the site. The car parks occupy the northeastern and southwestern corners of the site. The southwest car park (MCC Land) is bordered by a 1.5-2m high metal fence, separating it from the rest of the site (Land proposed for redevelopment by Kellen Homes). The south of the site is occupied by an access road from Kirkmanshulme Lane. A row of storage containers is located along the western site boundary. An area of landscaping, comprising grasses, low shrubs and semi mature-mature trees is present along the northern boundary. Additionally, an grassed embankment is present between the northern boundary and hardstand area, sloping downhill to the south. Sporadic semi mature and mature trees are present along the eastern, western and southern boundary, with a more densely vegetated area along the southwest boundary to the MCC parcel. Sapling trees and scrub vegetation is noted to be growing through former surface drainage grids and cracks/areas of poor conditioned hardstanding across the central and eastern areas.	

FEATURE	DESCRIPTION	PHOTOGRAPHIC RECORD
Structures	The site is predominantly hardstanding of varying conditions (poor to moderate). The only structure relates to the disused bingo hall in the northwest. This is a two-storey brick structure with metal clad front (east of building). The roof structure is hard to see from ground level but appears to be flat. Available aerial images online show areas of pooling water and vegetation on the roof, as such, it is likely to be in poor condition. An extension to the bingo hall is present along the southeast of the structure, comprising a temporary metal and plastic clad steel framed structure bolted to the ground. Additional temporary structures include the former bingo sign in the northwest and raised brick planters located in front of the bingo hall access in the northwest.	
Retaining Structures	The north of the site is slightly elevated (circa 1—1.5 m) in comparison to the adjacent Hyde Road. A brick retaining wall runs along the northern boundary, with six pedestrian access points (concrete steps) cut across the length of the northern boundary. Within the site boundary the elevation profile slopes southerly from the northern boundary towards the structure and hardstanding areas.	

FEATURE	DESCRIPTION	PHOTOGRAPHIC RECORD
Access	Vehicle access to the north of the site can be gained via Kirkmanshulme Lane to the south of the site. There is a 2.1m vehicle height restriction barrier located across the access road. At the time of writing, concrete blockades have been placed across the access to prevent public access Vehicle access to the southwestern car park (MCC Land) cannot be confirmed at this stage. There are six pedestrian access points to the north of the site via Hyde Road. These have no restrictions, fences, or barriers.	
Slope	There is a slope present along the north of the site comprising a grassed embankment that rises in gradient between the northeast car park and the footpath along Hyde Road. The wider site is generally topographically flat, with a gentle slope to the south towards Kirkmanshulme Lane.	

FEATURE	DESCRIPTION	PHOTOGRAPHIC RECORD
Vegetation/Ecology	Localised areas of landscaping have been identified around the site boundaries, consisting of grasses, self-seeded vegetation, bushes, and semi-mature trees. In the north of the site, a soft-cover landscaped embankment is situated, consisting of grasses and self-seeded vegetation. Across the two car park areas are intervals of overgrown grasses, self-seeded vegetation, and shrubbery –growing in areas of poorly conditioned hardstanding and former surface water drainage infrastructure.	
Hazardous Material and Storage	**Bulk Storage** No above ground storage tanks (ASTs) or underground storage tanks (USTs) were observed during the preliminary desk study. Due to the previous use of the site, it is unlikely that hazardous materials storage will have occurred there. **Non-Bulk Storage** No other evidence of hazardous material storage has been observed during the preliminary desk study.	
Asbestos-Containing Material (ACM)	No evidence of ACM has been identified during the preliminary desk study. A pre-demolition asbestos survey will be required within all existing buildings within the site boundary.	

FEATURE	DESCRIPTION	PHOTOGRAPHIC RECORD
Waste Storage	No hazardous waste storage was observed during the preliminary desk study. Evidence of possible general waste storage areas e.g. skips have been noted in the west of the site from recent aerial images.	
Utilities	A formal utilities survey has not been provided to E3P for review; however, multiple service indicators have been noted during the desk study. These include lampposts/CCTV cameras, cable boxes, manhole covers, surface water drains, ground scarring, an electrical pylon, and overhead cables have been noted within the site boundary.	

2.3. SURROUNDING LAND USE

The immediate surrounding area land uses are summarised in Table 2.3.

Table 2.3 Surrounding Land Uses

DIRECTION	DESCRIPTION
North	School, Youth Centre, Gorton Park, Residential
East	Car Park, Lodge/Hotel
South	Wedding Event Suite, Residential, Multi-Use Sports Pitch
West	Co-op Academy Belle Vue, Residential

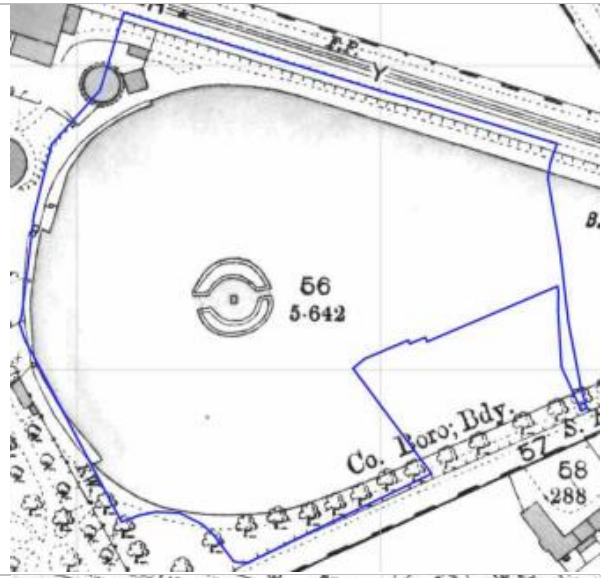
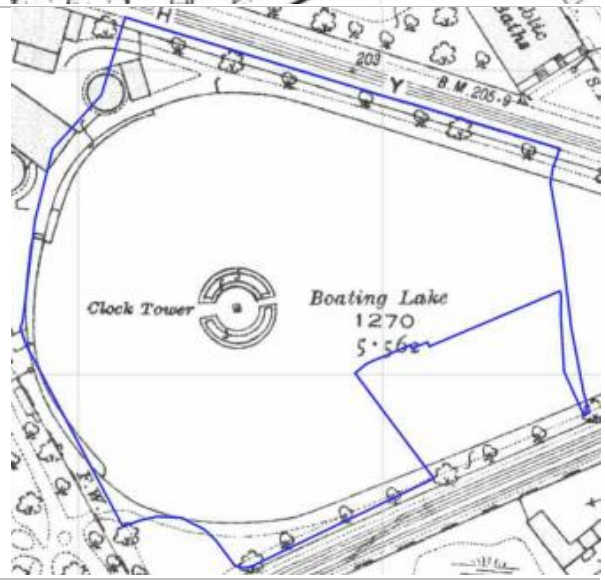
3. SITE HISTORY

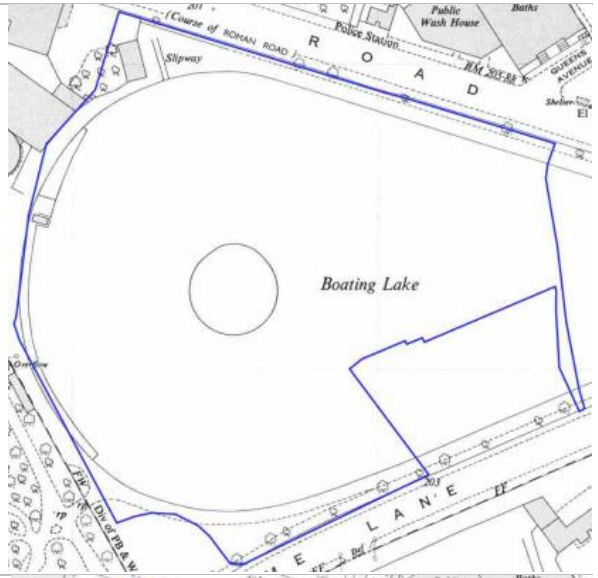
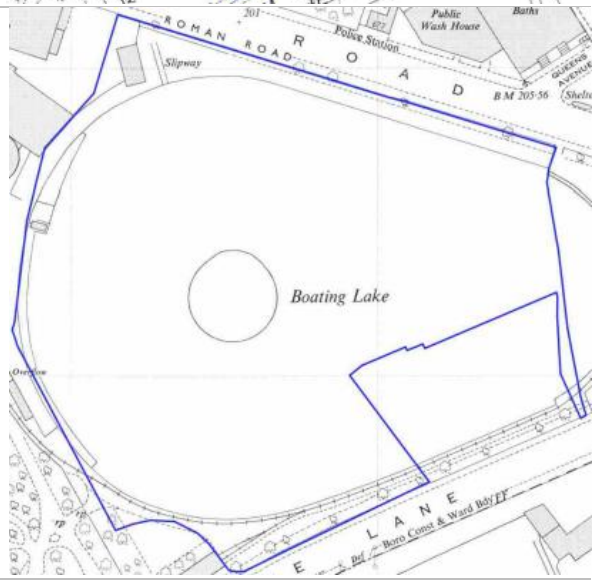
3.1. ON-SITE HISTORICAL DEVELOPMENT

A review of historical mapping and historical aerial imagery pertinent to the site is summarised in Table 3.1. In addition, historical site features are presented in Drawing No 18-376-003 in APPENDIX IV.

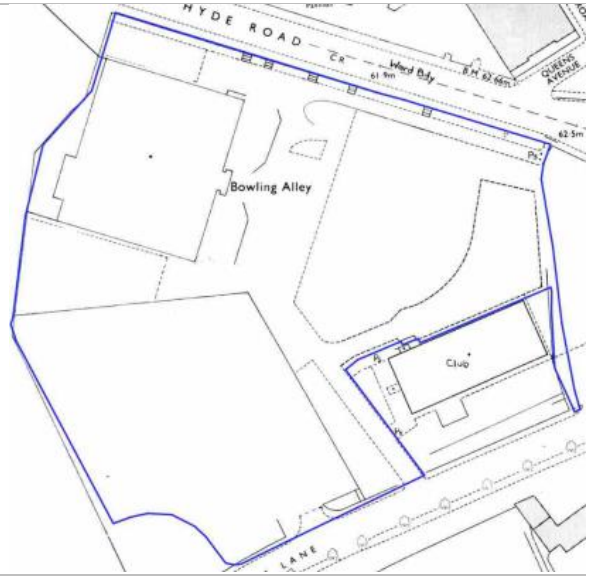
Table 3.1 Historical Development

MAP EDITION	DISCUSSION	MAP EXCERPT
1848 – 1849 **1:10,560**	The site comprises three fields, presumably utilised for agricultural purposes. A tree lined field boundary is noted within the site boundary, transecting through the centre of the site from the western site boundary in a roughly west-east direction, then changing to a north-south direction to the southern site boundary. A track or small road is noted to transect through the east of the site in a roughly north-south direction. Two ponds are noted within the site boundary, one in the centre-west along the field boundary, and one in the southeastern corner of the site. A County and Civil Parish Boundary is noted through the western section of the site. A large road is marked across the north of the site, likely to be a mapping error and relating to the current Hyde Road, adjacent to the northern boundary of the site.	

MAP EDITION	DISCUSSION	MAP EXCERPT
1893 **1:2,500**	The site is no longer made up of agricultural fields, and all previously mentioned site features are no longer noted within the site boundary. A lake is noted within the centre of the site boundary and occupies the majority of the site, associated with the Belle Vue Zoological Gardens. The lake features a circular structure in its centre. The south of the site is occupied by a row of trees. Three structures are present in the northwest corner, likely utilised by the Belle Vue Zoological Gardens.	
1922 **1:2,500**	The lake is marked as a Boating Lake. The circular feature noted in the centre of the boating lake is now noted as a clock tower. The most northerly outbuilding in the northwest corner has been removed, assumed demolished. No other significant compositional changes have been identified.	

MAP EDITION	DISCUSSION	MAP EXCERPT
1949 - 1951 **1:2,500**	The circular structure in the northwestern corner of the site is no longer marked, and a landscaped area is noted in its place. Additionally, in the northwestern corner of the lake a slipway has been noted with an overflow noted along the western boundary. The central feature is no longer recorded as a clocktower, and is now marked as a complete circle at the centre of the site, potentially signifying a small island feature within the lake.	
1961 **1:2,500**	A miniature railway is noted in the southwest of the site, transecting from the western site boundary to the southeastern corner.	

MAP EDITION	DISCUSSION	MAP EXCERPT
1978 – 1982 **1:1,250**	The site is no longer utilised as a Boating Lake, and all previously mentioned site features are no longer noted within the site boundary. The lake is presumed to have been infilled given the absence of any depressions marked along the site boundaries. A rectangular structure is noted in the northwestern corner of the site, labelled as a Bowling Alley. A footpath and five sets of steps are noted along the northern site boundary. A set of posts are noted in the northeastern corner of the site. The south and eastern areas of the site comprise hardstanding, utilised as car parking (Section 3.4). Several features are noted across the centre and east of the site (solid lines), which, based on imagery in Section 3.4, are car park section barriers. Additionally, several features are noted with a dashed line in the west, northwest, east, and centre of the site, which, based on imagery in Section 3.4 are possible areas of vegetation.	

MAP EDITION	DISCUSSION	MAP EXCERPT
1989 – 1992 1:1,250	Two new boundaries are noted in the southwest of site. One transects from the western site boundary towards the centre of the site in a roughly west-east direction. This connects to a boundary transecting from the southern site boundary in a roughly north-south direction. Access features to the area in the southwest are noted along the southern site boundary. Areas of vegetation are noted in the centre-south, the northwest, the west, and the centre-north of the site. Only one of the previously noted small areas of vegetation in the centre-north of the site is still marked, with the other landscaping assumed to have been removed.	
2003 1:1,250	The bowling alley is now marked as a club and extensions to its external features have been noted along the east side of the building. The area of vegetation in the west of the site has been reduced in size, whereas the area of vegetation in the centre-south has been extended along the southern site boundary to the southwestern corner. The areas of vegetation in the centre-north of the site have been reduced in size, and now the parcel vegetation is marked to run towards the northeastern corner and continues down the eastern site boundary.	

MAP EDITION	DISCUSSION	MAP EXCERPT
	The access features marked along the southern site boundary for the southwest portion of the site are no longer marked. Two rectangular features are now marked in the southwest of the site, representative of landscaped areas within the hardstand.	
2009 **Aerial Imagery** **(Getmapping PLC)**	The northwest of the site is occupied by a square structure, with external features on its eastern side. The majority of the site is occupied by car parks and hardstanding surfaces. Car parks are observed in the southwest, west, centre, and east of the site. A small roundabout feature is observed in the centre of the site, and an access road is observed in the centre-south. Vegetation is seen along all site boundaries, with additional parcels in the north and centre-south of the site. Smaller sections of vegetation are seen across the carparks, at the end of the rows of parking spaces. A footpath crosses the northern parcel of vegetation from the northeastern corner of the site. The temporary mobile NHS units (noted in Section 3.3) are observed in the east of the site. Except for these units, the present day configuration is identified.	

MAP EDITION	DISCUSSION	MAP EXCERPT
2022 **Aerial Imagery** **(Getmapping PLC)**	The NHS mobile units are no longer observed in the east of the site. Storage containers are observed in the west of the site. A new structure is observed along the western site boundary in the southwestern car park. It is likely these are temporary welfare units for the construction work on the neighbouring site. No other identifiable changes have been noted within the site boundary.	

3.2. OFF-SITE HISTORICAL DEVELOPMENT

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 100 m radius of the site is summarised in Table 3.2.

Table 3.2 Surrounding Historical Development

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Miniature Railway Then: No longer marked	On-site	Pre 1961 – Pre 1978 1978 - Present	SW
Belle Vue Zoological Gardens with Unspecified Tanks Then: Belle Vue Leisure Park Then: No longer marked	>5m	Pre 1848 – Pre 1978 1978 – Pre 1989 1989 - Present	W
Tramway Then: No longer marked	>5m	Pre 1893 – Pre 1949 1949 - Present	N
Electric Pylon Then: No longer marked	15m	Pre 1949 – Pre 1961 1961 - Present	NE
Public Wash House Then: No longer marked	20m	Pre 1933 – Pre 1978 1978 - Present	N
Electrical Substation Then: No longer marked	30m	Pre 1978 – Pre 1989 1989 - Present	W
Public House Then: Hotel	70m	Pre 1893 –Pre 2000 Pre 2003 – Present	E
Electrical Substation Then: No longer marked	80m	Pre 1990 – Pre 2025 Present	W
Belle Vue Greyhound Racecourse Then: Greyhound and Speedway Stadium Then: Residential	80m	Pre 1933 – Pre 1989 1989 – Pre 2025 Present	S
Spice Mill Then: Unspecified Mill Then: No longer marked	90m	Pre 1933 – Pre 1961 1961 – Pre 1978 1978 - Present	NE

3.3. PLANNING HISTORY

E3P has reviewed online planning records held by Manchester City Council, and a summary of environmentally pertinent information obtained for the site is included in Table 3.3.

Table 3.3 Planning History

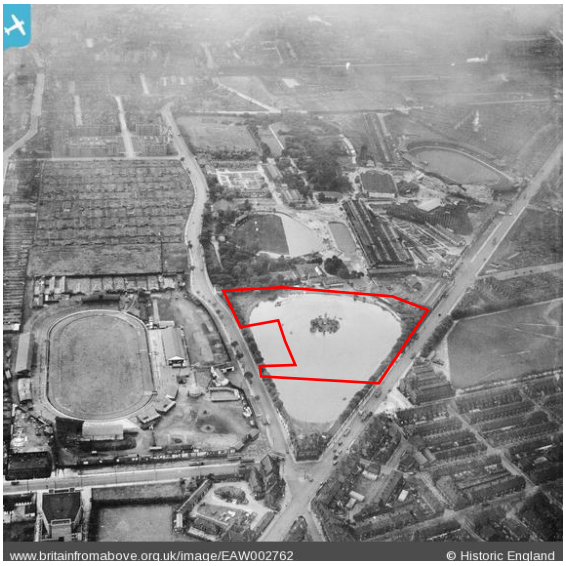
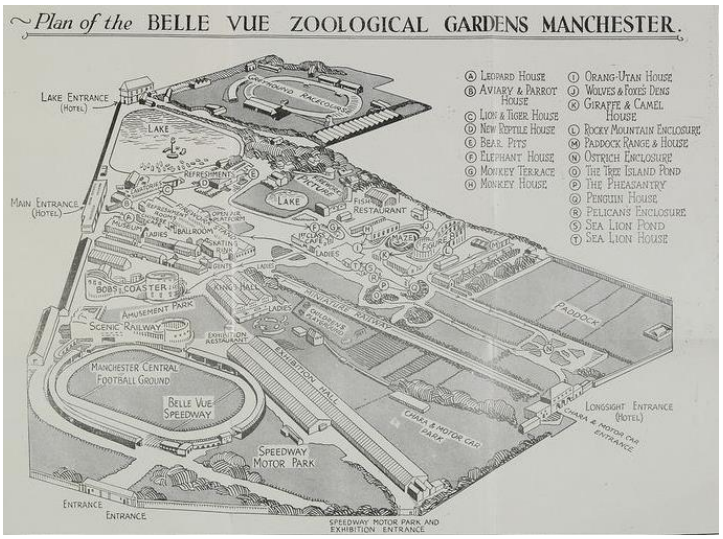
PLANNING REFERENCE	PLANNING TITLE	PERTINENT DOCUMENTS AND FINDINGS
109128/FO/2015/N2	Use of Gala Bingo car park for siting of mobile medical facilities with associated dedicated car parking for temporary period	From the Planning Permission Decision Document: • Condition 8: The removal of clinical and other waste materials shall be undertaken in accordance with the details set out with the planning application forms and email from Care UK. Email from Care UK: • The facility will incorporate internal power and water supplies and wastewater storage facilities. The wastewater storage facilities will be emptied at least once a day by a 'dirty' service vehicle which will also remove dirty laundry, utensils and general waste from the facility.

3.4. ANECDOTAL INFORMATION

A web-based search of the subject site has recovered the following photographs, courtesy of Britain From Above, Alchetron.com, Facebook, Mirrorpix, and Modern Mooch. The photos confirm the mapping records with uses as a boating lake, zoological gardens and bingo hall recorded.

Table 3.4 Summary of Anecdotal Information

Source of Photograph and Details	Photographic Excerpt
Britain From Above EPW017761 – 1927 Belle Vue Zoological Gardens	

Source of Photograph and Details	Photographic Excerpt
Britain From Above EAW002762 – 1946 Belle Vue Zoological Gardens, the Greyhound Stadium and Kirkmanshulme Lane	
Alchetron.com Map of the Belle Vue Zoological Gardens	
Manchester History Revisited, Facebook - 1965 Belle Vue Granada Bowl, from Kirkmanshulme Lane	

Source of Photograph and Details	Photographic Excerpt
Mirrorpix – June 1971 Exterior view of Belle Vue Granada Bowl	
Modern Mooch – May 2025 Granada Bowl Belle Vue	

3.5. PREVIOUS REPORTS

No previous site investigation reports have been provided to E3P for review.

4. ENVIRONMENTAL SETTING

4.1. GEOLOGY

The British Geological Survey (BGS) map (Sheet 085, Manchester) for the site (1:50,000, Solid and Drift editions) and online records indicate the area is underlain by the geological sequence presented in Table 4.1.

Table 4.1 Summary of Underlying Geology

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Superficial	Devensian Till	CLAY	Secondary Undifferentiated
Solid	Chester Sandstone Formation	SANDSTONE	Principal

E3P has reviewed the BGS database, which identified a borehole within a 150m radius of the site boundary, from which to compare the published geology above.

The borehole logs are summarised in Table 4.2 below.

Table 4.2 Summary of BGS Borehole Records

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
114m SE (SJ89NE1598)	70.19 m	0.00 – 0.49 m bgl	0.49 – 30.27 m bgl: CLAY	>30.27 m bgl: SANDSTONE

Given the site history as a boating lake and subsequent infilling of this feature, it is anticipated that deep Made Ground is present across the site.

The BGS mapping also identifies no faults within a 250 m radius of the site boundary.

4.2. HYDROGEOLOGY

The Groundsure report indicates that the site is not located within a groundwater source protection zone.

The Groundsure report has identified no active groundwater, surface water or potable abstractions within 2 km of the site. Two historical groundwater abstraction points have been identified within a 500 m radius of the site boundary.

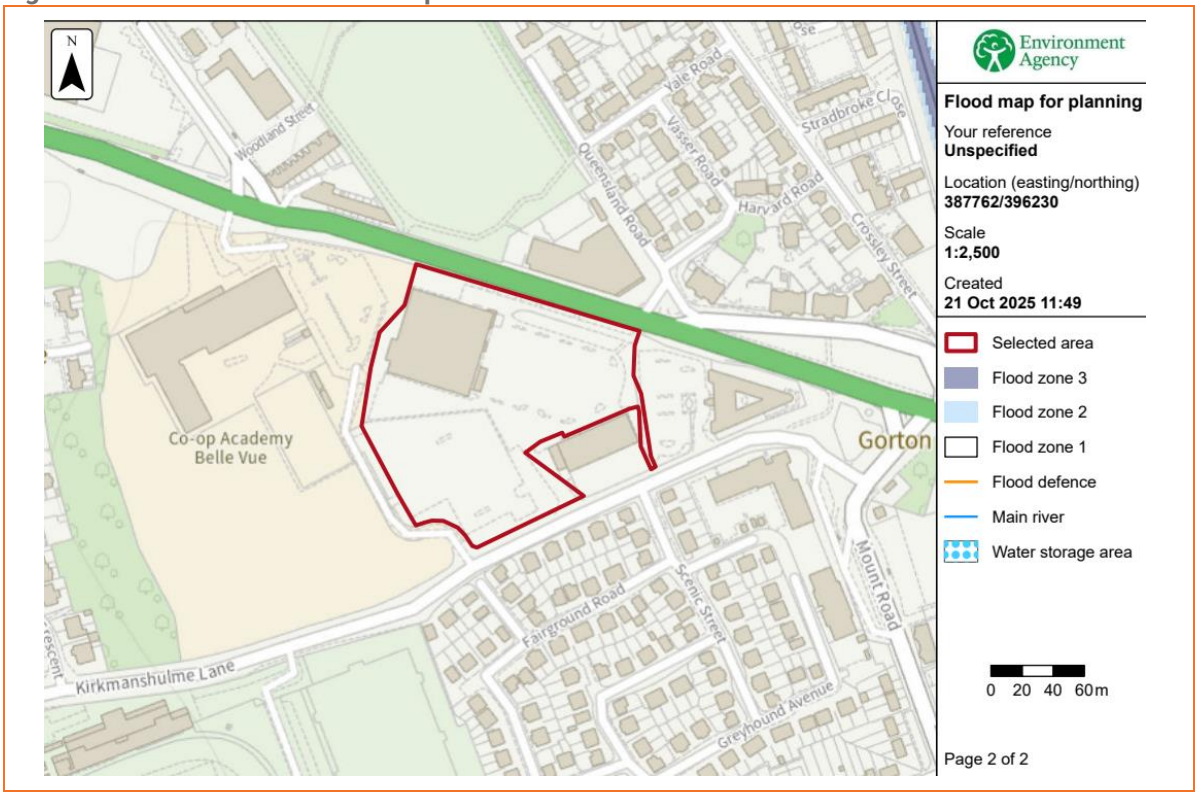
Historical mapping of the surrounding area shows surface watercourses flow in a south-westerly direction; therefore, it is likely that shallow groundwater, if present, will flow towards the southwest.

4.3. HYDROLOGY

The Groundsure report has identified no surface water features within a 50m radius of the site boundary.

The site is predominantly located within a currently defined "Flood Risk Zone 1", defined as land assessed as having less than 1 in 1,000 annual exceedance probability of river or sea flooding (<0.1%) and, as such, is considered to have a very low fluvial flooding each year. It is, however, worth noting that there is a risk of surface water flooding across the site. In addition, the Groundsure report states there is a moderate-high potential for groundwater flooding at the site. The Environment Agency (EA) Flood Map for Planning and Ambiental Risk Analytics Groundwater Flood Risk Map for the site are presented in Figure 4.1 and Figure 4.2.

Figure 4.1 EA Fluvial Flood Risk Map



Source – https://flood-map-for-planning .service.gov.uk

Figure 4.2 Groundwater Flood Risk Map



Source – Ambiental Risk Analytics

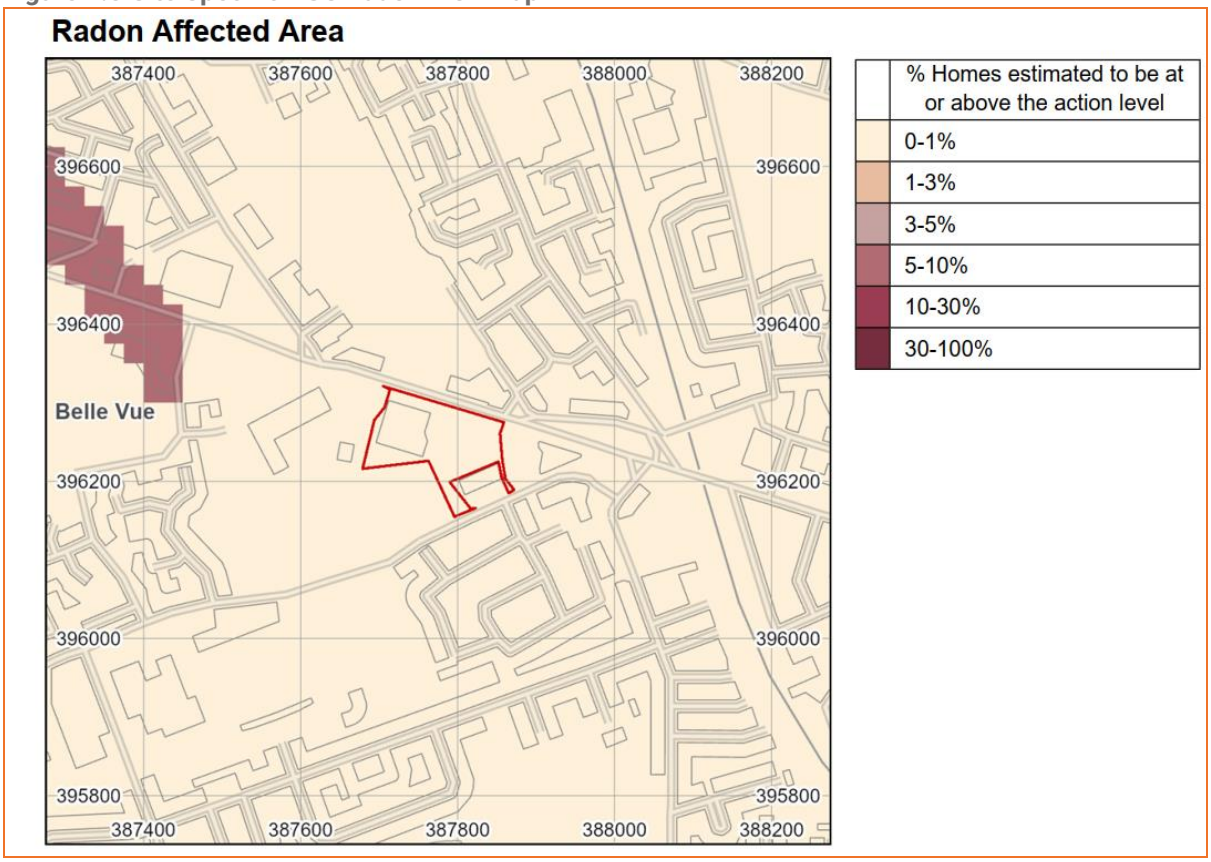
4.4. RADON RISK

UK radon maps record the site to fall in an area where the maximum radon potential is 5-10% of homes affected. As such, E3P obtained a site-specific radon report (Report ID: *GS_345202/63565)*.

The BGS report records indicates the site is situated in an area where less than 1% of homes are above the “Action Level”. Therefore, full radon protective measures are not necessary for the construction of new dwellings or extensions, and as such, no further assessment is required.

A snapshot of the BGS radon risk map is provided as Figure 4.3.

Figure 4.3 Site Specific BGS Radon Risk Map



4.5. LANDFILL SITES

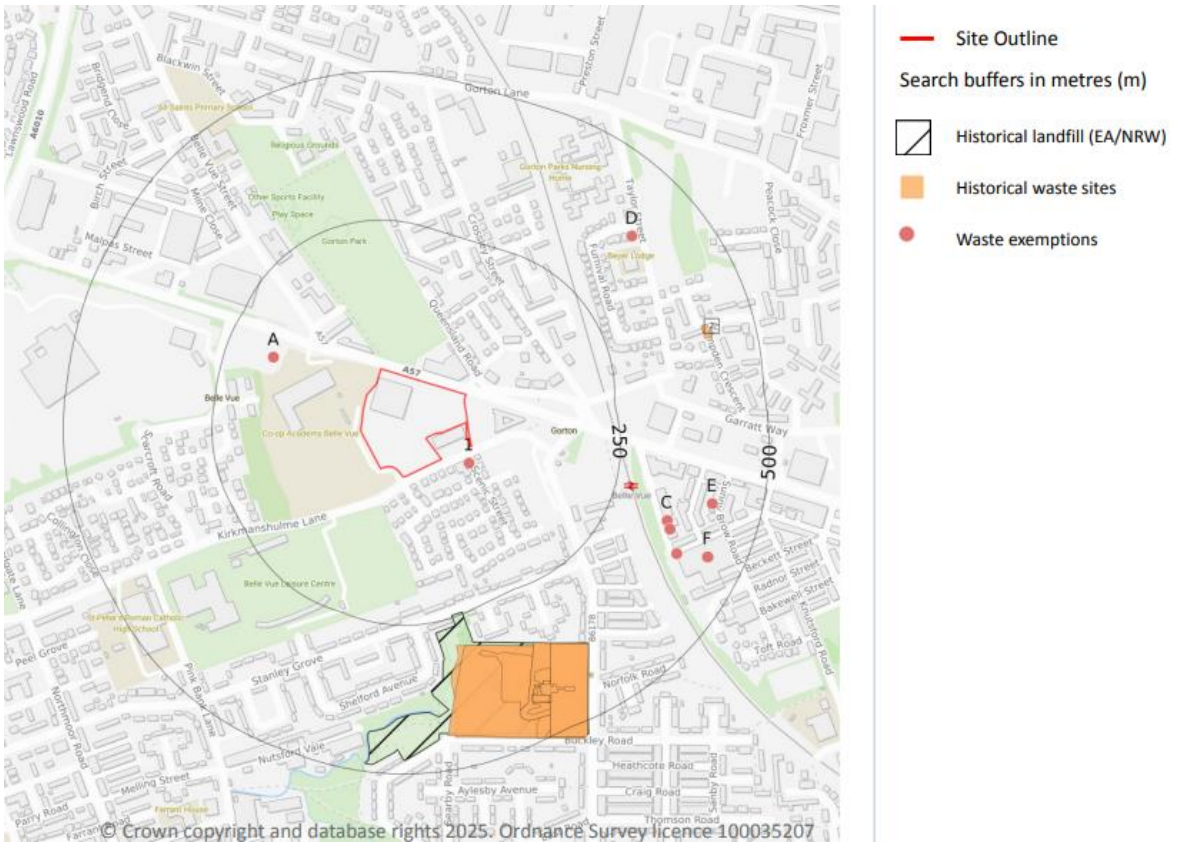
The Groundsure report identified no active landfills within a 2km radius of the site boundary. One historical landfill recorded by the EA has been identified within a 250m radius of the site boundary. A summary of landfill details is provided in Table 4.3.

Table 4.3 Licensed Landfills

LANDFILL NAME	OPERATING DATES	ACCEPTED WASTE	DISTANCE	DIRECTION
Mount Road Plant Site Annie Leigh Playing Fields, Greater Manchester	Unknown	Household	246 m	S

A screenshot of the mapping showing the location of waste sites and exemptions within 250m radius of the site is included in Figure 4.4.

Figure 4.4 Locations of Landfills



4.6. WASTE MANAGEMENT LICENSES AND ENVIRONMENTAL PERMITS

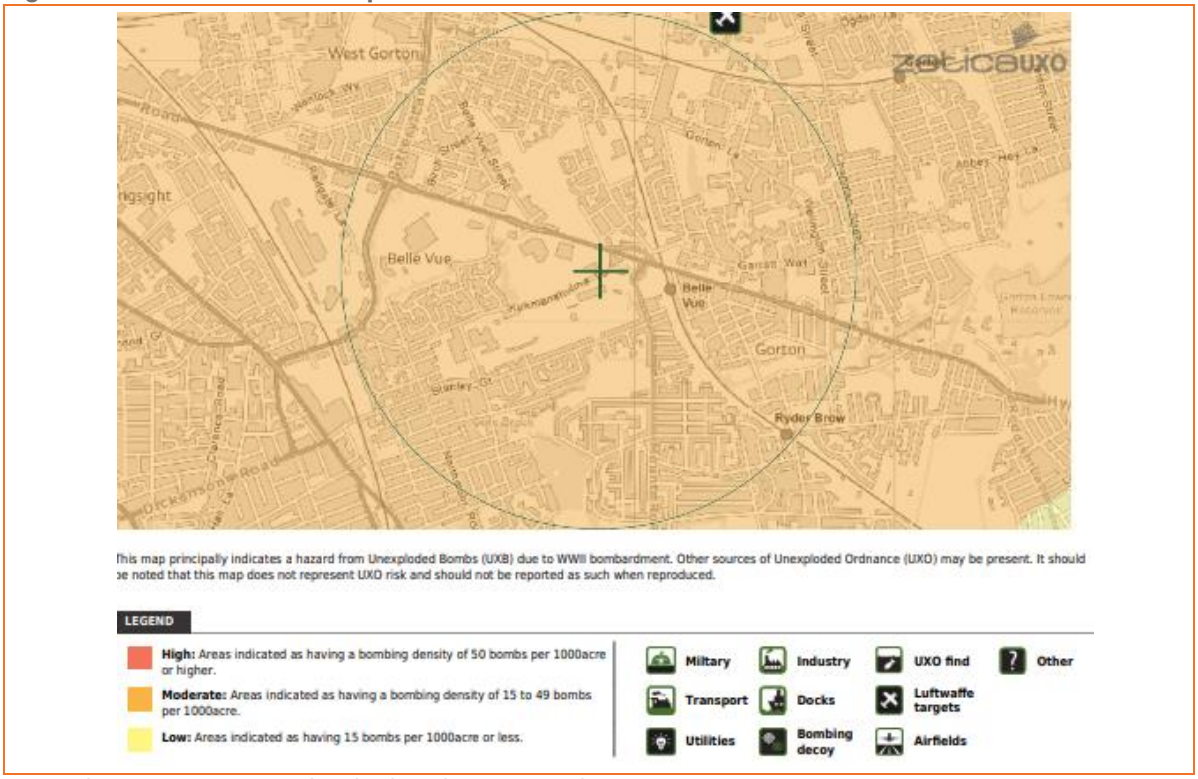
The Groundsure report identified no active licensed waste sites within a 2 km radius, and no historic waste sites within a 250m radius of the site.

No Waste Exemptions or Environmental Permits have been identified in the environmental database for the site.

4.7. UNEXPLODED ORDNANCE

The regional unexploded bomb risk map from Zetica (2014) indicates that the site is in an area at moderate risk from possible unexploded ordnance (UXO) resulting from the Second World War. The Zetica UXO Risk Map is presented in Figure 4.5.

Figure 4.5 Zetica UXO Risk Map



Source - https://zeticauxo.com/downloads-and-resources/risk-maps/

Due to the a moderate UXO rating E3P obtained a preliminary UXO desk study assessment from Zetica UXO, (report reference: PA025101), the pertinent points from this report are outlined below:

- During WWI, the Ministry of Munitions (MoM) requisitioned Belle Vue Gardens, encroaching on the Site, as a storage depot.
- During WWII, the military requisitioned several buildings at Belle Vue Gardens, in the vicinity of the Site. After WWII, they reverted to civilian use.
- Potential targets within approximately 5 km of the site include transport infrastructure, public utilities, munitions factories, aircraft manufacturing, chemical works, Alexandra Park Airfield, military establishments, military training areas and AA / anti-invasion defences.
- Readily available records indicate that several HE bombs fell in close proximity to the Site.
- No readily available records have been found indicating that the site was bombed.
- One bombing decoy located approximately 4.0 km southeast of the site
- A detailed desk study is recommended to assess, and potentially zone, the UXO hazard level on the site.

Review of available historic mapping shows that the site was upfilled to create the current development platform circa 1971, post World War II. Given the absence of any record of bombs strikes on site or in the immediate surrounding area, and upfill post WWII the UXO risk is somewhat reduced.

However, given the findings from the Zetica UXO preliminary assessment and presence of Military and MoM storage within the adjacent Belle Vue Gardens, a detailed UXO risk assessment is required to confirm the hazard level on site.

4.8. INDUSTRIAL LAND USES

The industrial land uses identified within a 100m radius of the site are summarised in Table 4.4.

Table 4.4 Industrial Land Uses

INDUSTRIAL LAND USE	DISTANCE	DIRECTION	STATUS
Miniature Railway	On-site	SW	Historic
Zoological Gardens	>5m	W	Historic
Tramway	>5m	N	Historic
Electric Pylon (Possible Transformer attached)	15m	NE	Historic
Public Wash House	20m	N	Historic
Electrical Substation	30m	W	Historic
Electrical Substation	80m	W	Historic
Greyhound and Speedway Stadium	80m	S	Historic
Spice Mills	90m	NE	Historic

4.9. SITE SENSITIVITY ASSESSMENT

The site is assessed to be located within a "Moderate" sensitivity setting, as discussed in Table 4.5.

Table 4.5 Site Sensitivity Assessment

SENSITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguarding Zone	The site is not located within a groundwater source protection zone or a drinking water safeguard zone.	Low
Distance to the closest groundwater abstraction point	The site is not located within 2km of any active groundwater, surface water or potable abstraction points.	Low
Aquifer classification in superficial drift deposits	Secondary Undifferentiated Aquifer is recorded in the superficial geology.	Low
Aquifer classification in bedrock	Principal Aquifer is recorded in the bedrock geology.	High
In the site underlain by low-permeability drift to depths in excess of 10 m?	The superficial geology underlying the site recorded in BGS mapping is Devensian Till, which likely consists of low-permeability CLAY, with bands of SAND, GRAVEL, and SILT. Data from a BGS borehole located 114m from the site boundary recorded CLAY from depths of 0.49 – 26.22m bgl. However, the site will be underlain by Made Ground from the infilling of the boating lake, and as such, it is difficult to confirm the site's geology at this stage.	Moderate/Low

SENSITIVITY PROFILE	DISCUSSION	RATING
Is the site located within 50 m of a surface watercourse?	The site is not located within 50 m of a surface watercourse.	Low
Sensitive land uses	Residential dwellings are present to the south of the site, within 20 m of the site boundary. There are no areas with environmental designations within a 2 km radius of the site boundary. The site is not located within a SSSI Impact Risk Zone. There are no areas with visual or cultural designations within a 250m radius of the site boundary.	Low/Moderate
Sensitive ecological receptors	None identified.	Low
	Overall Site Environmental Sensitivity	Moderate

4.10. REGULATORY DATABASE

The information summarised in Table 4.6 has been obtained from a commercially available environmental database. The summary table only includes records from within 250m of the subject site and is not otherwise detailed in the report.

Table 4.6 Summary of Environmental Data

RECORD	ENTRIES WITHIN 250 m	DETAILS
Contaminated Land Register Entries And Notices	0	None identified.
Authorised Industrial Processes (Part A, A1 and Part B Permits)	0	None identified.
Fuel Stations Entries	0	None identified.
Licensed Radioactive Substances	0	None identified.
Enforcements, Prohibitions Or Prosecutions	0	None identified.
Discharge Consents	0	None identified.
Pollution Incidents	1	Incident Identification: 73121 (236m E) - Incident Date: 19/04/2002 - Pollutant Description: Other Pollutant (not identified) - Water Impact: No Impact - Land Impact: Minor Impact - Air Impact: No Impact

RECORD	ENTRIES WITHIN 250 m	DETAILS
Consents Issued Under The Planning (Hazardous Substances Act 1990)	0	None identified.
Control Of Major Accident Hazard (COMAH) Sites	0	None identified.

4.11. REGULATORY CONSULTATION

Manchester City Council has been contacted regarding any further information they hold on contamination at the site. This consultation has covered both parcels of land. A response has yet to be received.

5. PRELIMINARY MINING ASSESSMENT

5.1. COAL MINING

The Mining Remediation Authority (MRA) mapping and records indicate that the site is in an area that may be affected by coal mining.

The MRA operates a risk-based approach to assessing potential instability issues associated with future land development located within the predefined MRA consultation areas. This risk-based approach subdivides the potential risk into "low" and "high" risk categories.

The risk categories can be defined as:

Low-Risk Sites – Deemed to be land where coal mining has taken place, however, it was at such depth not to pose a risk to new development, and it, therefore, contains no known recorded risks and as such, no further assessment is required.

For low-risk site, the MRA categorically states:

*If your proposed development is within the Development Low Risk Area**, there is no need for you to submit any coal mining information with your planning application** and The Mining Remediation Authority will not be consulted by the LPA. The LPA will include our Standing Advice as an informative note within the decision notice.*

High-Risk Sites – Deemed to be landholdings located within an area known to contain legacy risks that include:

- Mine entries (shaft or adit);
- Shallow coal working (recorded and probably);
- Workable coal seam outcrops;
- Mine gas sites and areas;
- Recorded coal-mining -related hazards;
- Geological features (fissures and break lines); and
- Former surface mining sites (sometimes using historic opencast extraction methods).

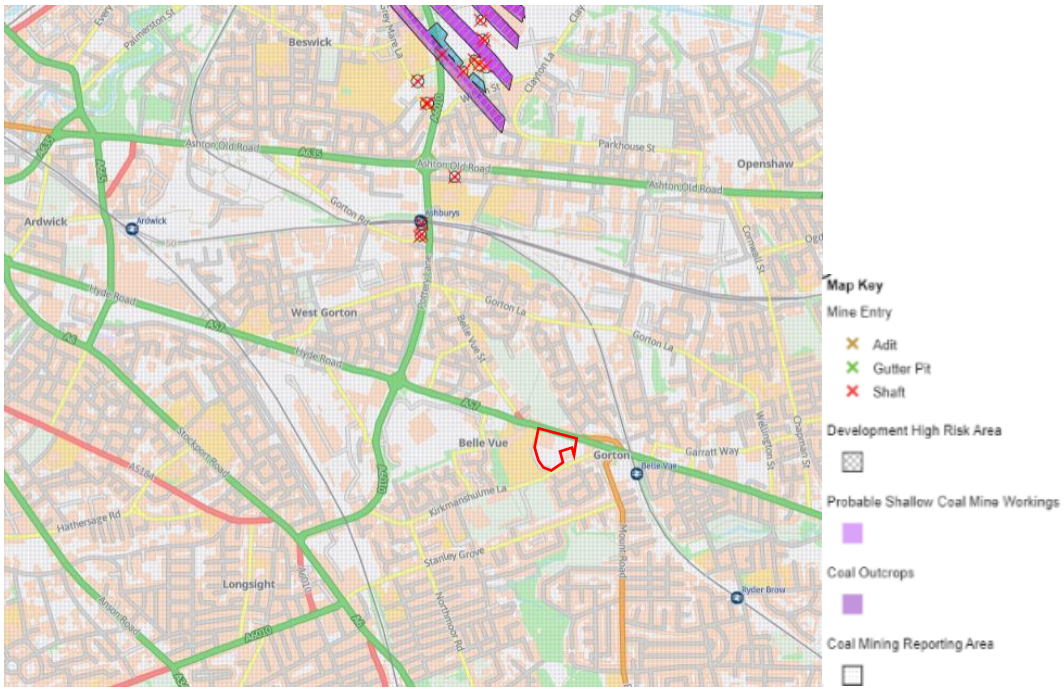
5.2. COAL MINING INFORMATION

Prior to the enactment of the Coal Mines Regulation Act (1872), which came into force on the 1st of January 1883, there was no statutory requirement to record the extent of abandoned mine workings and as such the MRA has no knowledge of extensive workings throughout the UK Coal Fields where shallow workings are present at a depth that could result in a subsidence event in the future (through successive cavitation) associated with failure of support mechanism.

Determining if a site may have unrecorded or recorded coal mine workings requires the consideration of a wide range of information, and E3P has completed a review of relevant information in relation to potential coal mining activities.

In the first instance, E3P has reviewed the Mining Remediation Authority Online Viewer, and an excerpt of this is presented in Figure 5.1. This map shows that the site does not lie within a high-risk development area. Furthermore, there are no coal seams, mine entries or probable shallow coal workings on or within influencing distance to the site.

Figure 5.1 Excerpt of the Mining Remediation Authority Online Viewer

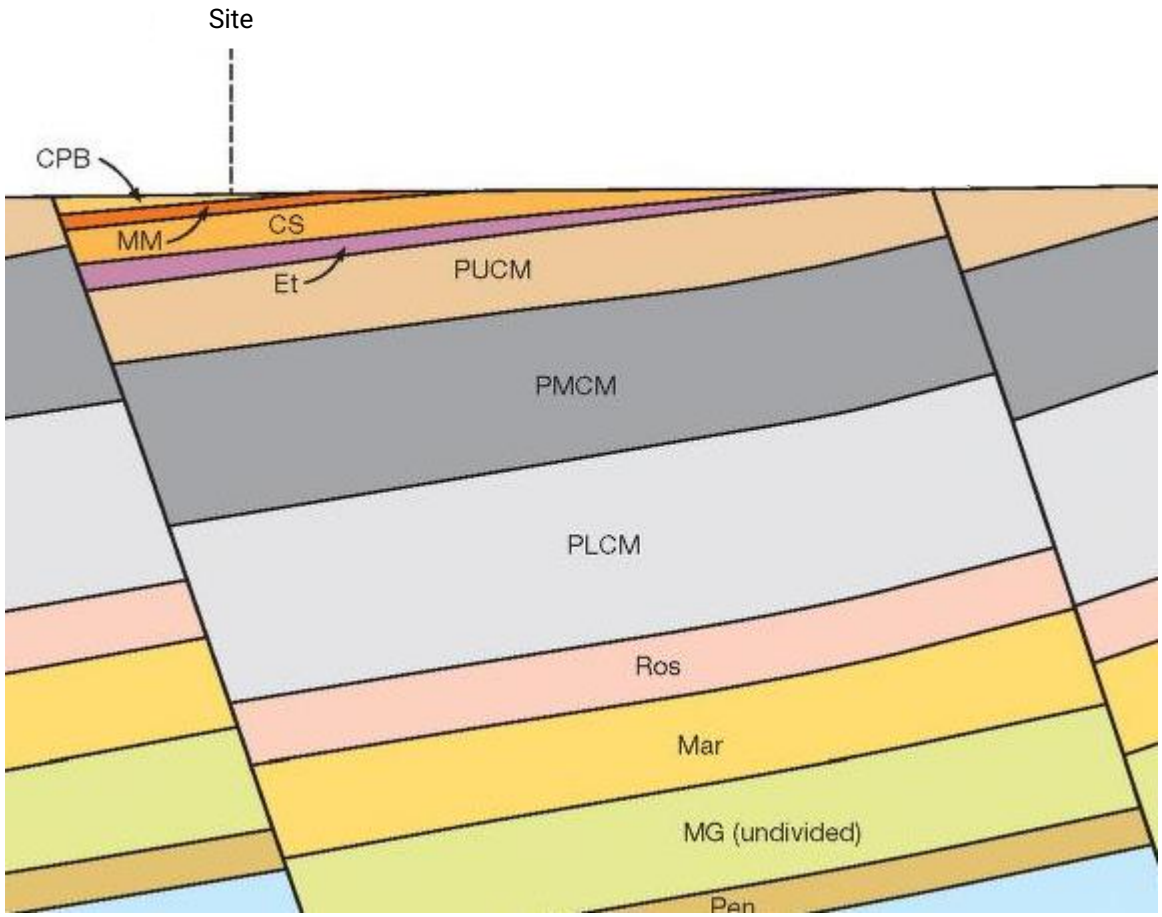


Review of the British Geological Society (BGS) 1:50,000 bedrock map (Figure 5.2) shows that the site lies is recorded to be underlain by the Chester Pebble Beds Formation with no faulting present on site. Review of the associated cross-section shows that the bedrock sequence is recorded to be the Chester Pebble Beds Formation overlying the Manchester Marls and Collyhurst Sandstone which in turn is underlain by sandstone deposits associated with the Upper Pennine Coal Measures and mudstone deposits of the Etruria Formation followed by the Middle and eventually Lower Pennine Coal Measures (Figure 5.3).

Figure 5.2 Excerpt of the BGS Mapping Sheet (Sheet 85)



Figure 5.3 Excerpt of the BGS Mapping Sheet Cross Section(Sheet 85)



KEY
CPB- Chester Pebble Beds Formation
MM- Manchester Marls
CS- Collyhurst Sandstone
ET- Etruria Formation (Mudstone)
PUCM- Pennine Upper Coal Measures
PMCM- Pennine Middle Coal Measures
PLCM- Pennine Lower Coal Measures

The recorded geological sequence and lack of faulting to disturb this sequence indicates that any coal seams would be present at significant depth and are unlikely to have been viable to mine.

Given the lack of development high risk area on site, the absence of mine entries, coal sub-crops and potential workings, and the geological sequence indicating any seams present are at significant depth, there is not considered to be any risk associated with historic coal mining at the site. No further action is deemed to be required with respect to coal mining.

6. PRELIMINARY GEOTECHNICAL ASSESSMENT

6.1. GEOTECHNICAL DATA

Geotechnical data presented within a commercially available environmental database is summarised in Table 6.1.

Table 6.1 Summary of Geotechnical Data

HAZARD	DESIGNATION
Shrink-Swell Clay	Very Low
Landslides	Very Low
Ground Dissolution	Negligible
Compressible Ground	Negligible
Collapsible Deposits	Very Low
Running Sand	Very Low
Anthropogenic Cavities	Historic mapping shows a man-made boating lake was built on the site between c. 1849 – c. 1890 and subsequently infilled between c. 1964 – c. 1968. The development platform has been upfilled to an known specification and cavities within or below the upfill cannot be discounted. No other historic or current anthropogenic cavities have been identified on the site by the Groundsure report.
Sinkhole and Natural Cavities	Information within the Groundsure report states the site is within an area of no hazard to very low hazard from rock solubility.

6.2. ARTIFICIAL LANDFORM AND GEOMORPHOLOGY

Based on the initial geological assessment, a review of available topographic data and pertinent mapping, E3P has undertaken a preliminary geomorphological evaluation of the landform and its possible mechanism for formation. Current surface LiDAR imagery covering the site is displayed in Figure 6.1.

The historical excavation and subsequent infilling of the boating lake will have resulted in significant depths of Made Ground overlying the natural Devensian till associated with the superficial geology.

Circa 1971, the site was upfilled to form the current development platform, as such, given the historic earthworks across the site, the current topography, inclusive of embankment in the northeastern, is not considered to represent the natural landform.

Figure 6.1 Surface Lidar Data



6.3. GEOTECHNICAL RISK ASSESSMENT

Based on the desk-study information, the following geotechnical assessment has been made:

- Given the historical activities at the site, it is likely there will be extensive Made Ground fill deposits across the entire site area utilised to infill the boating lake and create a site-level plateau.
- Historic upfill has been completed to an unknown specification. An investigation will be required to assess these fill deposits and undertake in-situ geotechnical testing to determine the potential foundation solution for plots in these areas, however, it is likely an engineered foundation will be required across the site.
- Existing buildings will require demolition, with all relict foundations grubbing out before the proposed development's construction.
- Two ponds were noted on historical mapping within the site boundary prior to the construction of the Boating Lake. These will presumably have been drained and dug out during construction of the lake; however, they are potential sources of alluvial deposits, silts and possible organic peat deposits.
- The retaining wall across the northern boundary should be considered in any proposed designs.
- Where cohesive soils are present within the vicinity of trees, foundations may require local deepening or heave precautions.
- Minor cut-and-fill operations may be required to create a level development platform to construct low-rise residential development.

7. INITIAL CONCEPTUAL SITE MODEL

Under EA LCRM (updated July 2025) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), and BS EN ISO 21365:2021 (Soil Quality – Conceptual models for potentially contaminated sites), E3P has developed a Tier 1 risk assessment comprising an initial conceptual site model (CSM) to identify potential contamination sources, migration pathways and receptors within the study area. An initial screening of the on and potential off-site sources of contamination has been undertaken in Table 7.1, with the more detailed initial CSM included overleaf in Table 7.2.

Table 7.1 Initial Contaminant Source Screening

SOURCE	SOIL	GROUNDWATER	GROUND GAS/VAPOUR
On-Site			
Made Ground	Heavy Metals, ACMs, TPHs, PAHs, Sulphates	Heavy Metals, Mobile Hydrocarbons	Carbon Dioxide, Methane
Existing Building	ACMs	N/A	N/A
Miniature Railway	Heavy Metals, TPHs, PAHs, VOCs & SVOCs	Heavy Metals, Mobile Hydrocarbons, Mobile VOCs & SVOCs	Carbon Dioxide, Volatile Vapours
Off-Site			
Zoological Gardens with Unspecified Tanks	Heavy Metals, TPHs, PAHs, VOCs & SVOCs	Heavy Metals, Mobile Hydrocarbons, Mobile VOCs & SVOCs	Carbon Dioxide, Volatile Vapours
Tramway	Heavy Metals, TPHs, PAHs, VOCs & SVOCs	Heavy Metals, Mobile Hydrocarbons, Mobile VOCs & SVOCs	Carbon Dioxide, Volatile Vapours
Public Wash House	Heavy Metals, PAHs, SVOCs (Detergents, Sterilisers)	Mobile SVOCs	Volatile Vapours
Electrical Substation and Electric Pylon (Possible Transformer attached)	PCBs (highly localised)	N/A	N/A
Greyhound and Speedway Stadium (Since remediated and redeveloped into residential housing)	Heavy Metals, TPHs, PAHs, VOCs & SVOCs	Heavy Metals, Mobile Hydrocarbons, Mobile VOCs & SVOCs	Carbon Dioxide, Volatile Vapours

After reviewing all environmentally pertinent information and the potential contaminant sources, the following initial conceptual site model has been developed for the site:

Table 7.2 Initial Conceptual Model

CONTAMINANT SOURCE	MIGRATION PATHWAY	RECEPTOR
HUMAN HEALTH		
Made Ground, Miniature Railway *Heavy Metals, TPHs, PAHs*	Accidental ingestion and/or dermal contact with contaminated soil and/or leachate. **PL1/PL2** Inhalation of contaminated dust **PL3**	Human Health – construction workers Human Health – end users
Discussion Significant depths of Made Ground fills are anticipated across the site that are a potential source of heavy metals, TPHs and PAHs. An intrusive investigation and assessment are required to determine the full extent of Made Ground and identify if any contamination is present.		
Probability: Likely	**Consequence: Mild**	**Level of Risk: Low/Moderate**
Tanks, Tramway, Substations, Speedway Stadium *Heavy Metals, TPHs, PAHs, PCBs*	Accidental ingestion and/or dermal contact with contaminated soil and/or leachate. **PL1/PL2** Inhalation of contaminated dust **PL3**	Human Health – construction workers Human Health – end users
Discussion Off-site historical industrial land uses may be sources of heavy metals, TPH, PAH, and PCBs, which could pose a risk to site users if contamination has leached into the soil on-site. However, the likelihood of contamination is low as the off-site sources are low mobility and isolated (e.g. substation PCBs). Additionally, the presence of cohesive superficial deposits will limit the migration of any such contaminant reducing the risk. An intrusive investigation and assessment are required to confirm the conceptual model.		
Probability: Low Likelihood	**Consequence: Mild**	**Level of Risk: Low**
Made Ground ***Methane, Carbon Dioxide, VOC***	Inhalation of vapours **PL4** Migration through permeable strata and preferential pathways **PL5**	Human Health – end users Human Health – Off-site receptors
Discussion As the site was historically agricultural land prior to the construction of the building, the anticipated potential of on-site volatile contamination is considered unlikely. No significant sources of contamination have been identified on-site. An intrusive investigation is required to confirm the present and extent of potential volatile compound-impacted ground.		

CONTAMINANT SOURCE	MIGRATION PATHWAY	RECEPTOR
Probability: Low Likelihood	**Consequence: Mild**	**Level of Risk: Low**
Made Ground and On-Site Structures *Asbestos (Asbestos containing materials (ACMs) and loose fibres)*	Inhalation (of fibres) Construction works disturbing bound material and releasing fibres. **PL3**	Human Health – construction workers, end land users, and users of adjacent sites

Discussion
ACMs contained within Made Ground and the existing building are considered likely due to the age of the development**.** During the demolition of on-site structures ACMs could be disturbed, posing a risk to construction workers and site users, and users of adjacent sites via the inhalation of released fibres.

Intrusive investigations will be required to determine the presence of ACMs in the Made Ground and develop the appropriate mitigation measures.

Probability: Likely	**Consequence: Medium**	**Level of Risk: Moderate**
Made Ground *Organic contaminants such as hydrocarbons, solvents*	Ingestion of tainted water supply. **PL7**	Human Health – End users Water pipeline

Discussion
Hydrocarbon compounds may be present in concentrations exceeding PE thresholds.

An intrusive investigation, including a water pipeline risk assessment, will be required to assess appropriate water pipeline classification for the proposed development.

Probability: Low Likelihood	**Consequence: Mild**	**Level of Risk: Low**

CONTAMINANT SOURCE	MIGRATION PATHWAY	RECEPTOR
CONTROLLED WATERS		
Groundwater *Mobilisation of contaminants from Made Ground*	Contact with contaminated groundwater **PL2** Migration to the principal aquifer **PL5**	Human Health – site personnel Principal Aquifer

Discussion
Made Ground deposits associated with historical development are a potential source of mobile contamination. There are no surface water features within influencing distance of the site, and although the site is underlain by a principal aquifer, the site is not located within a source protection zone.

An intrusive investigation will be required to assess ground conditions and composition, groundwater levels, and levels of any mobile contamination on-site.

Probability: Low Likelihood	Consequence: Mild	Level of Risk: Low

GROUND GAS		
Made Ground *Methane, Carbon Dioxide*	Inhalation of ground gas **PL4** Accumulation of ground gas in confined spaces (asphyxiation or explosion) **PL4**	Human Health – site personnel Human Health – end users Infrastructure and services

Discussion
Made Ground deposits associated with historical infilling of the lake may be potential sources of ground gas, especially as Made Ground is anticipated to be present at substantial depths. The accumulation of ground gases in confined spaces (dwellings) presents future risks to the proposed residential developments and future site users.

It is recommended that an intrusive investigation in conjunction with a period of ground gas monitoring, is completed to determine the gas regime for the development.

Probability: Likely	Consequence: Medium	Level of Risk: Moderate
Radon	Inhalation of ground gas **PL4** Accumulation of ground gas in confined spaces (carcinogenic)	Human Health – site personnel Human Health – end users

Discussion
The site specific BGS radon report indicates that the site is an area where less than 1% of houses are above the “action level” and therefore radon protective measures are not necessary for the construction of new dwellings or extensions.

CONTAMINANT SOURCE	MIGRATION PATHWAY	RECEPTOR
Probability: Unlikely	**Consequence: Minor**	**Likelihood: Very Low**
INFRASTRUCTURE AND DEVELOPMENT		
Made Ground *Sulphate from potential ash within the Made Ground*	Sulphate attack on **PL6**	Building Concrete

Discussion
Ash may be present in Made Ground deposits across the site, which may be a source of sulphates.

Intrusive investigation will be required to assess the concrete classification for suitable concrete design.

Probability: Likely	**Consequence: Medium**	**Likelihood: Moderate**
Made Ground *Phytotoxic contaminants*	Direct contact (plant uptake) **PL8**	Flora

Discussion
Significant contamination that may affect plants is not considered likely. Potential phytotoxic elements and compounds, if present, may be taken up by flora in the dwelling gardens.

An intrusive investigation is required to confirm the presence and extent of phytotoxic elements and compounds present on-site, if any.

Probability: Low Likelihood	**Consequence: Mild**	**Likelihood: Low**

Main Exposure Pathways
PL1 = Soil Ingestion, PL2 = Dermal Contact and Ingestion, PL3 = Dust Inhalation, PL4 = Vapour/Gas Inhalation, PL5 = Vertical/Lateral Migration, PL6 = Corrosion of Concrete, PL7 = Tainting of Water Supply, PL8 = Uptake by Plants

FROM CIRA 552 (2001)

		RISK ASSESSMENT MATRIX			
		Consequence			
		SEVERE	MEDIUM	MILD	MINOR
Probability	HIGH LIKELIHOOD	Very High	High	Moderate	Moderate / Low
	LIKELY	High	Moderate	Moderate / Low	Low
	LOW LIKELIHOOD	Moderate	Moderate/ Low	Low	Very Low
	UNLIKELY	Moderate / Low	Low	Very Low	Very Low

END OF REPORT

Appendix I: Limitations



GENERAL

This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEOENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: This section covers reports with the following titles or combination of titles: Phase 1; Desktop Study; Geoenvironmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Baseline Environmental Assessment; Project Scope Summary Report (PSSR), Program Environmental Impact Report (PEIR), Geotechnical Development Risk Register; Agricultural Land Assessment; Mineral Safeguarding Assessment; Desk Top Coal Mining Risk Assessment; Hydrogeological Appraisal; Construction Environmental Management Plan; and Site Water Management Plan.

The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects’ responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys completed by suitably qualified and experienced specialists in these fields.

E3P does not warrant work/data undertaken/provided by others.

Appendix II: Glossary



ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
MRA	Mining Remediation Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns

LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation
MCV	Moisture condition value	WRAP	Waste and Resources Action Programme
MIBK	Methyl isobutyl ketone	WTE	Water table elevation
m	Metres	ppm	Parts per million
km	Kilometres	mg/m^3	Milligram per metre cubed
% v/v	Percent volume in air	m bgl bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m^2	Kilonewtons per metre squared
ppb	Parts per billion	µm	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	SSRT	Site Specific Remediation Target
PSD	Particle Size Distribution	DD	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	Mc	Moisture Content
ρ	Bulk Density	GPR	Ground Penetrating Radar
NDP	Nuclear Density Probe	FFL	Finished Floor Level
LEL	Lower Explosive Limit	UKWIR	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	LOD	Limit of Detection
PFAS	Per- and Poly-Fluorinated Substances	PFOA	Perfluorooctanoic Acid

Appendix III: CIRIA 552 Risk Classification



CIRIA C552;2001 – Classification of Consequence

CLASSIFICATION	CATEGORY	DEFINITION
SEVERE	Humans	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environmental Protection Act 1990, Part 2a
	Controlled Water	Short-term risk of pollution of sensitive water resource
	Property	Catastrophic damage to buildings/property
	Ecology	Short-term risk to a particular ecosystem or organism forming part of such ecosystem
MEDIUM	Humans	Chronic damage to human health ("significant harm" as defined in DEFRA, 2006)
	Controlled Waters	Pollution of sensitive water resources
	Ecological Systems	Significant change in a particular ecosystem or organism forming part of such ecosystem
	Humans	Chronic damage to human health ("significant harm" as defined in DEFRA, 2006)
MILD	Controlled Waters	Pollution of non-sensitive water resources
	Property	Significant damage to buildings, structures, crops and services ("significant harm" as defined in DEFRA, 2006) and damage to sensitive buildings / structures and services
	Ecological Systems	Damage to the environment
MINOR	Humans	Non-permanent health effects to human health that are easily prevented by the use of PPE
	Property	Easily repairable effects of damage to buildings, structures and services
	Financial / Project	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve

CIRIA 552:2001 Classification of Probability

RISK	DEFINITION
LOW	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property.
LOW MODERATE	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of future redevelopment of the Site.
MODERATE	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or

	undertake further environmental improvements. Redevelopment of the Site will likely require further site investigation.
MODERATE HIGH	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment, including intrusive ground investigations.
HIGH	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine the level of risk and associated liability.

Appendix IV: Drawings



DRAWING 18-376-001 – SITE LOCATION MAP





Notes:

Client: Kellen Homes

Job No: 18-376

Date: 24.10.2025

Drawing No: 001

Scale: NTS

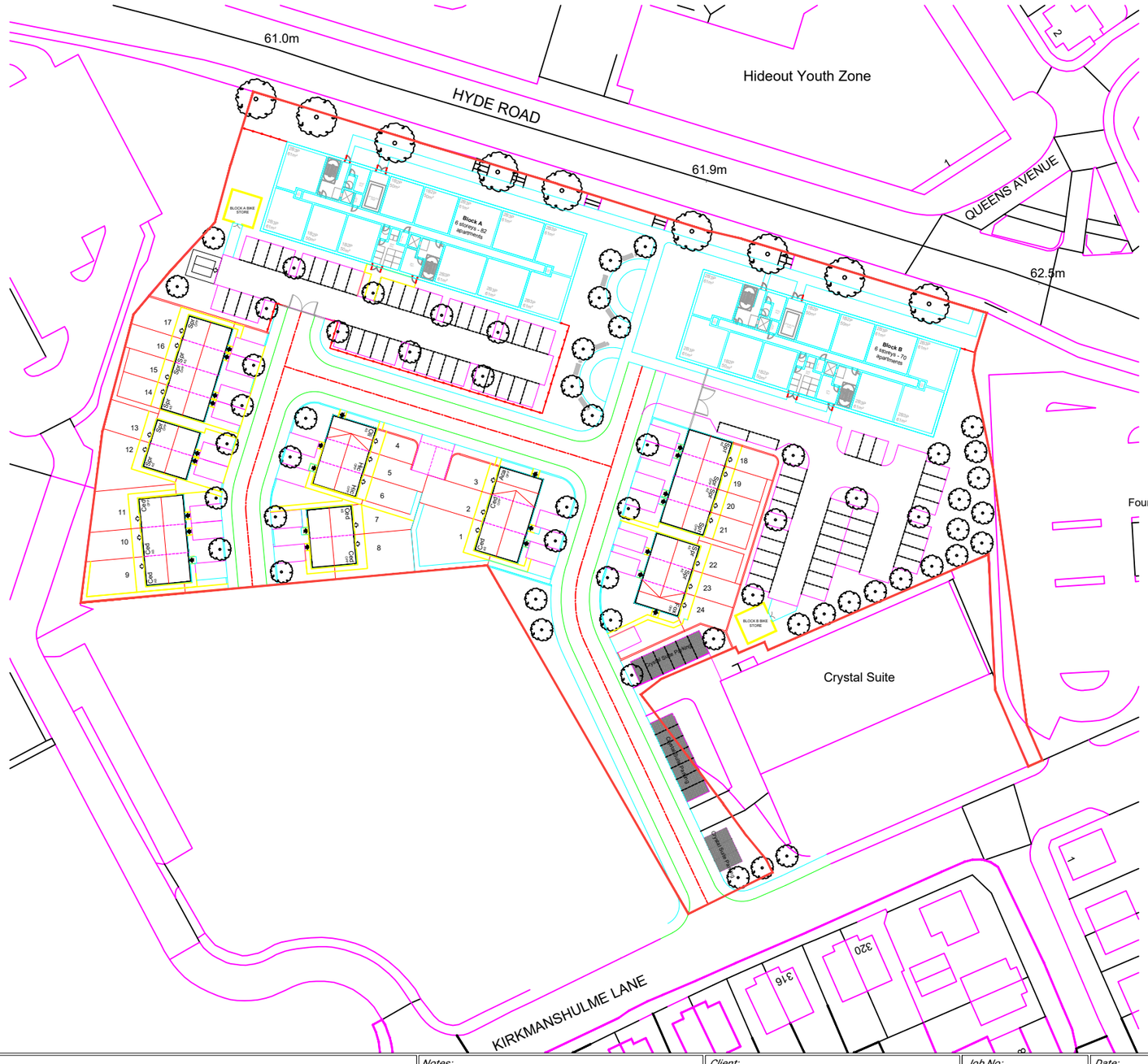
Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	24.10.2025	TG	EP	MD

Job Title: Buzz Bingo

Drawing Title: Site Location Plan

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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	Notes:		Client: Kellen Homes	Job No: 18-376	Date: 27.10.2025	Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk	
				Drawing No: 002	Scale: NTS		
	P1	REVA	27.10.2025	TG	EP	MD	Job Title: Buzz Bingo
	Phase	Issue	Date	Drawn	Checked	PM	Drawing Title: Proposed Development Plan

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Historical Features

- Boating Lake
- Clock Tower
- Bowling Alley / Bingo Hall / Disused Bingo Hall
- Footpath
- Field Boundary

Notes:

P1	REVA	27.10.2025	TG	EP	MD
Phase	Issue	Date	Drawn	Checked	PM

Client: Kellen Homes

Job No: 18-376

Date: 27.10.2025

Drawing No: 003

Scale: NTS

Job Title: Buzz Bingo

Drawing Title: Historical Features Plan

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Urmston, Manchester, M41 7JQ
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E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Site Features

- Area Of Vegetation
- Footpath
- Access Road
- Hardstanding Car Park
- Cable Box
- Storage Container
- Diused Bingo Hall
- Air Conditioning Unit
- Skip / Bin
- Manhole
- Surface Water Drain
- Stairs
- Electrical Pylon
- Trees
- Lamppost
- Sign Post
- MCC Land Boundary
- Vehicle Access Gate

Notes:

P1	REVA	27.10.2025	TG	EP	MD
Phase	Issue	Date	Drawn	Checked	PM

Client: Kellen Homes

Job No: 18-376

Date: 27.10.2025

Drawing No: 004

Scale: NTS

Job Title: Buzz Bingo

Drawing Title: Site Features Plan

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Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
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Appendix V: Historical Maps





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BUZZ BINGO,
KIRKMANSHULME LANE,
MANCHESTER, M18 7BA

Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: County Series

Map date: **1893**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

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MANCHESTER, M18 7BA

Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: County Series

Map date: **1908**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1908
Revised 1908
Edition N/A
Copyright N/A
Levelled N/A

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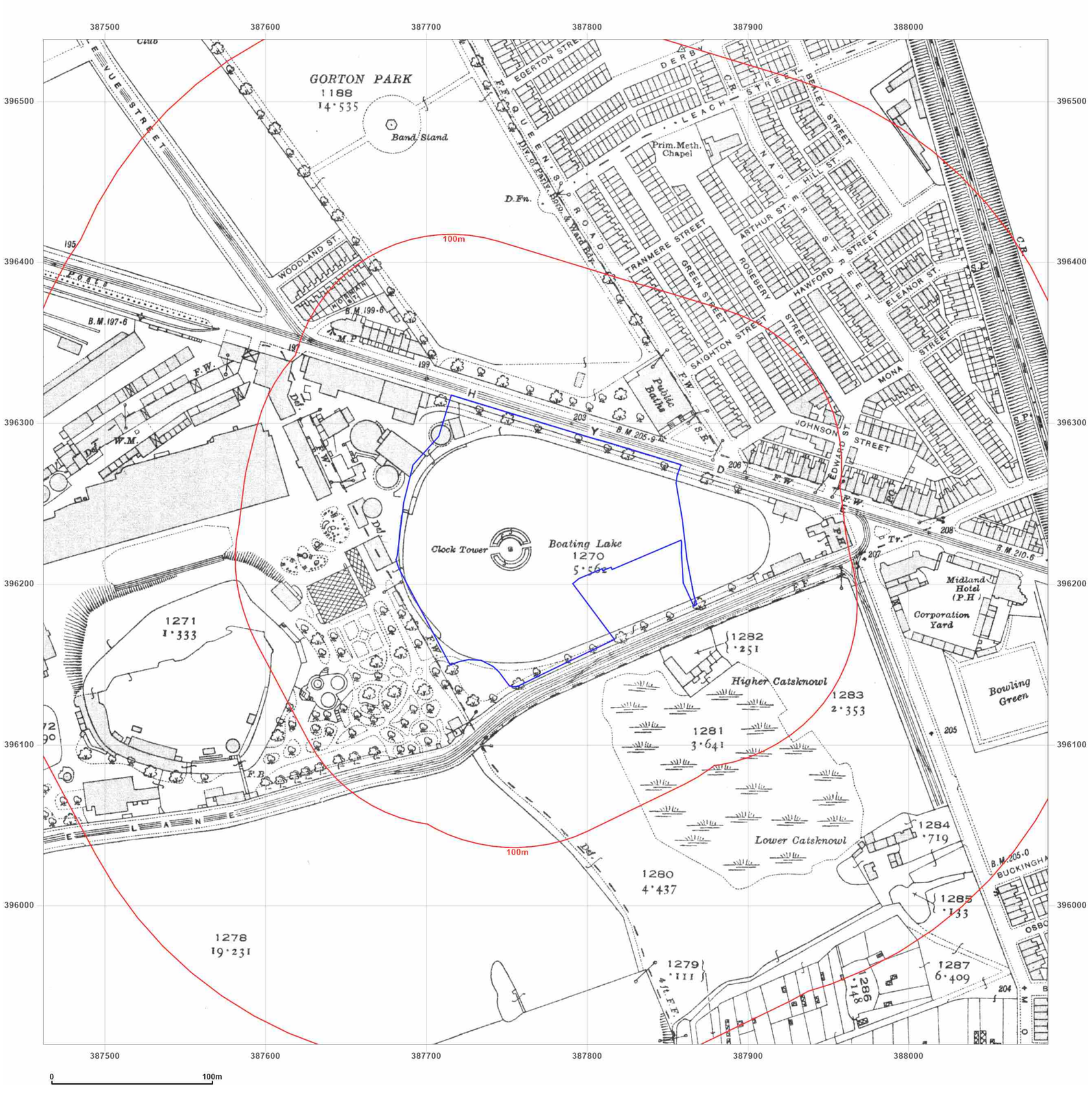
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MANCHESTER, M18 7BA

Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: County Series

Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

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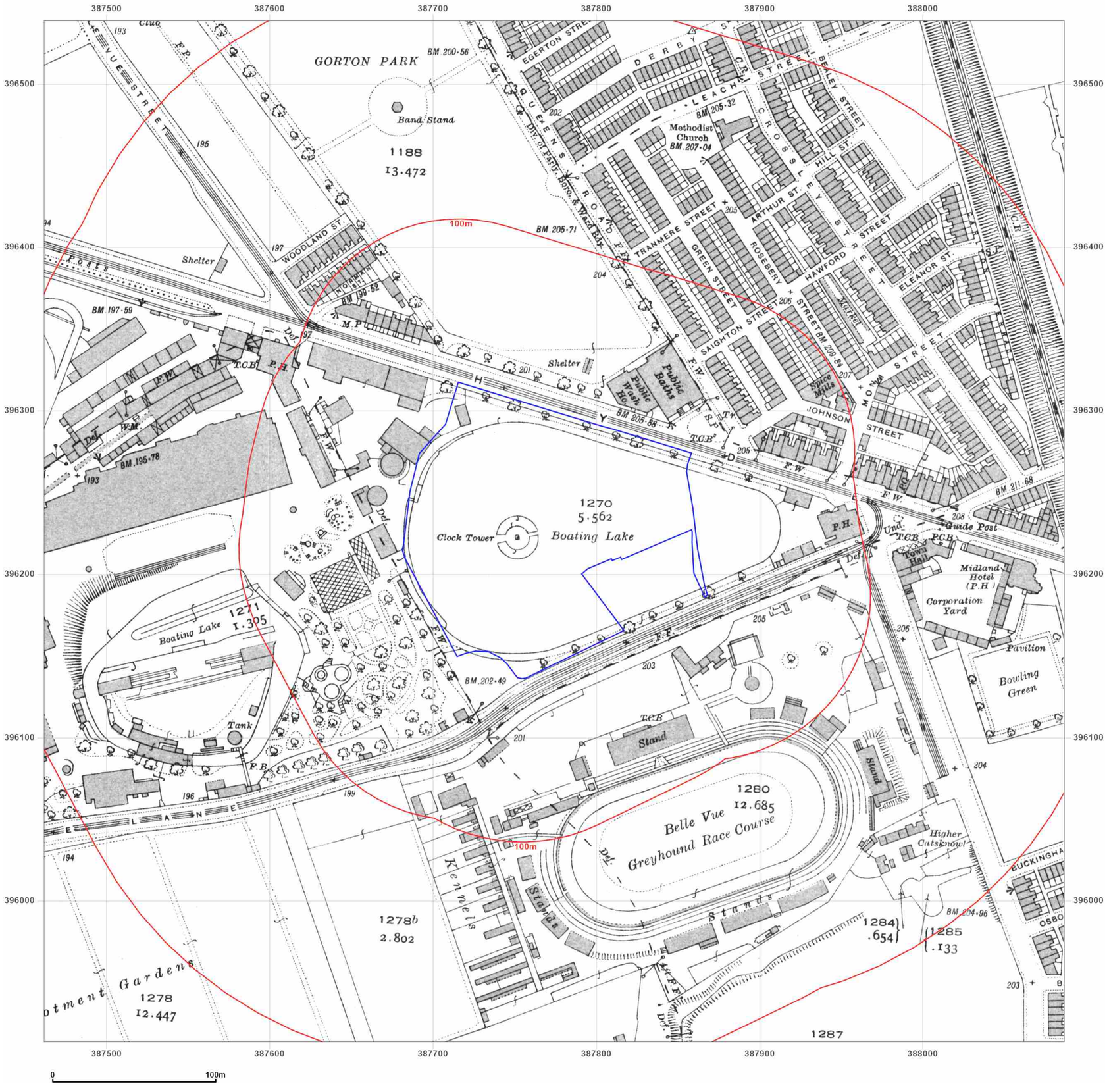
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Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: County Series

Map date: **1933**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1933
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

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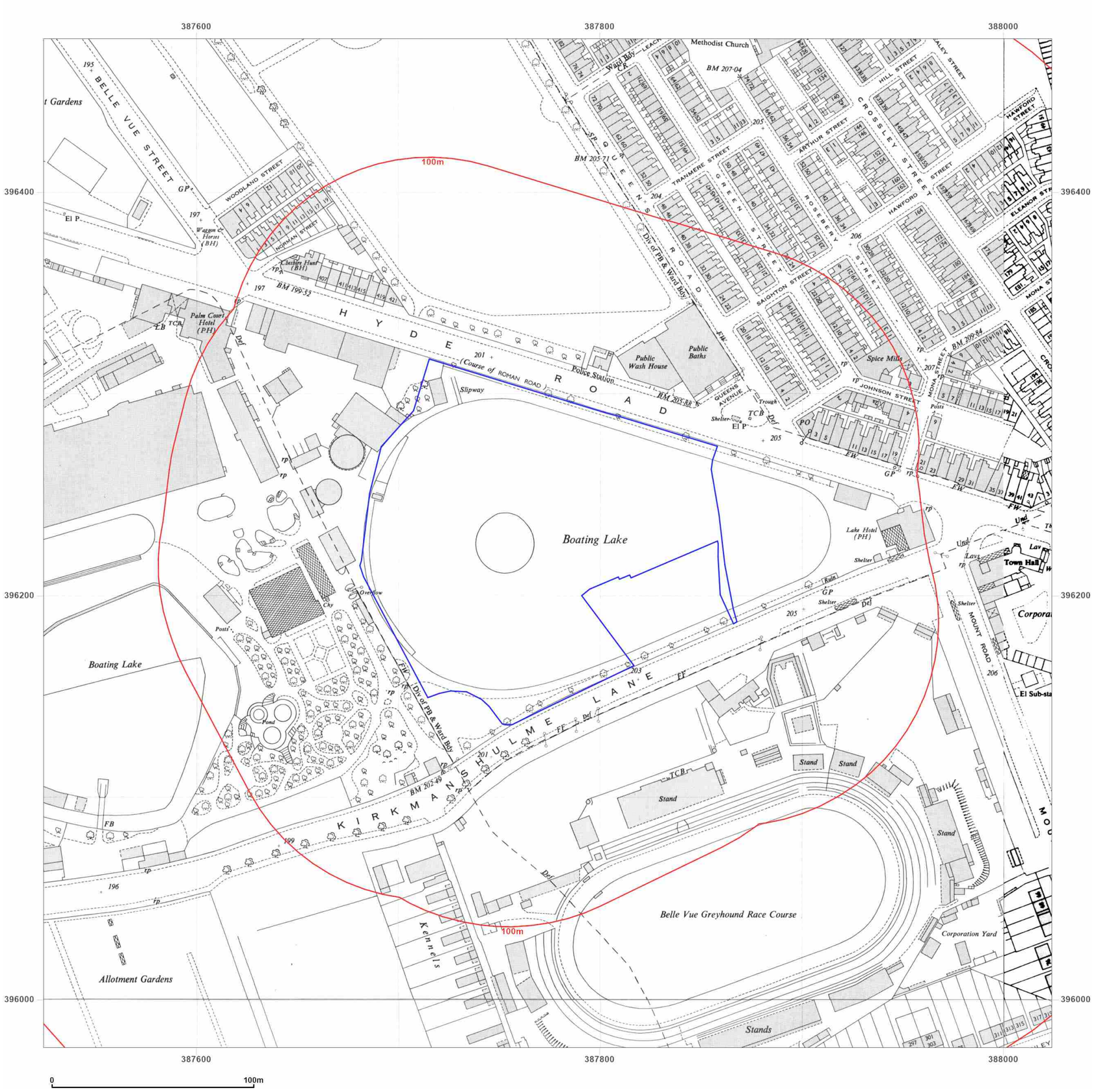
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Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1949-1951**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1949 Revised 1949 Edition N/A Copyright N/A Levelled 1929	Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A
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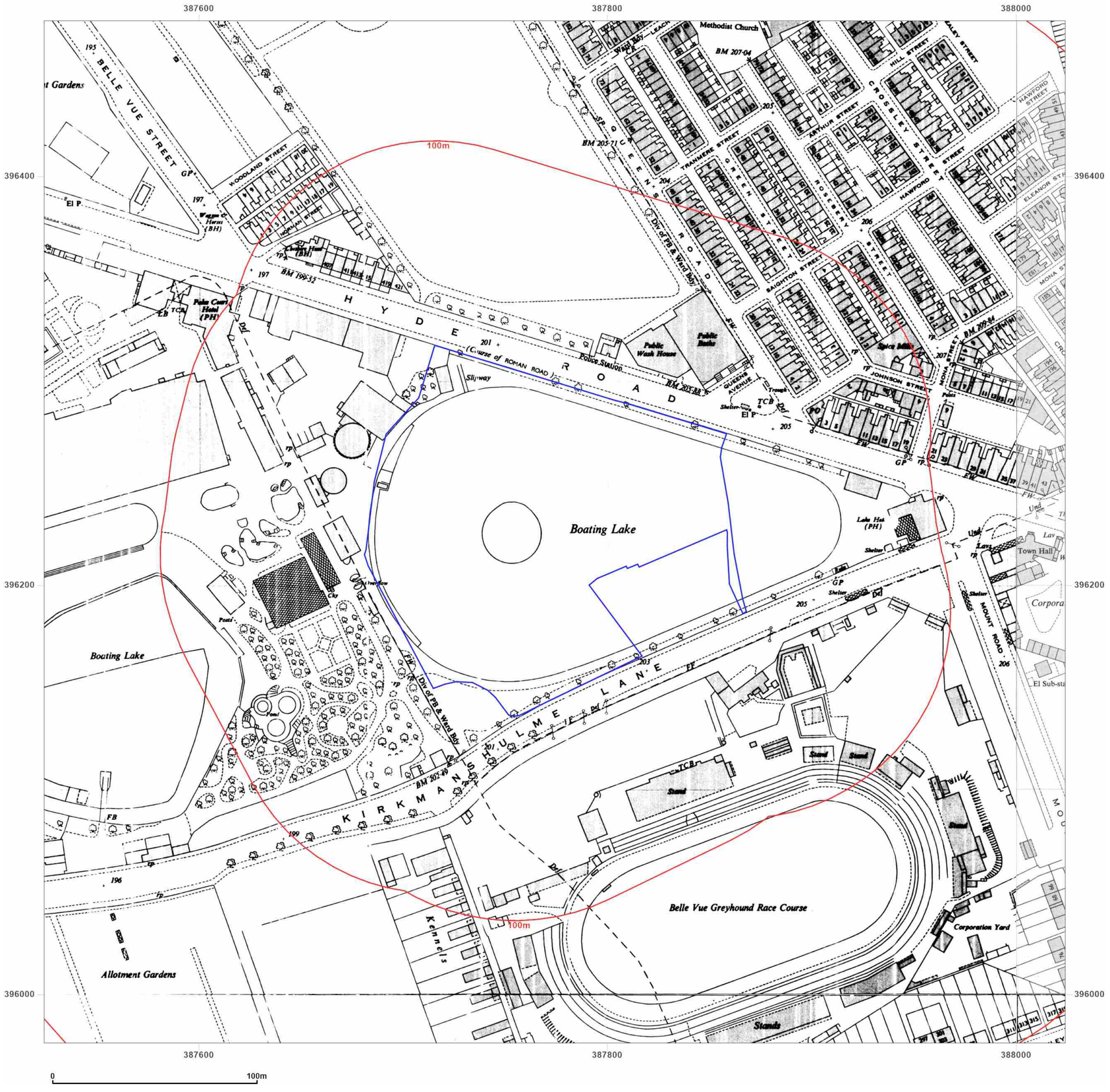
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Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1950-1951**

Scale: 1:1,250

Printed at: 1:2,000

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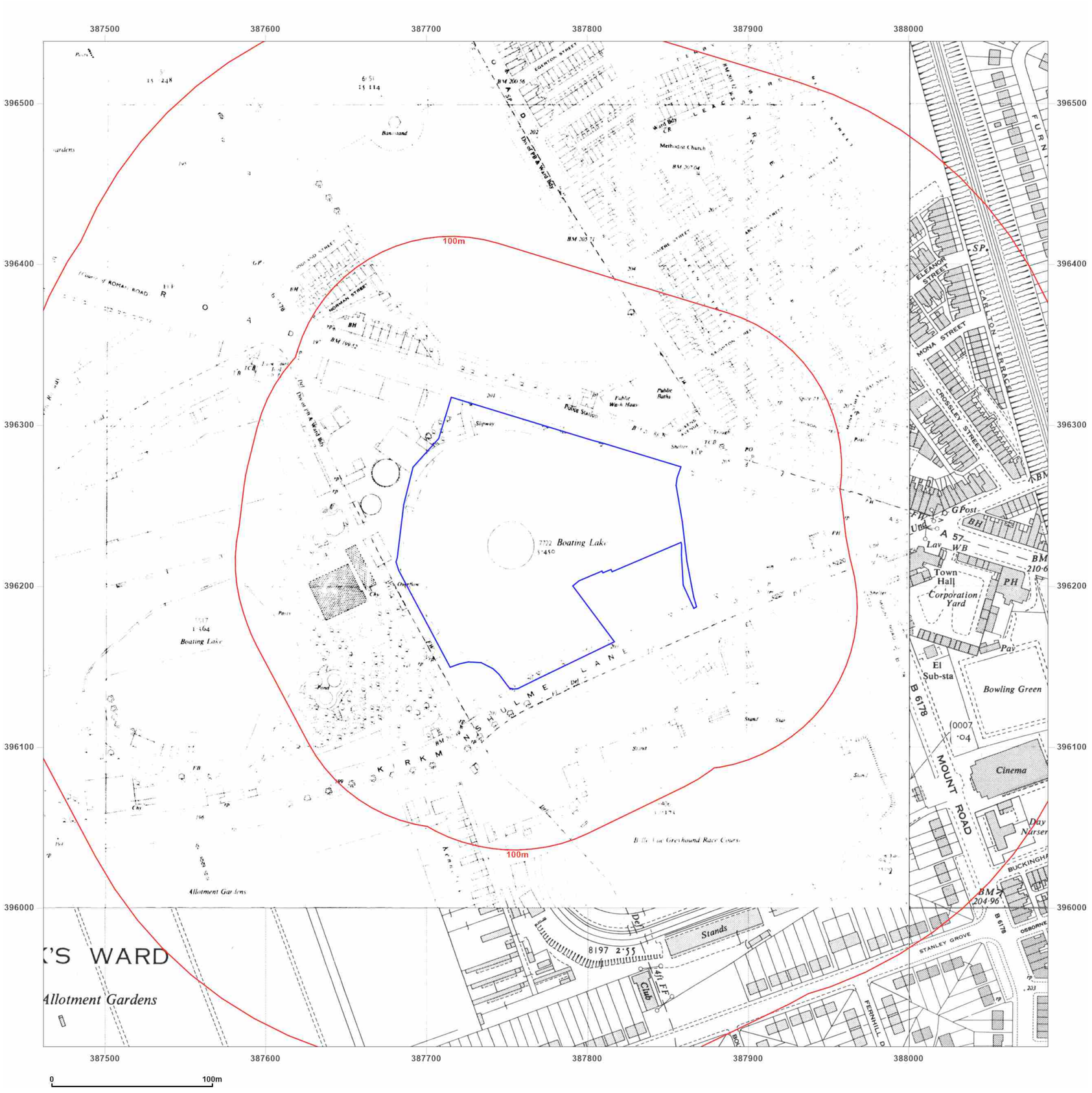
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Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1950-1951**

Scale: 1:2,500

Printed at: 1:2,500

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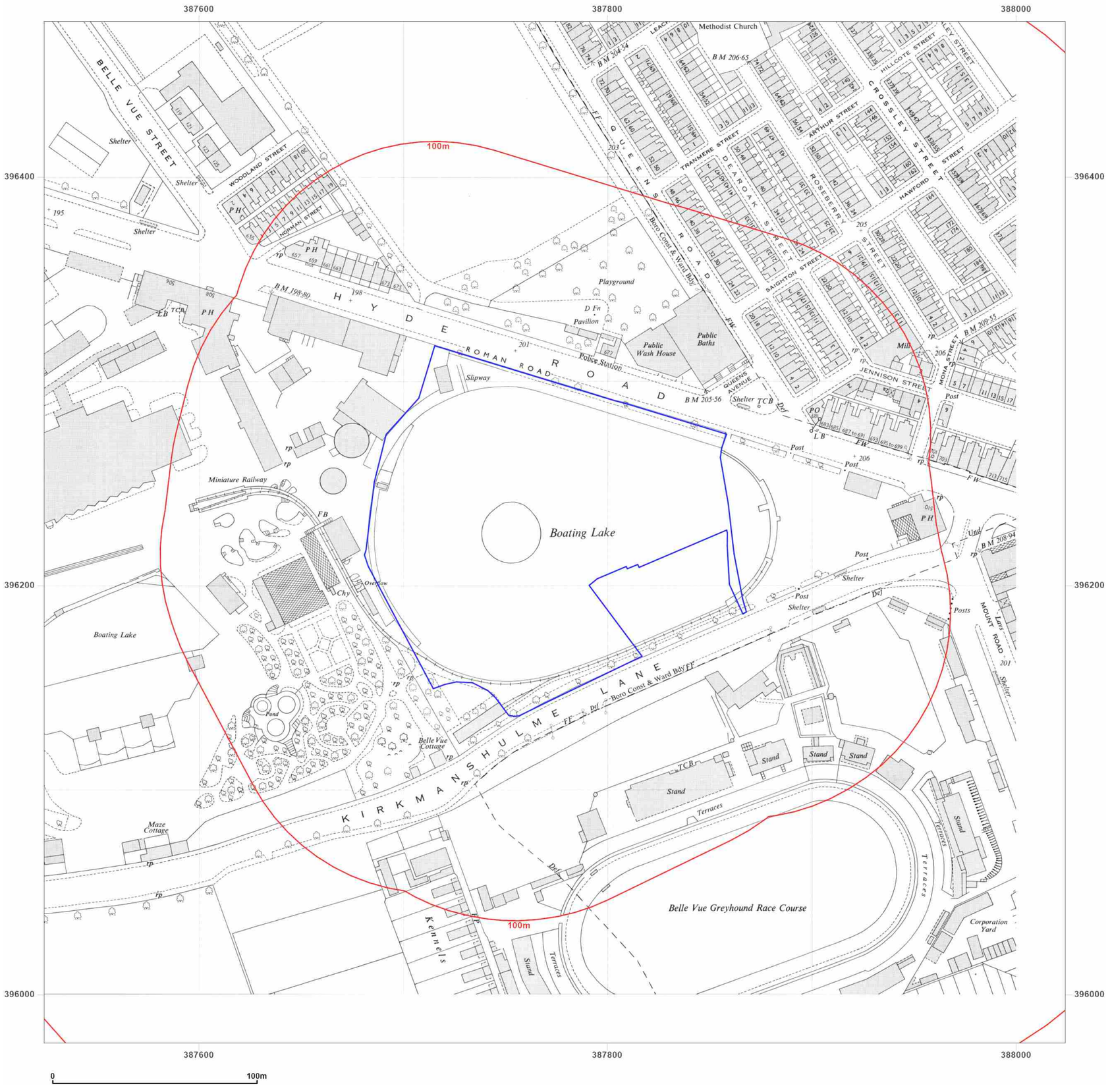
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Client Ref: 012585
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Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1961**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1949
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Edition N/A
Copyright 1961
Levelled 1959

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Grid Ref: 387774, 396226

Map Name: National Grid

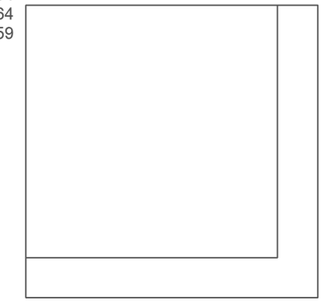
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Surveyed 1960
Revised 1960
Edition 1964
Copyright 1964
Levelled 1959



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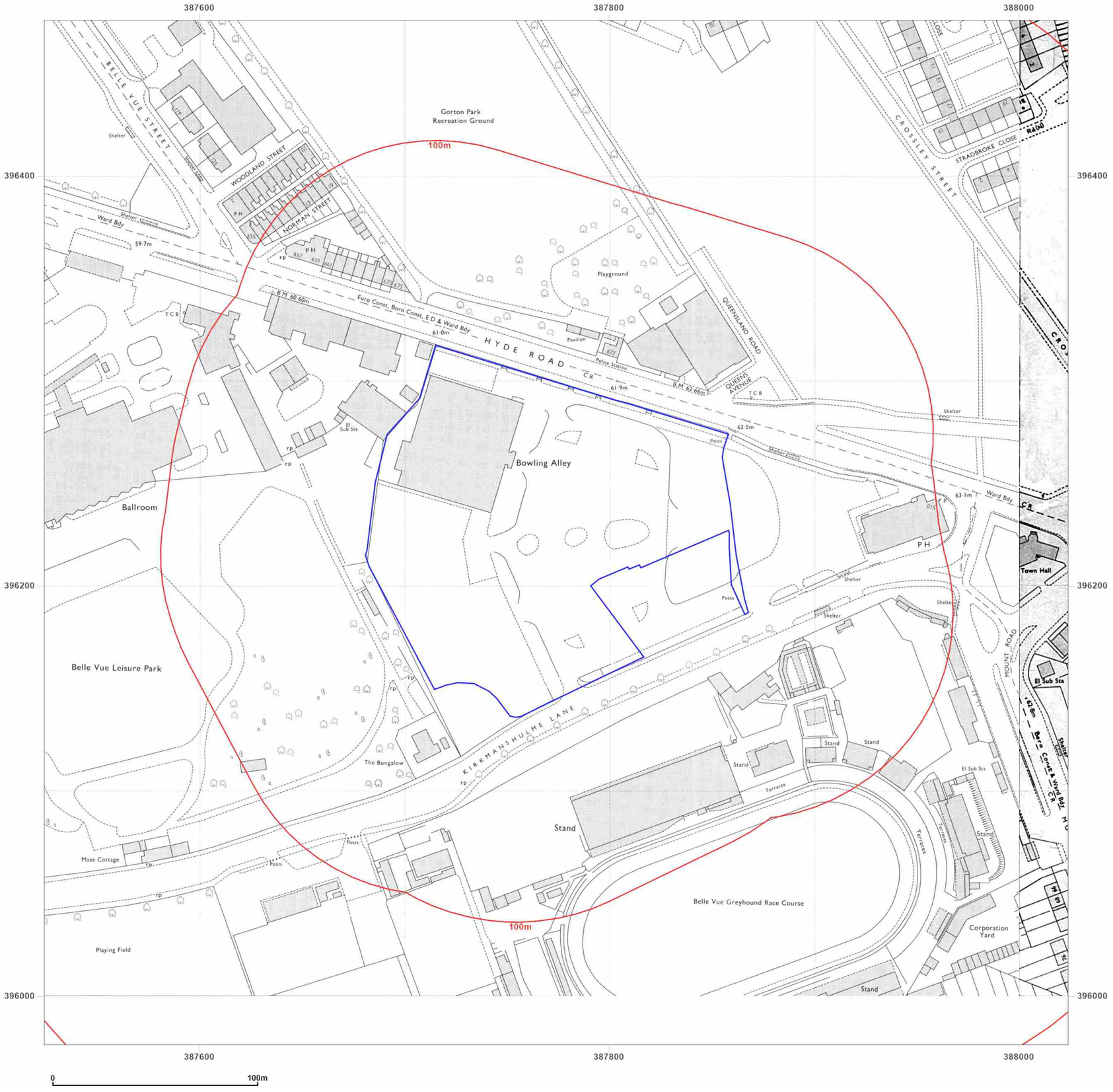
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Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1978-1982**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1949
Revised 1981
Edition N/A
Copyright 1982
Levelled 1963

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1978
Levelled 1964

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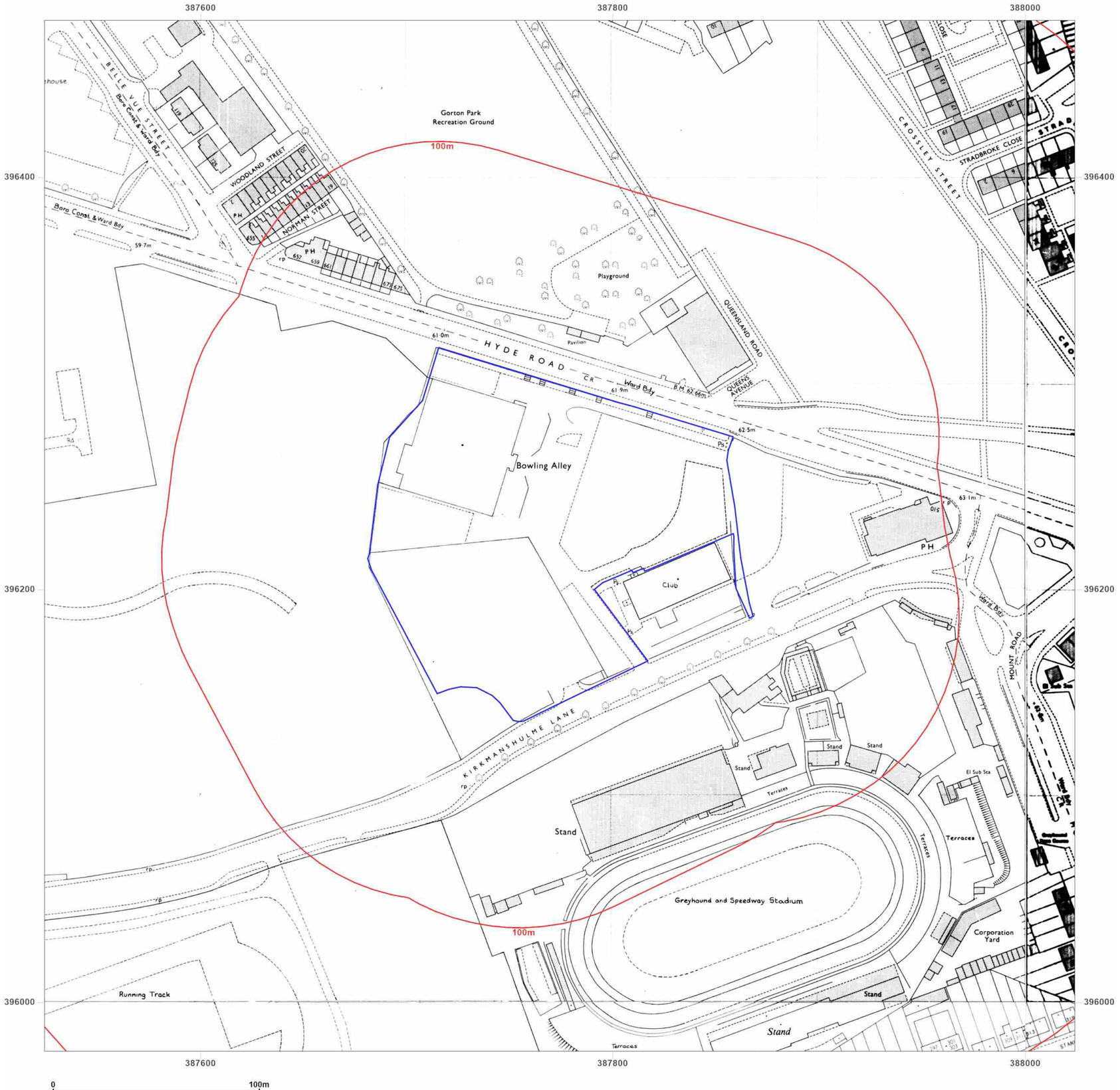
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Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1989-1992**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1964	Surveyed N/A
Revised 1989	Revised N/A
Edition N/A	Edition N/A
Copyright 1989	Copyright N/A
Levelled 1964	Levelled N/A
Surveyed 1963	Surveyed 1992
Revised 1991	Revised 1992
Edition N/A	Edition N/A
Copyright 1991	Copyright 1992
Levelled 1963	Levelled N/A

Groundsure INSIGHTS

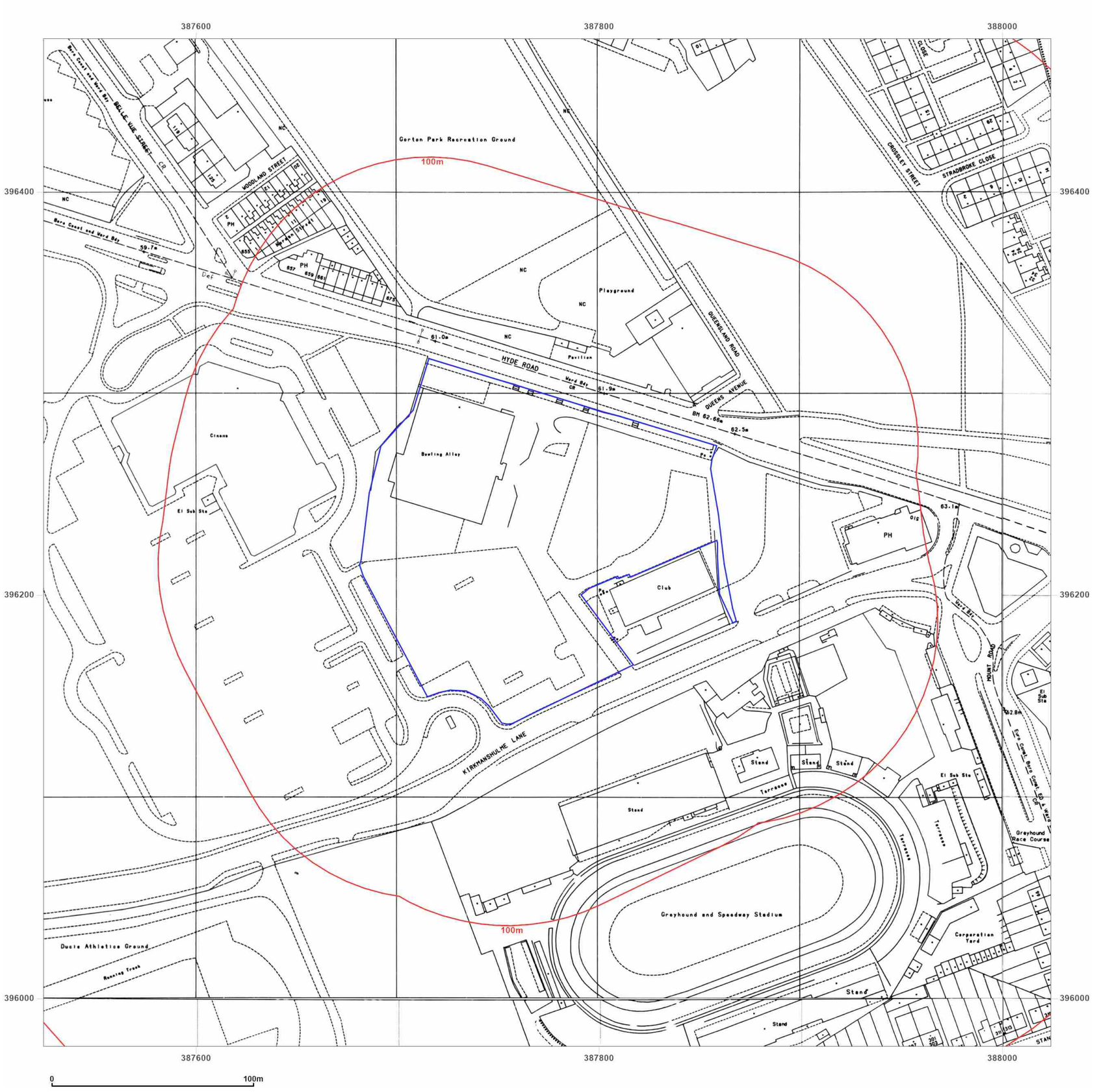
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Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1990-1992**

Scale: 1:1,250

Printed at: 1:2,000

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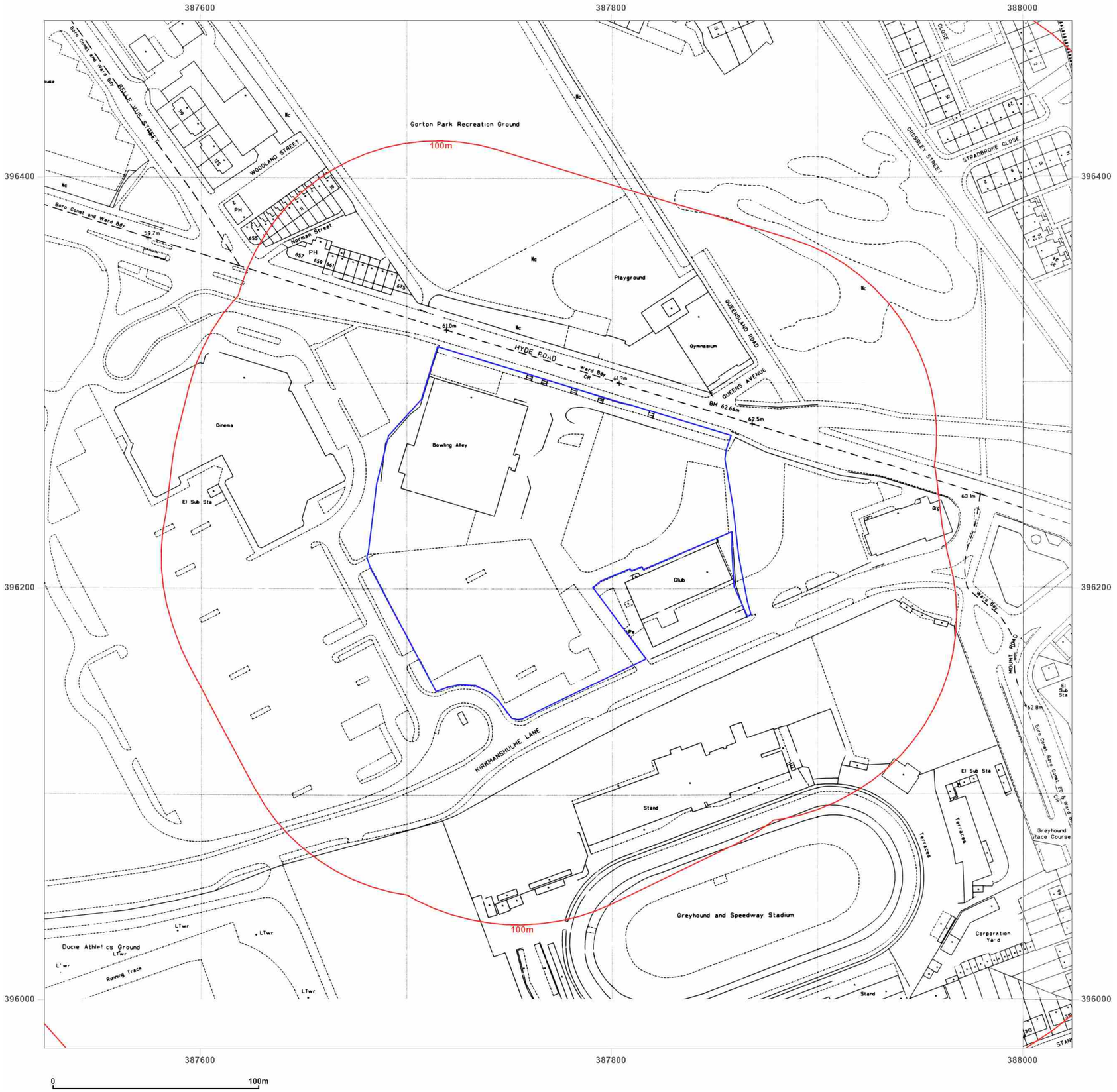
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e3p

Site Details:

BUZZ BINGO,
KIRKMANSHULME LANE,
MANCHESTER, M18 7BA

Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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e3p

Site Details:

BUZZ BINGO,
KIRKMANSHULME LANE,
MANCHESTER, M18 7BA

Client Ref: 012585
Report Ref: E3P-OAU-YXJ-WDV-JE2
Grid Ref: 387774, 396226

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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2003

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Appendix VI: Zetica UXO Preliminary Report



PA025101 — BUZZ BINGO MANCHESTER

DOCUMENT DETAILS

Site name:	Buzz Bingo Manchester		
Reference:	PA025101	**Client:**	E3P
Date:	10th November 2025	**Contact:**	Ellie Pugh

RECOMMENDATION

A detailed desk study is recommended to assess, and potentially zone, the Unexploded Ordnance (UXO) hazard level on the Site.

SUMMARY OF FINDINGS

Military Activity	During WWI, the Ministry of Munitions (MoM) requisitioned Belle Vue Gardens, encroaching on the Site, as a storage depot. During WWII, the military requisitioned several buildings at Belle Vue Gardens, in the vicinity of the Site. After WWII, they reverted to civilian use.
WWI Bombing	Potential targets within approximately 5km of the Site: ▪ Transport infrastructure and public utilities. ▪ Munitions factories, aircraft manufacturing, and chemical and engineering works. ▪ Military establishments and training areas. ▪ Anti-Aircraft (AA) defences. No readily available records have been found indicating that the Site was bombed.
WWII Bombing	The Site was located in Manchester County Borough (CB), which officially recorded 737No. High Explosive (HE) bombs, with a density of 27.0 bombs per 405 hectares (ha). These statistics typically exclude bombs that fell on military establishments. The Manchester area was heavily bombed between the 22nd and 24th December 1940 (the 'Manchester Blitz'). Over 400No. HE bombs and more than 30,000No. Incendiary Bombs (IBs) fell across the region. Bombing was concentrated on Manchester city centre, approximately 3.7km from the Site. Potential targets within approximately 5km of the Site: ▪ Transport infrastructure and public utilities. ▪ Munitions factories, aircraft manufacturing, and chemical works. ▪ Alexandra Park Airfield. ▪ Military establishments and training areas. ▪ AA and anti-invasion defences. Readily available records indicate that several HE bombs fell in close proximity to the Site.
Bombing Decoys	1No. located approximately 4.0km southeast of the Site.

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Email: uxo@zetica.com
Web: www.zeticauxo.com

Zetica House
Southfield Road, Eynsham
Oxfordshire, OX29 4JB

FURTHER INFORMATION

These findings are based on a cursory review of readily available records; caution is advised if you plan to action work based on this PDSA.

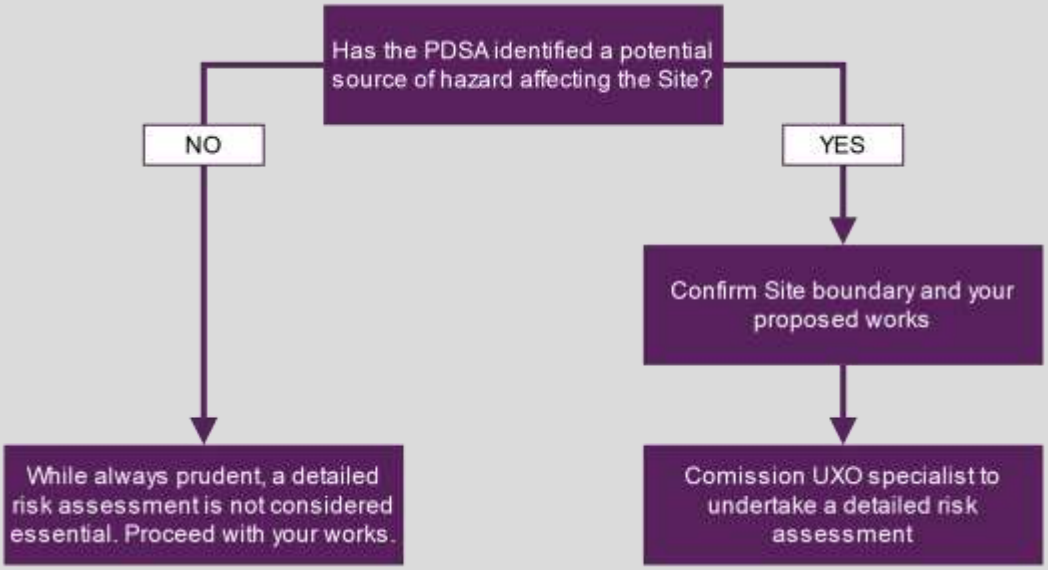
Where a potentially significant UXO hazard source has been identified on the Site, no further research has been undertaken. A detailed UXO desk study and risk assessment may identify other potential UXO hazard sources on the Site.

Visit www.zeticauxo.com to learn more about Zetica's detailed UXO desk studies and other UXO services. Click here for more information about the most common UXO hazard sources in the UK.

If you have any further queries, please don't hesitate to contact us at uxo@zetica.com or 01993 886 682.

NEXT STEPS

Follow the steps below to determine the appropriate course of action:



Potential UXO hazard identified? If the PDSA has identified a potential source of UXO hazard affecting your site, then a detailed UXO risk assessment is recommended.

No obvious source of UXO hazard? If the PDSA has not identified any obvious source of potential UXO, works can proceed.

It is good practice to raise awareness of the background UXO risk in the UK as part of a standard site induction. This will ensure that appropriate action is taken in the unlikely event that UXO is discovered.

Don't skip a stage: If you skip the detailed risk assessment stage, you could end up undertaking unnecessary work (e.g. trying to detect a UXO hazard that has already been removed).

Similarly, a detailed risk assessment might find that the UXO hazard is worse than expected and has a greater potential to cause harm, requiring a different mitigation approach than would otherwise be undertaken.