

Cover Pages

Project Huyton Town Centre Regeneration
Subject Phase I Desk Study Report Cover Pages
Project no 051610
Date 20 November 2023
Ref 051610-BHE-XX-XX-RP-GE-0001

Revision	Description	Issued by	Date	Approved (signature)
P01	For Planning	GM	12/09/23	
P02	Updated for final red line boundary	GM	20/11/23	<i>coll</i>

1.1 Introduction

Buro Happold have been appointed by Genr8 to provide technical planning support and advice for the enabling works associated with the proposed Huyton Town Centre Regeneration scheme. The site is located in the town of Huyton in the Metropolitan Borough of Knowsley, Merseyside (Figure 1—1 refers). The key geotechnical and geoenvironmental objectives of the enabling works are to demolish the existing buildings onsite, remove existing below-ground substructure, undertake earthworks to create suitable platforms for development, and mitigate potential risks from contaminated land (if applicable). The ultimate proposed development comprises a mix of commercial, leisure, office and residential developments as part of the wider Huyton Village Masterplan. A planning application is proposed to be submitted for the enabling works at this stage.

A Phase I Desk Study report is required for planning and in line with best practice for any site. An existing Phase I Desk Study report for the site was undertaken by Sutcliffe Investigations on behalf of Knowsley Council (ref: Phase I Preliminary Risk Assessment, 30104LG – R01, dated November 2018; herein referred to as the Sutcliffe PRA).

Because the Sutcliffe PRA was prepared 5 years ago, Buro Happold have undertaken an assessment and due diligence review in order to:

- Assess whether any onsite changes or activities since 2018 could have affected the findings of the Sutcliffe PRA.
- Assess whether the site boundary has changed since the Sutcliffe PRA was produced, and if so, whether this has any implications to the findings of the report.
- Identify whether there are any data gaps in the Sutcliffe PRA and undertake further assessment as necessary.
- Assess whether the existing report is considered suitable for inclusion in the planning application as-is (subject to agreement with the Local Authority), or whether any additional work is recommended (such as an entirely new report or an addendum to the existing report).

The purpose of this document is to present Buro Happold's due diligence review of the Sutcliffe PRA. It will be included in the planning application alongside the Phase I Desk Study report.

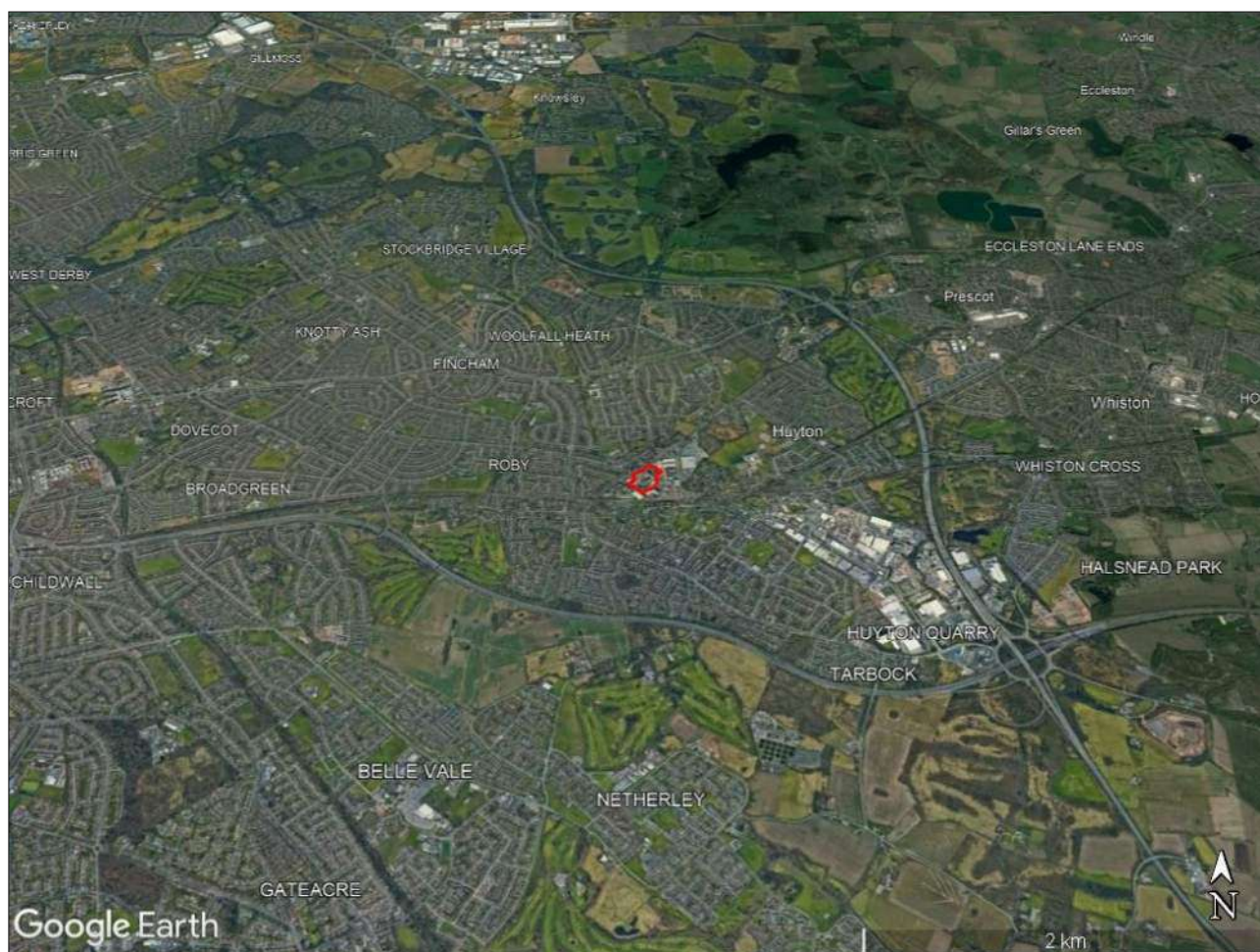


Figure 1—1: Site location plan. Source: Google Earth.

1.2 Existing Desk Study Report Due Diligence

The following is a summary of a due diligence review of the Sutcliffe PRA by Buro Hapold.

- The red line boundary used in the Sutcliffe PRA is different from the red line boundary to be used as part of the planning application for the enabling works (Figure 1—2 refers). This is because the site boundary for planning purposes changed following the initial instruction for the work. The site area has become smaller since the Sutcliffe PRA. Therefore, the Sutcliffe PRA covers the same area of land as the proposed planning application, and there are not considered to be any significant changes with respect to the risk assessment and conclusions.
- The Sutcliffe PRA contains most of the contents and topics we would expect from a Phase I Desk Study, including:
 - Site location, setting and surrounding land uses
 - Site walkover
 - Utilities
 - Site history
 - Geology and soils
 - Mining
 - Radon
 - Hydrogeology
 - Hydrology and flood risk
 - Preliminary Quantitative Risk Assessment and Conceptual Site Model in terms of contamination
- One key item not present in the Sutcliffe PRA is recommended outline scope for Phase II ground investigation. However, this is not considered an issue because Buro Hapold have produced a definitive scope and specification for the Phase II ground investigation works based on the findings of the Phase I study.
- Another key item not present in the Sutcliffe PRA is an assessment related to unexploded ordnance (UXO). A UXO risk map has been obtained from Zetica and is included as Figure 1—3. The map shows the site to be at 'moderate' risk of UXO. On this basis, it was determined that a Preliminary UXO Risk Assessment should be undertaken by a specialist UXO consultant in accordance with CIRIA C681, with a Detailed UXO Risk Assessment to be

e subsequently carried out if required. Preliminary and Detailed Risk Assessments were undertaken by Brimstone Site Investigation Limited. The Brimstone reports are included as Appendix A and the findings are summarised in Section 1.4.

- An Envirocheck report with data from a suitable range of sources was obtained to inform the study. The Envirocheck report is also dated November 2018.
- A CON29M Non-Residential Mining Report was obtained from the Coal Authority as part of the study. In principle, it would have been preferable to obtain a more comprehensive Coal Authority Consultants Report. However, the risk to the site from coal mining is considered to be low due to the presence of sandstone bedrock (Chester Formation and Wilmslow Sandstone Formation) above any potential coal-bearing strata. Therefore, it is considered acceptable to use the existing CON29M report instead of obtaining a new Coal Authority Consultants Report.
- Section 3.9 (Sensitive Land Uses) notes a 'low sensitivity' for groundwater. The rationale for this is that the high sensitivity 'Principal Aquifer' in the bedrock (Chester Formation and Wilmslow Sandstone Formation) is overlain by a lower sensitivity 'Secondary (undifferentiated) Aquifer' in the superficial deposits (Devensian Till), and that there are no groundwater abstractions recorded nearby. However, given the lack of existing borehole information for the site and surrounding area, it is unknown how thick the superficial deposits are. If there is only a thin veneer of Devensian Till, the risk to the underlying Principal Aquifer could be higher. Notwithstanding this, the depth to bedrock will be investigated as part of the Phase II Ground Investigation and the groundwater sensitivity will be reassessed once this information is available, therefore it is not considered necessary to revise the Sutcliffe PRA.
- The Preliminary Quantitative Risk Assessment (Section 4) only considers the onsite Made Ground as a source of contamination. Buro Happold consider that there are other potential sources of contamination: potential for hydrocarbon contamination which could have migrated from the Asda petrol station offsite to the west; and possible hydrocarbon, fuel and oil contamination due to vehicle leakage from the car park land use. Nonetheless, the degree of contamination to site soils and groundwater will be investigated as part of the Phase II Ground Investigation with contamination testing to be undertaken across the site as a whole with particular focus on the area near the petrol station. On this basis, it is not considered necessary to revise the Sutcliffe PRA.



Figure 1—2: Red line boundary from the Sutcliffe PRA (left) and proposed to be used in the planning application (right – Open drawing 'Huyton Town Centre, Huyton, Knowsley', ref M10335_0001 rev01, dated 15/11/23).



Figure 1—3: Zetica UXO risk map.

1.3 Comparison Between Site Conditions in 2018 and 2023

An assessment of similarities and differences to the site conditions in 2018, when the Sutcliffe PRA was written, and the present day is summarised in the following section. A new Envirocheck report, dated July 2023, was obtained for this purpose, and other data sources were also reviewed. This assessment includes a summary of the differences between the 2018 Envirocheck report and the 2023 Envirocheck report. The 2023 Envirocheck report is included as Appendix B. As discussed in Section 1.2, the site boundary for planning purposes changed following the initial instruction for the work. The red line boundary in the Envirocheck Report is different from the red line boundary to be used as part of the planning application for the enabling works (Figure 1—4 refers). The site area has become smaller since the Envirocheck Report was obtained. Therefore, the Envirocheck Report covers the same area of land as the proposed planning application, and there are not considered to be any significant changes with respect to the risk assessment and conclusions.

- There is an updated 1:10,000 OS plan in the 2023 Envirocheck report but it shows no changes since 2018. The historical maps within the 2018 and 2023 Envirocheck reports are the same.
- A review of historical satellite imagery (Google Earth) shows there have been some changes to the site since the Sutcliffe PRA was completed, with reference to Figure 1—5 and as follows:
 - April 2021: Temporary tent-like structures and storage containers are present within a car park area in the western portion of the site. This is thought to be a temporary Covid 19 testing centre (ref: Liverpool Echo website, [New walk-through coronavirus testing centre opens in Merseyside - Liverpool Echo](#)). The area is a car park again by March 2022.
 - March 2022: Two buildings have been demolished and replaced with surface car parking. A number of trees to the south of one of these buildings have also been removed.
- The site description and walkover (Section 2.3) is similar, with the only significant differences appearing to be the demolition of two buildings since 2018.
- The geology and soils (Section 3.2) beneath the site remain the same.
- In terms of hydrogeology and hydrology (Sections 3.6 and 3.7), the groundwater vulnerability classification for the site is now "Medium Vulnerability – Principal Aquifer" instead of "Major Aquifer – High Vulnerability" in 2018. This indicates a downgrading of the groundwater vulnerability. Otherwise, the hydrogeology and hydrology of the site remain the same.
- There are no additional potentially contaminative land uses recorded onsite or in the surrounding area in the 2023 Envirocheck report.

- The preliminary conceptual model (Section 7) beneath the site remains the same. The changes to the site between 2018 and 2023 (temporary Covid 19 testing facility and demolition of two buildings) are not anticipated to significantly affect the conceptual site model.
- The potential sources of contaminants (Section 7.2), receptors & pathways (Section 7.3) and risk assessment (Section 7.4 & Table 7-3) within the report remain the same.

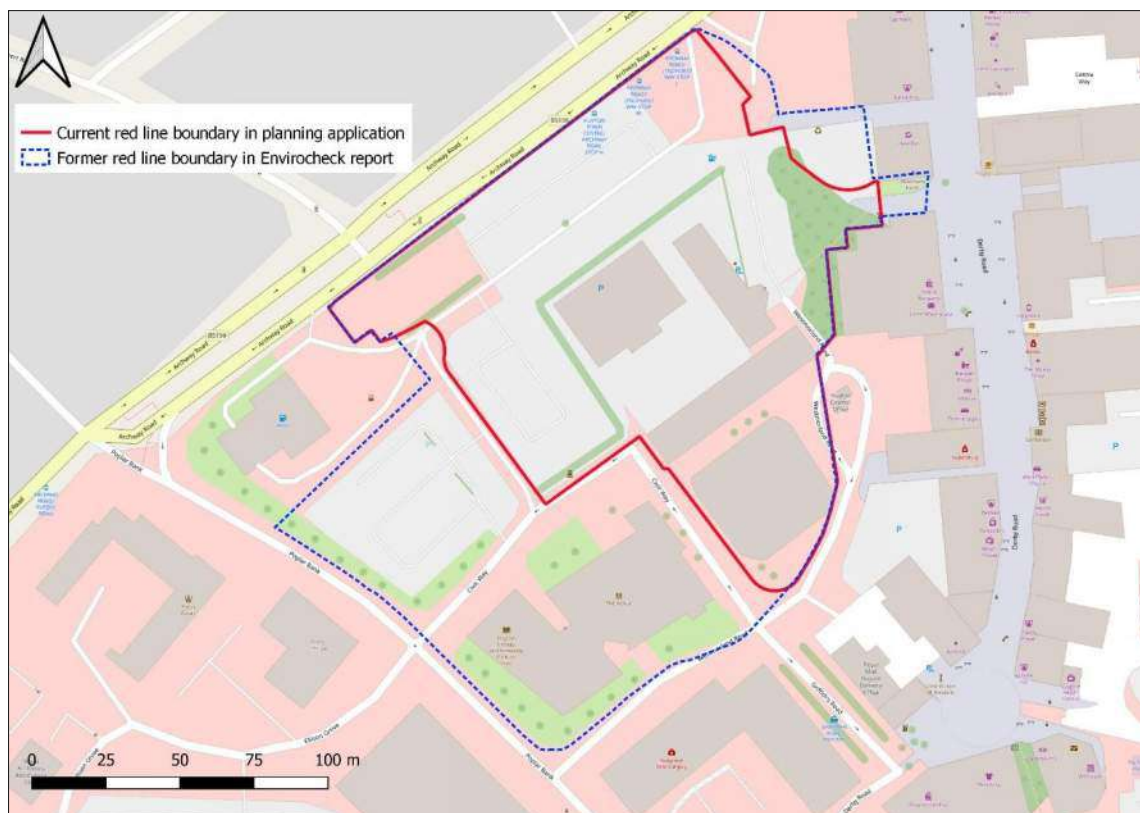


Figure 1—4: Comparison between current red line boundary to be used in the planning application (red) and former red line boundary which was used in the Envirocheck report (blue).

1.4 Unexploded Ordnance

As discussed in Section 1.2, Preliminary and Detailed UXO Risk Assessments have been undertaken for the site in accordance with CIRIA C681. The report references are as follows, and both reports are included as Appendix A.

- Brimstone UXO, "Stage 1 Preliminary UXO Risk Assessment", report ref 23-2180 revision 0, dated 13th July 2023.
- Brimstone UXO, "Stage 2 Detailed UXO Risk Assessment", report ref DRA-23-1581 revision 0, dated 9th August 2023.

The detailed assessment concludes that the risk to the site from UXO is low to moderate: low around the edge of the site where undamaged wartime structures were present, and low-moderate in the centre of the site which was a grassy undeveloped area at the time of WWII. The assessment also considers the significant degree of post-war redevelopment across the whole site. The report recommends that UXO safety awareness briefings should be undertaken prior to all intrusive works commencing to mitigate the risk to ALARP level (as low as reasonably practicable). No further mitigation requirements for intrusive works are recommended in both low and low-moderate areas. Reference should be made to the Brimstone reports for full details.

1.5 Conclusion

The Sutcliffe PRA is considered to be suitable to be submitted as part of the planning application for the Huyton enabling works.

It is recommended that this document, the Brimstone UXO assessments, and the 2023 Envirocheck report should be submitted along with the Sutcliffe PRA. The UXO assessments are included as Appendix A and the 2023 Envirocheck report is included as Appendix B.

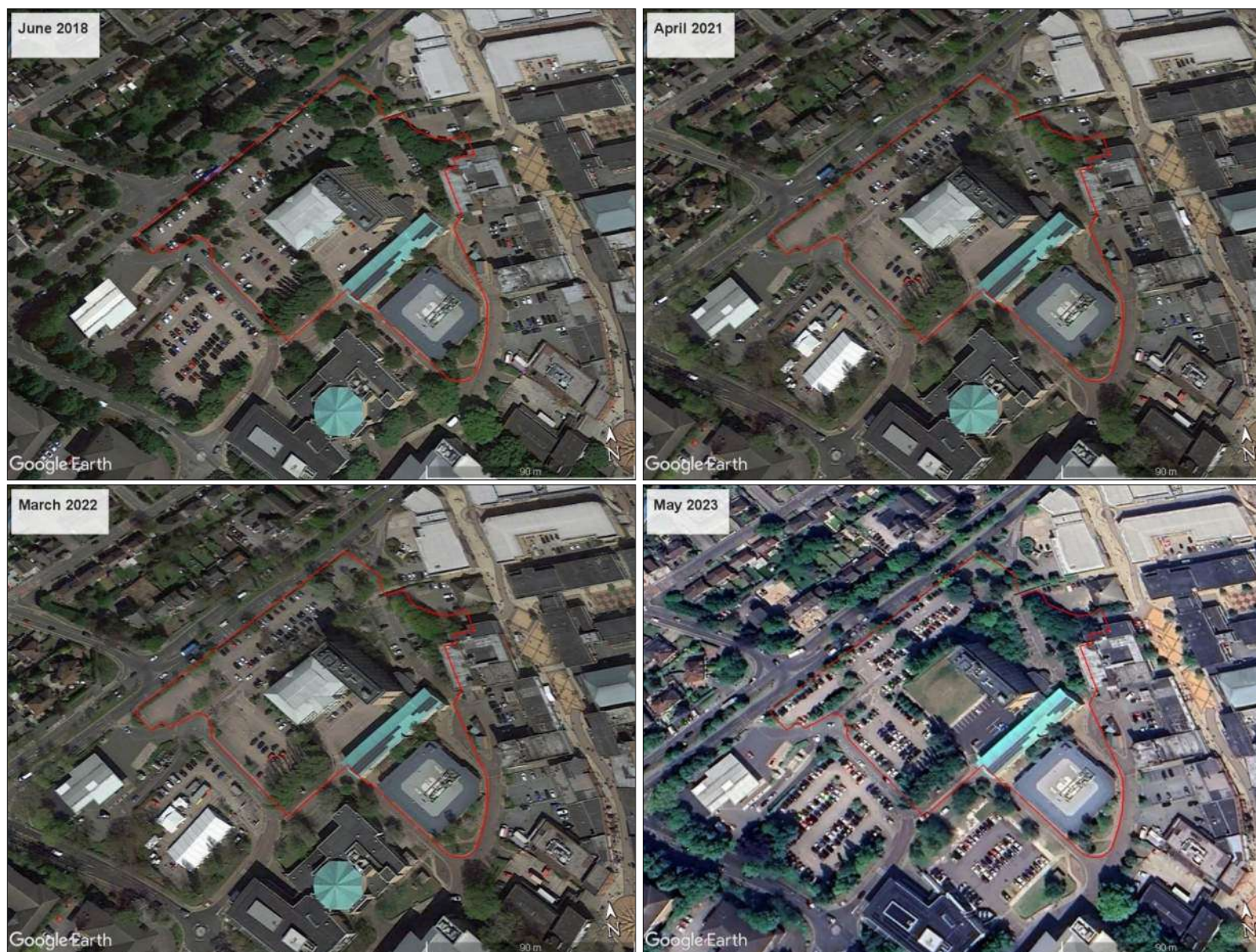


Figure 1—5: Site history between 2018 and 2023. Source: Google Earth.

Appendix A – UXO Assessments

STAGE 1 PRELIMINARY UXO RISK ASSESSMENT

REPORT REF: PRA 23-2180 | Revision: 0

Client: Genr8 Kajima Regeneration Limited
Project: Civic Way, Huyton
Date: 13/07/2023
Author: CB



Innovation Centre Medway, Maidstone Road,
Chatham, ME5 9FD
0207 117 2492
www.brimstoneuxo.com

INTRODUCTION

The Stage 1 Preliminary Risk Assessment is an initial screening assessment designed to highlight any sources of unexploded ordnance (UXO) with the potential to contaminate a given site.

The aim of the Stage 1 assessment is to identify or discount the need for further detailed research - a Stage 2 Detailed UXO Risk Assessment.

This desktop assessment has been researched and written by a dedicated Researcher / Risk Assessor and produced in accordance with the CIRIA C681 Guidelines: 'Unexploded Ordnance, a Guide for the Construction Industry' (published in 2009).

In preparation for this assessment, original wartime records, historic OS mapping and the *Brimstone UXO Sources Database* have been reviewed. The latter incorporates multiple datasets plotting the positions of a variety of domestic military sites and confirmed historic German bombing targets.

The Stage 1 Preliminary Risk Assessment considers the following:

1. The Proposed Works
2. Enemy Action During WWI and WWII
3. British / Allied Military Activity
4. Historic Site Occupancy
5. Risk Mitigating Factors

THE SITE

The Site (approximately centred on the National Grid Ref: SJ 44169 90827) is situated in Huyton within the Metropolitan Borough of Knowsley, Merseyside, approximately 95m north-east of Huyton railway station.

The Site comprises a combination of structures of a largely administrative nature, including Knowsley Council Building Control and Huyton Library, hardstanding car parks and accessways, as well as some vegetation and undeveloped land. Civic Way intersects the Site in the south-east and south-west. It is bound to the north-west by the Archway roadway, to the north-east by structures of an assumed commercial nature on Derby Road, to the south-east by Westmorland Road and to the south-west by Poplar Bank.



THE PROPOSED WORKS

SI works will consist of boreholes (most to 20m bgl, one to 10m bgl), window samples to 5m bgl or refusal, machine excavated trial pits to 3m bgl or refusal, hand dug foundation inspection pits against some of the existing buildings, and in situ testing (DCP probe and soakaways).

Development works will comprise an enabling works package involving a site strip, demolition of three buildings, installing drainage, diverting utilities, earthworks (envisage to be relatively minor) and ground remediation (if required). The construction of new buildings will be done in phases and the plans currently involve two offices, a hotel, a multistorey residential building, a new council HQ building, a multistorey car park, various low-rise food and beverage kiosks and landscaping. The existing library building will be retained.

ENEMY ACTION DURING WWI AND WWII

Potential Source of UXO	Significant?	Details
WWI German Bombing	✗	Huyton did not sustain any enemy bombing during WWI.

WWII German Bombing	✓	British District Bombing Density Statistics	The Site is situated within the WWII-era Urban District of Huyton-with-Roby, which sustained 22.3 bombs / 1,000 acres, a low-to-moderate bombing density.
		Evidence of Bomb Strikes / Damage	An ARP bomb map for Lancashire records numerous incidents in proximity to the Site footprint, including one potentially on Site. However, this map is of a small scale and therefore, the precise locations of bombing incidents cannot be discerned at a preliminary stage. Consultation of written records will be required to establish whether any of the local incidents occurred within / adjacent to the Site area. An in-house geodata set plotting incidents on Merseyside records an incident approximately 55m south-east of the Site at Huyton Telephone Exchange on Derby Road, occurring on 9/10 th January 1941; no further details were provided. Post-WWII aerial photography displaying the northern extent of the Site footprint does not display any immediately obvious evidence of bomb damage occurring i.e. structural clearance, cratering. However, it has not been possible to analyse the southern extent of the Site for evidence of damage at this stage due to a lack of suitable resources, namely aerial photography.
		Local Bombing Decoy Sites	None within a significant distance. Closest recorded decoy is plotted approximately 4.6km south-west.
		Local German Bombing targets	No identified primary or secondary targets in the immediate vicinity. Huyton railway station, approximately 95m south-west, may have been identified as a target of opportunity. The majority of bombing in the wider area will have been focussed on Liverpool docks, approximately 10km west.
WWII German Cross Channel Artillery Shelling	✗	n/a	
BRITISH / ALLIED MILITARY ACTIVITY			
Potential Source of UXO	Significant?	Details	
WWII Home Guard (HG) Activity	✗/✓	Soldiers of the 84 th Lancashire (Liverpool) Woolton HG Battalion may have been active locally during WWII. The possibility that the undeveloped area in the centre of the Site was accessed by armed HG soldiers on patrol cannot be discounted at this stage.	
Site Requisitioned for Wartime Military Use	✗/✓	No such evidence found at this stage. The possibility that the Site was requisitioned for temporary wartime use cannot be ruled out entirely (e.g. LAA gun battery, searchlight battery, RAF barrage balloon site).	
Existing or Historic Army or RAF Training Area / Weapons Range	✗	n/a	
Existing or Historic Military Bases and Other Installations	✗	During WWII, Huyton was home to three camps; an internment camp, a prisoner-of-war (POW) camp and a base for American servicemen. The interment camp was situated on the present day Bluebell Estate, approximately 160m north of the Site. The presence of this camp is unlikely to have resulted in UXO contamination occurring on Site.	
Existing or Historic Munitions or Explosives Factories	✗	n/a	

Existing or Historic Military Defensive Fortifications	✘	n/a
WWII Light and / or Heavy Anti-Aircraft (LAA and HAA) Fire	✘/✓	20 permanent HAA batteries were active within range of the Site during WWII. LAA guns may have defended vulnerable points within range of the Site. Luftwaffe activity in the immediate vicinity was infrequent, but was frequent and intense in the wider area. It is possible that an unexploded AA shell struck the Site and penetrated to a shallow depth.
Pipe-Mined Locations and Beach Minefields	✘	n/a
UXO Finds	✘	n/a

SITE HISTORY

What was the Site occupancy historically, especially during WWI and WWII?	During WWII, the Site was occupied by residential structures in peripheral areas, an area of undeveloped ground in the centre and further undeveloped ground throughout, including residential gardens. Wellcroft House is labelled in the southern extent, whilst a war memorial is labelled in the east.
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RISK MITIGATING FACTORS

Post-Conflict Ground Works	Post-WWII, the Site has experienced widespread redevelopment. All wartime structures have since been cleared and structures including Knowsley Council offices and Huyton Library have been constructed. Hardstanding has also been laid throughout in previously undeveloped areas. Deep (>2m bgl) excavations associated with the foundations for some of the post-WWII redevelopment may have occurred in the east of the Site. The remainder of the structures are likely to have required shallow (1-2m bgl) excavations, although deep excavations may have been required in some further areas. The grubbing out of wartime foundations and the laying of hardstanding on previously undeveloped land will have disturbed WWII-era soil to very shallow (<1m bgl) depths.
Likelihood of UXO Remaining	The risk associated with (any) very shallow buried UXO will have been largely mitigated. The risk associated with (any) shallow and deep buried UXO will have been partially mitigated.

CONCLUSIONS

German UXO:

- The Merseyside conurbation was the second most heavily bombed urban area in Britain after London due to the presence of Liverpool docks. However, the Site was situated in the Urban District of Huyton-with-Roby, approximately 10km from the docks and experienced a low-to-moderate bombing density.
- Despite this, a countywide ARP bomb plot map for Lancashire records numerous incidents within close proximity to the map, including one potentially falling on Site. However, due to the small scale of this map, it has not been possible to accurately pinpoint the location of each incident. In addition, a geodata set held in-house records an incident approximately 55m south-west of the Site; no further details were available at a preliminary stage.
- Although post-WWII aerial photography does not display any immediately obvious evidence of bomb damage occurring on Site, the image consulted only displays the northern extent of the Site. Therefore, it has not been possible to determine whether the southern extent sustained damage. High-resolution aerial photography of the Site area will be required in order to establish this.
- At the outset of WWII, the peripheral areas of the Site are anticipated to have experienced frequent levels of access owing to the presence of the residential properties and roadways. However, should damage have occurred as a result of the recorded incidents, it is possible that access levels will have decreased, potentially significantly depending on the scale of the damage (if any).
- Furthermore, although initially a UXB strike to any of the structures present will have left incontrovertible evidence of its existence, should these structures have sustained damage, then it is possible that conditions conducive to the visual detection of UXBs will have been present i.e. rubble and debris.

- In addition, the areas of undeveloped ground within the Site footprint may have presented further uncondusive ground cover i.e. overgrown vegetation. These areas are also likely to have experienced less frequent levels of access, heightening the chance of a UXB falling unnoticed and unreported.
- Although some post-WWII ground works have occurred on Site, the depths to which these have disturbed WWII-era soil will have varied. Subsequently, any UXB strike occurring in this location could feasibly remain in situ at shallow / deep levels, within previously unexposed areas / beneath or in between previous post-WWII excavations. Therefore, the proposed ground works are considered to be at risk of being exposed to a UXB encounter.

British / Allied UXO:

- No confirmed evidence of significant military activity specifically on Site has been found and none is likely to have occurred.
- It is quite possible that an unexploded British AA shell struck the Site during WWII and penetrated to a shallow depth within damaged areas / undeveloped ground. Any such UXO incident could have been overlooked and remained in-situ.

RECOMMENDATIONS

SI Works

Development Works

A **Stage 2 Detailed Risk Assessment** is recommended in order to further assess the risk to proposed works. In lieu of a Detailed UXO Assessment, Brimstone recommends on-Site support for any planned ground works.



BRIMSTONE

DETAILED UXO RISK ASSESSMENT

INTEGRITY

PROFESSIONALISM

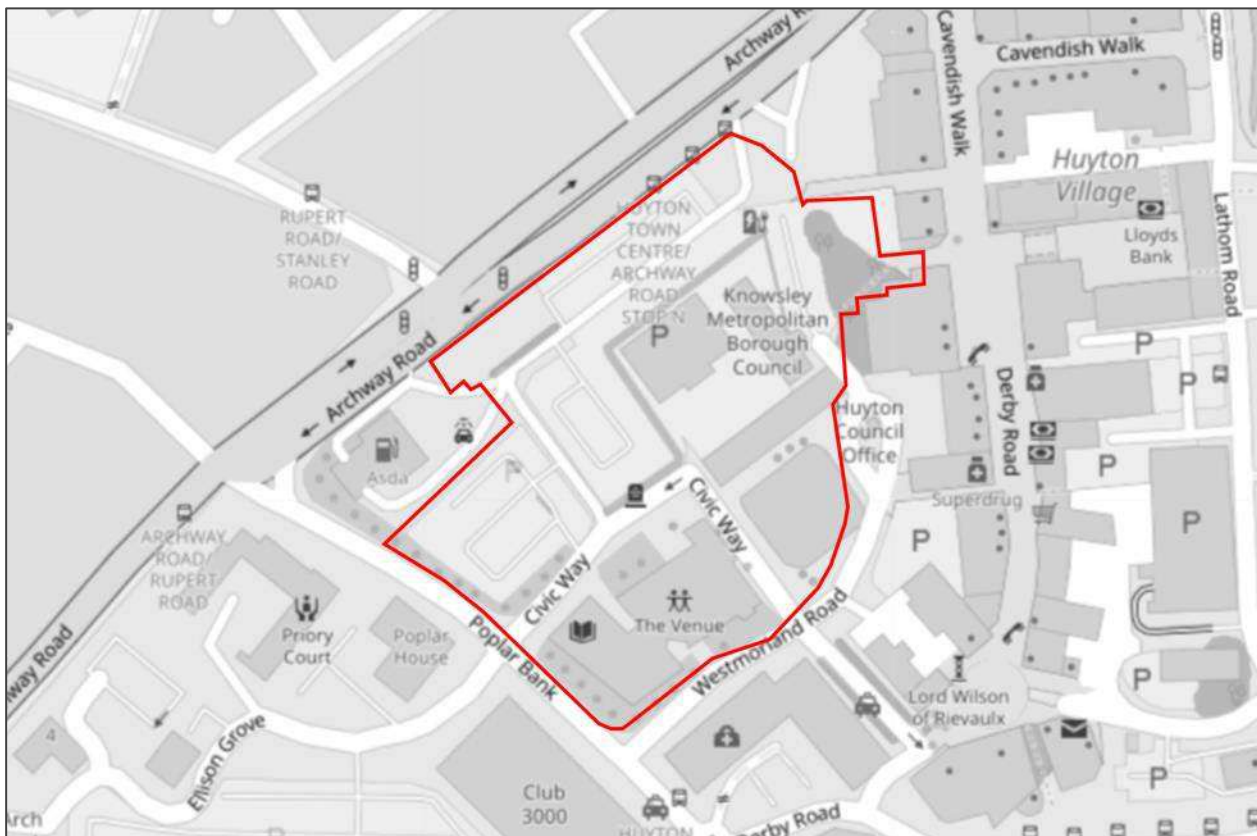
KNOWLEDGE



STAGE 2 DETAILED UXO RISK ASSESSMENT

Client: Genr8 Kajima Regeneration Limited
Project Ref: GENR02R
Site: Civic Way, Huyton
Report Ref: DRA-23-1581 GENR02R-CivicWay,Huyton
Revision: 0
Status: Final
Release Date: 9th August 2023

Author:	Tara Libbey	Project Researcher	tara.libbey@brimstoneuxo.com
Reviewed By:	Chris Birch	Project Researcher	chris.birch@brimstoneuxo.com
Authorised By:	Aaron Florence	Managing Director	



EXECUTIVE SUMMARY

RESULT: Brimstone concludes that UXO poses a **LOW** and **MODERATE RISK** to the proposed works.

THE SITE: The Site comprises a combination of structures of a largely administrative nature, including Knowsley Council Building Control and Huyton Library, hardstanding car parks and accessways, as well as some vegetation and undeveloped land. Civic Way intersects the Site in the south-east and south-west. It is bound to the north-west by the Archway roadway, to the north-east by structures of an assumed commercial nature on Derby Road, to the south-east by Westmorland Road and to the south-west by Poplar Bank.

THE PROPOSED WORKS: SI works will consist of boreholes (most to 20m bgl, one to 10m bgl), window samples to 5m bgl or refusal, machine excavated trial pits to 3m bgl or refusal, hand dug foundation inspection pits against some of the existing buildings, and in situ testing (DCP probe and soakaways).

Development works will comprise an enabling works package involving a site strip, demolition of three buildings, installing drainage, diverting utilities, earthworks (envisage to be relatively minor) and ground remediation (if required). The construction of new buildings will be done in phases and the plans currently involve two offices, a hotel, a multistorey residential building, a new council HQ building, a multistorey car park, various low-rise food and beverage kiosks and landscaping. The existing library building will be retained.

UXO RISK ASSESSMENT:

German UXO:

- The Merseyside conurbation was the second most heavily bombed urban area in Britain after London due to the importance of Liverpool docks, the largest west-facing port in Britain during WWII. However, the Site was situated in the Urban District of Huyton-with-Roby, which was approximately 10km from the docks and experienced a low-to-moderate bombing density according to official Home Office bombing statistics.
- Despite this, consultation of available records indicates that at least nine air raids affected the study area (approximate 500m radius). These raids resulted in at least 10 bombing incidents within 1km of the Site, although no incidents are recorded on Site. The closest HE bomb strike is recorded approximately 95m south, the closest incendiary incident approximately 500m south-west of the Site and the closest UXB approximately 160m north. However, it should be noted that the precise locations of some incidents, namely those within the Liverpool bomb census tracings, could not be discerned.
- Consultation of post-WWII aerial photography does not display any immediately obvious evidence of bomb damage occurring i.e. structural clearance, cratering. As a result of the lack of significant damage, the areas of the Site occupied by structures likely received frequent access throughout the majority of the bombing campaign, if not entirely. Although access to the schools may have been lower due to potential evacuation occurring, structures and roadways in the surrounds will have provided at least an intermittent level of observation.
- Any UXB strike to undamaged structures will have caused incontrovertible evidence of its existence and would have almost certainly been reported at the time. Additionally, aerial photography indicates that gardens associated with residential properties present within the Site footprint were well maintained and not covered by dense vegetation, suggesting regular levels of access and heightening the possibility of a UXB strike being noticed and reported.
- However, although the consulted aerial photography indicates that this area was relatively well maintained, the same cannot be said for the grassy undeveloped area in the centre of the Site due to potential periods of infrequent access; undeveloped areas with no immediately obvious usage could often be neglected for long periods of time. Should such a period have occurred, conditions conducive to the visual detection of UXBs i.e. vegetation may have been present in this location, which could have easily obscured a UXB entry hole. In addition, access levels to the undeveloped area will likely have been intermittent at best; a UXB is more likely to have fallen unnoticed in infrequently accessed areas as opposed to areas experiencing frequent access i.e. residential properties.

- In light of the abovementioned factors, the risk of encountering UXO on Site has been assessed to vary. Within locations of undamaged wartime structures, where wartime conditions are considered to be conducive to the obvious detection of UXBs, and adjacent well-kept garden areas, the risk has been assessed as **Low**. However, given the concentration of incidents in the wider study area, as the centre of the Site consisted of undeveloped ground, wherein conditions present could have feasibly resulted in a UXB strike falling unnoticed i.e. overgrown vegetation, a **Low-Moderate** risk of encountering UXO has been assessed. A 15m J-curve buffer has been included in the **Low-Moderate** zone.
- Note, the well-maintained nature of the **Low-Moderate** zone, as evidenced in the aerial photography, means that a likelihood of encountering UXBs is not considered significantly elevated, although a UXO Safety Awareness Briefing prior to works commencing is recommended. This variation in risk has been presented in the form of a risk map; see **FIGURE 9**.

British / Allied UXO:

- 20 permanent HAA batteries were active within range of the Site during WWII. LAA guns may have defended vulnerable points within range of the Site. Luftwaffe activity in the immediate vicinity was infrequent, but was frequent and intense in the wider area. However, for the same reasons as above, any such incident is unlikely to have gone unnoticed in the north and south of the Site, while such an occurrence could conceivably have gone unobserved within the undeveloped ground in the centre of the Site.
- During WWII, Huyton was home to three camps; an internment camp, a prisoner-of-war (POW) camp and a base for American servicemen. The internment camp was situated on the present-day Bluebell Estate, approximately 160m north of the Site. The presence of this camp is unlikely to have resulted in UXO contamination occurring on Site.
- No evidence of historic military activity within the Site boundary has been found and it is highly unlikely that any has occurred historically. Consequently, the risk from associated UXO is **Low**.

Likelihood of UXO Remaining and UXO Encounter:

- Post-WWII, the Site has experienced significant redevelopment. All wartime structures have since been cleared and structures including Knowsley Council offices and Huyton Library have been constructed. Hardstanding has also been laid throughout in previously undeveloped areas. Deep (>2m bgl) excavations associated with the foundations for some of the post-WWII redevelopment consisting of a six-storey structure as well as further one to three storey structures may have occurred in the east of the Site. The remainder of the structures are likely to have required shallow (1-2m bgl) excavations, although deep excavations may have been required in some further areas. The grubbing out of wartime foundations and the laying of hardstanding on previously undeveloped land will have disturbed WWII-era soil to very shallow (<1m bgl) depths.
- The risk associated with any deep buried German UXBs will likely have been mitigated in the locations of possible deep excavations in the south and east of the Site. The risk associated with any very shallow buried HAA shells will have been mitigated with the clearing of pre-WWII structures and the subsequent laying of hardstanding on previously undeveloped ground.

RECOMMENDED RISK MITIGATION MEASURES: The measures detailed below are recommended to mitigate the risk to ALARP level.

Risk Mitigation Measure	Recommendation
UXO Safety Awareness Briefings	Prior to all intrusive works commencing.

RISK MAP:



LOW risk from German UXBs and HAA shells

LOW-MODERATE risk from German UXBs and HAA shells



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QUALITY MANAGEMENT

Brimstone is committed to the provision of UXO risk mitigation services, including the safe removal and disposal, in the UK and overseas. Since our inception in 2016 it has been our goal to provide unsurpassed UXO risk mitigation services. Brimstone is a client-driven organisation, we aim to provide the client the services they need, to the agreed requirement, in accordance with national and international standards.

We are committed to providing a safe, cost-effective and quality service, underpinned by our three core values;

- Integrity in advice, information and the manner in which we conduct ourselves and our operations,
- Professionalism in the way we handle our operations, people and processes, and
- Knowledge in new skills and information, to ensure we remain at the forefront of innovation and strategy.

We are committed to the applicable requirements of the ISO 9001 standards. We set and review quality monitoring objectives to measure the performance of our quality management system. Brimstone wholly endorses the ethos of 'continual improvement efforts' and allocates resources to meet this requirement.

This policy applies to the whole of the Brimstone services and affects roles from the managing director down. All staff are responsible for helping manage quality, seeking improvement through constant review, and by encouraging supplier and subcontractor involvement. We are committed to achieving customer satisfaction using quality procedures, which will be operated to meet or exceed the applicable requirements of ISO 9001.

Aaron Florence
Founder and Managing Director
Brimstone

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1 INTRODUCTION

1.1 Background

Genr8 Kajima Regeneration Limited (the Client) has commissioned Brimstone to carry out a Stage 2 Detailed Unexploded Ordnance Risk Assessment (DRA) of the proposed redevelopment works at the Civic Way, Huyton site (the Site).

1.2 Legislation

There are no regulations that specifically govern the UXO risk mitigation industry in the UK. There are however two pieces of legislation that require consideration. It is industry best practice (and common sense) to frame your site in the context of UXO, and to put in place measures to protect people from risks. In 2009, CIRIA published Unexploded Ordnance (UXO) - A Guide for the Construction Industry C681. This publication, though not legally binding, provides the gold-standard framework to which UXO and construction companies operate.

1.2.1 Construction Design and Management Regulations (CDM) 2015

The regulations identify the client, the CDM coordinator, the designer, and the principal contractor as responsible parties. Under the regulations, responsible parties are held accountable for the way a construction project is managed and for the health and safety of workers. Responsible parties must:

- Provide an appropriate assessment of potential UXO risks, or ensure an assessment is completed by another party.
- Put in place appropriate risk mitigation measures if necessary.
- Supply all parties with information relevant to the risks.
- Ensure the preparation of an emergency response plan.

1.2.2 The Health and Safety at Work Act 1974

The Health and Safety at Work Act 1974 had a transformative impact on health and safety, saving thousands of lives since its enactment. Employers must consider their employees, workers not in their employment, and members of the public. The act places a duty on every employer 'as far as is reasonably practicable' to protect workers from risks. It also says that information must be provided about aspects of health and safety that affect their role.

1.3 Commercial Contractor and the Authorities

1.3.1 Commercial Contractors

If your site has been given a moderate or high-risk rating, then control measures will be recommended. The measures will be specific to the scope of works on site, usually in relation to the depth and extent of excavations, piling and similar activities. There are a range of different methods at Brimstone's disposal, including:

- Non-intrusive surveying (including drone surveying)
- Intrusive surveying
- Search and clear
- Watching brief
- Support to geotechnical investigations
- Target investigation
- Site-specific training packages
- Site safety briefings

Our UXO Engineers can assess suspicious items on site when they are found. This will avoid unnecessary site evacuations. If our engineer(s) decide the item is UXO, they will coordinate with the authorities, manage disruptions, and advise on control measures, such as evacuations and a cordon.

1.3.2 UK Authorities

If Brimstone is not on site and a suspicious item is found, the local police must be immediately called on the non-emergency number. Police will visit the site. They will then inform the Joint Services Explosive Ordnance Disposal (JSEOD) office, which will coordinate the callout of an army or navy response team.

A precautionary cordon will initially be put into effect, with possible evacuation of homes and businesses, road and rail closures. The cordon may be extended following the advice from JSEOD's response team.

To manage their resources, JSEOD triages incidents. A consideration of the type, size and location of the UXO is made. If an incident is not given a high priority rating, a team may not be available for up to two days following the initial report.

The use of JSEOD is under the Military Aid to Civil Authorities (MACA) framework, therefore the budget and personnel is limited, and there are no statutory obligations made of the MOD. Often the MOD will recommend involvement of a commercial UXO contractor to manage the ongoing risk – this is especially true of former airfields and training areas where contact with land service ammunition can be frequent.

1.4 UXO Risk in the UK

Fortunately, to the best of our knowledge, there has not been a single post-war incident in the UK where a construction worker has been killed or injured because of an item of UXO exploding. There have been cases in mainland Europe where UXO had been struck and then exploded, killing workers. In 2019 a WWII general purpose bomb spontaneously detonating in a field north of Frankfurt, Germany.

However, the incident in Frankfurt is not comparable to the UK, due to the way different countries manufactured ordnance. Bombs made in different countries have different associated hazards. British WWII bombs, for example, have a fuzing system which uses chemicals which makes them very unsafe. Please see **APPENDIX 1** for recent examples of UK UXO incidents.

Between 2013 and 2016 JSEOD responded to 7,500 callouts. These callouts range from falsely identified objects, inert objects, small items of UXO and large WWII German unexploded bombs (UXBs). Each year the construction industry inadvertently unearths UXO; often this goes unreported. UXO contamination comes from three main sources:

- **Enemy action:** during WWI and WWII the air forces of Germany, and to a lesser extent Italy, bombed targets throughout the UK. The German navy bombarded several coastal targets in eastern England during WWI and then in WWII German long-range artillery on the French coast bombarded parts of Kent.
- **Allied military activity:** during WWI and WWII several Allied nations used the UK as a staging area for military action in the European Theatre; predominantly the US and Canada.
- **UK military activity:** domestic British Army, Royal Air Force (RAF) and Royal Navy (RN) training activities during peacetime and conflict as well as anti-aircraft gun and rocket batteries during WWI and WWII.

1.5 UXO Detonations

A detonation is a violent chemical reaction which creates a huge volume of gas. This reaction appears to happen instantaneously – the velocity of the shockwave moving is up to 9000m per second. This chemical reaction is started using a small amount of very sensitive explosives called primary explosives. These types of explosives are highly sensitive to shock, friction, heat, and spark. As the explosive charge undergoes high order decomposition (detonation), the brisance, or shattering effect, causes the casing to splinter, projecting razor-sharp shrapnel across long distances.

The blast wave effect and the shrapnel effect can cause significant damage. Calculating safety distances is a complex process. As a rule of thumb, in open ground, a 250kg explosive charge (as would be found inside a typical 500kg bomb) would require an omnidirectional safety distance of at least 1.6km.

Bombs work by amplifying the explosive charge from the sensitive primary explosive through to the main charge or fill of the item. This process is called an explosive train, if any link in that chain is broken, the item will fail to function as intended. This can be due to mechanical, electrical, or manufacturing tolerances or faults. Amongst other reasons, detonation of UXO could occur under the following circumstances:

- **UXO body impact:** A substantial impact onto the main body of a UXO; borehole rigs, piling rigs, jack hammers and mechanical excavator buckets.
- **Fuse impact:** Environmental conditions during decades of burial can result in the primary explosives located in the fuse pocket to crystallise and become shock sensitive. It would then take a relatively small impact or friction impact to cause the fuse to function and detonate the UXO.
- **Re-starting a timer:** A small proportion of German WWII bombs used clockwork fuses. In 2002 an Army EOD Engineer reported that the clockwork fuse in a UXB re-started. Decades of burial cause substantial corrosion in WWII German UXBs and therefore an incident such as this is extremely rare.

2 ASSESSMENT METHODOLOGY

2.1 Introduction

This assessment has been produced in accordance with the relevant CIRIA guidelines; *Unexploded Ordnance (UXO) - A Guide for the Construction Industry C681* (published in 2009). CIRIA C681 is a publication which originated from round table best practice discussions from industry leaders.

2.2 SPRC Risk Model

The Source, Pathway, Receptor, Consequence (SPRC) risk model can be applied to buried UXO as follows:

- **Sources:** UK and allied UXO sources include military firing ranges, bases, storage depots, munitions factories, anti-aircraft batteries, amongst others. There are many wartime causes of UXO contamination. The source for enemy contamination is overwhelmingly from WWII German air raids.
- **Pathways:** the pathway describes how the UXO reaches receptors. Usually UXO is buried and therefore pathways can be any activity which involve breaking ground. Examples include ground investigation works, site enabling works and excavations.
- **Receptors:** receptors are the people, assets and infrastructure that can be adversely affected by UXO exposure. This includes site personnel, plant, equipment, buildings, the general public, , and the environment.
- **Consequence:** the consequences of an inadvertent UXO detonation are catastrophic. They include injury and loss or life, as well as damage to property. Fortunately, the likelihood of UXO detonating is low, even when it is uncovered during works. Another consequence to consider however is delays to works, which itself can be a risk.

2.3 Assessment Structure

In accordance with CIRIA C681 this assessment addresses the following considerations in the appropriate order:

- The likelihood that the site was contaminated with UXO.
- The type of UXO that could have contaminated the site, and their associated hazards.
- The likelihood that UXO remains on the site.
- Theoretical bomb penetration depths.
- The likelihood that UXO will be uncovered during the proposed works.
- Risk rating and risk mapping (as appropriate).
- Risk mitigation recommendations.

2.4 Information Sources

To complete this risk assessment Brimstone has gathered information from a wide range of sources. Brimstone's research team has completed detailed historical research, including access of original archived records. The following is a general list of information sources that are consulted during the research process:

- The National Archives,
- Local archive centres,
- Ministry of Defence,
- The Council for British Archaeology,
- Groundsure mapping services,
- Historical aerial photography (Historic England, Britain From Above, Bluesky),
- Google open source mapping,
- The British Geological Society,
- Open sources; published book, articles, web resources,
- Site specific information supplied by the Client,
- Brimstone's library and historical database, and
- Brimstone's former armed forces employees.

2.5 ALARP Principle

The ALARP (as low as reasonably practicable) principle corresponds to the actions that should be taken to reduce risks. The term 'ALARP' is in the Health and Safety at Work Act 1974, which says that risks must be controlled in a reasonable way.

Infinite time, effort and money could be spent trying to eliminate risk entirely. HSE uses the example that spending £1m to prevent five employees bruising their knees is disproportionate, whereas spending the same amount to prevent an explosion which could kill 150 people is proportionate.

Using this principle, Brimstone aims to reduce client costs by recommending strategies that are proportionate to the assessed risks, if any elevated risk is found at all.

2.6 Risk Tolerances

The Brimstone risk assessment process divides UXO risk into two tolerances:

- **Tolerable:** negligible risk or low risk ratings are tolerable. Where the risk cannot be completely discounted, it may be a useful strategy to opt for a low-cost measure, such as a UXO safety briefing from a qualified UXO engineer.
- **Intolerable:** moderate risk or high-risk ratings are intolerable. Proactive risk mitigation measures should be put in place. Various strategies are at Brimstone's disposal to meet your project-specific needs.

2.7 Reliance and Limitations

This report has been prepared using published information and information provided by the Client. Brimstone is not liable for any information which has become available following the publication of this report. No third-party liability or duty of care is extended. Any third-party using information contained in this assessment do so at their own risk.

3 THE PROJECT

3.1 The Site

The Site (approximately centred on the National Grid Ref: SJ 44169 90827) is situated in Huyton within the Metropolitan Borough of Knowsley, Merseyside, approximately 95m north-east of Huyton railway station.

The Site comprises a combination of structures of a largely administrative nature, including Knowsley Council Building Control and Huyton Library, hardstanding car parks and accessways, as well as some vegetation and undeveloped land. Civic Way intersects the Site in the south-east and south-west. It is bound to the north-west by the Archway roadway, to the north-east by structures of an assumed commercial nature on Derby Road, to the south-east by Westmorland Road and to the south-west by Poplar Bank.

FIGURE 1: Site Location Maps **FIGURE 2:** Recent Aerial Photograph

3.2 The Proposed Works

SI works will consist of boreholes (most to 20m bgl, one to 10m bgl), window samples to 5m bgl or refusal, machine excavated trial pits to 3m bgl or refusal, hand dug foundation inspection pits against some of the existing buildings, and in situ testing (DCP probe and soakaways).

Development works will comprise an enabling works package involving a site strip, demolition of three buildings, installing drainage, diverting utilities, earthworks (envisage to be relatively minor) and ground remediation (if required). The construction of new buildings will be done in phases and the plans currently involve two offices, a hotel, a multistorey residential building, a new council HQ building, a multistorey car park, various low-rise food and beverage kiosks and landscaping. The existing library building will be retained.

FIGURE 3: Proposed Site Plan

4 SITE HISTORY

4.1 Site Introduction

Site-specific history can be assessed by reviewing historical mapping, historical aerial photography and by carrying out additional Site-specific research where appropriate. Below are descriptions of a selection of records relevant to the Site:

4.2 Mapping

Period	Map Date	Map Scale	Review
Pre-WWI	1908	1:10,560	The majority of the Site comprised undeveloped ground associated with Wellcroft House, of which some may be consisting of gardens belonging to the residential properties positioned along the Site boundary in the north and south. The Site was bound to the north-east by further residential properties and undeveloped ground, whilst Westmorland Road lies to the south-east. Poplar Bank borders the Site to the south-west whilst Archway Road is located north-west of the Site. Huyton Station can be seen approximately 95m south of the Site.
Post-WWI	1925	1:10,560	No significant changes have occurred on Site. A war memorial is present in the east of the Site.
Pre-WWII	1938	1:10,560	FIGURE 4.1: Although this map is of small scale and lacks detail, it can be said that no significant changes have occurred on Site.
Post-WWII	1952-1953	1:2,500	FIGURE 4.2: No significant changes have occurred on Site. Further residential structures were developed in the south-east to the Site.
	1965	1:10,000	A school has been developed the east of the Site, in addition to one in the south-east to the Site.

4.3 Photography/Aerial Photography

Period	Photo Date	Review
Pre-WWII	26 th March 1946	FIGURE 5.1: This photograph was taken approximately one year after the end of WWII. No immediately obvious damage can be seen to the structures on or nearby the Site. The undeveloped ground occupying the Site appears to have been well maintained with no ground disturbances visible.
Post-WWII	9 th March 1948	FIGURE 5.2: This photograph was taken three years after the end of WWII and only covers the northern section of the Site. No immediately obvious damage / ground disturbances are visible to the structures and undeveloped but well-maintained ground on Site. The same can be said about the surrounding structures and nearby roads.

4.4 Additional Site-Specific History

Some sites will have been occupied by landmarks or significant buildings historically and in such cases specific written histories including significant wartime details are occasionally available in the public domain. No such information was available.

5 UXO RISK - GERMAN BOMBING

5.1 WWII Bombing History of the Site

5.1.1 Liverpool

During WWII, Liverpool was home to the second largest port complex in the UK – the largest west facing port - and a Royal Navy base. As such, its destruction became a primary objective for the Luftwaffe. The city and its long stretch of docks were subjected to a concentrated bombing campaign which resulted in Liverpool becoming the second most heavily bombed area in Britain, behind London. The scale of these raids also led to extensive bomb damage in neighbouring Bootle, Wallasey and Birkenhead.

The first major air raid on Liverpool took place on 28th August 1940. 160 bombers dropped 350 tons of HE bombs, 30 HE parachute mines and 3,000 incendiary bombs. There were 50 raids during the first three months of the Luftwaffe campaign on the city. In September and October, Liverpool was subject to a raid almost every other night. Most of these were minor, conducted by just a few aircraft; however, several attacks were executed by approximately 300 aircraft and lasted over ten hours.

The Christmas Blitz of 1940 was a series of three consecutive night raids, which were the heaviest attacks so far. Between 20th and 22nd December, 365 people were killed. Another heavy attack, aimed at the docks specifically, on 9th January was the only raid of that month.

Another period of devastation was known as the May Blitz of 1941, consisting of a seven-night bombardment. 500 roads were closed due to damage, over 6,500 homes were completely demolished and a further 190,000 sustained damaged. It involved 681 bombers dropping 870 tonnes of HE bombs and over 112,000 1kg incendiaries, the latter starting numerous fires throughout Merseyside. As a result of this assault, 70 out of 140 berths in Liverpool's docks were put out of action.

The May Blitz marked the end of concentrated raids over Merseyside. A few small-scale attacks followed with the final bombs falling on the night of 10th January 1942, the eightieth air raid over the city.

5.1.2 Site Specific

The Luftwaffe's primary aiming point for indiscriminate large-scale air raids (Liverpool Docks) is situated some 9km to the west. The Site would have therefore not been vulnerable to inaccurate overspill bombing.

No identified primary or secondary targets were present in the immediate vicinity. Huyton railway station, approximately 95m south-west, as well as the internment camp and prisoner of war camp, later a base for American servicemen approximately 160m north may have been identified as a target of opportunity. The majority of bombing in the wider area will have been focussed on Liverpool docks, approximately 10km west.

5.1.3 Bombing Decoy Sites

In mid-1940 bombing decoys were introduced. The decoys used either;

- A system of lighting to simulate an urban area or a military airfield's runway
- Deliberately started fires to simulate a previously bombed target
- Dummy buildings and vehicles to simulate a military facility

792 static decoy sites were built at 593 locations in Britain. They were estimated to have drawn at least 5% of the total weight of bombs away from their intended targets. No decoys were operational within a significant radius of the Site during WWII. The closest was approximately 4.6km to the south-west.

5.2 WWII Bombing Records

5.2.1 Introduction

The bomb census recorded the location and type of bomb strikes to help with intelligence gathering and planning. It was compiled using information recorded by ARP wardens. These records were gathered by the Ministry of Home Security to calculate bombing density within administrative areas.

The bomb census was unreliable in the early stages of the war, though by 1941 procedures had been standardised. The quality of the census records also depended on where in the UK the records were produced. Some records are held at the National Archives and some are held at local borough archives.

Relevant records held at the National Archives, Merseyside Fire and Rescue Service, Liverpool Central Library & Record Office and the Lancashire Archives were obtained for this risk assessment.

5.2.2 Bombing Density Statistics

The table below records the Ministry of Home Security's bombing density calculation for the Urban District of Huyton-with-Roby. It gives a breakdown of the types of large German bombs reported and is understood to not include UXBs.

Admin Area	Huyton-with-Roby
Area Acreage	3,053
High Explosive Bombs (all types/weights)	64
High Explosive Parachute Mines	4
Flam (Oil) Bombs	0
40kg Phosphorus Incendiary Bombs (IBs)	0
40kg 'Fire Pot' IBs	0
V1 Flying Bomb	0
V2 Long Range Rocket	0
Total (excluding V-Weapons and 1kg / 2kg IBs)	68
Bombs Per 1,000 Acres	22.3

1kg / 2kg incendiary bombs (IBs) and 2kg anti-personnel (AP) bombs were often too numerous to record accurately and therefore are not included in the above figures.

5.2.3 Lancashire ARP Bomb Map

Brimstone has reviewed a countywide map for WWII-era Lancashire, held at Lancashire Archives. This small-scale map covers all boroughs / districts throughout the WWII-era county aside from County Boroughs and relates to a set of written ARP incident records (discussed in the following section). Each plot point on the map is thought to represent one incident; due to the size of the plot point, the precise location of each incident is not discernible. A relevant section of the map is displayed at **FIGURE 6**.

- At least six incidents are plotted within an approximate 1km radius.
- The closest recorded incident appears to be approximately 400m east of the Site.

5.2.4 Lancashire ARP Incident Records

Brimstone has reviewed a collection of written ARP incident records for WWII-era Lancashire, related to the bomb map discussed in the previous section and held at Lancashire Archives. Details provided include the date, location, type of ordnance dropped and comments on damage and evacuation. It should be noted that due to the small-scale of the related map, precise locations could not be discerned. Records in proximity (an approximate 1km radius) to the Site have been transcribed in the table below.

Local ARP Bombing Incidents				
Incident Number	Date	Bombs	Location (relative to the Site)	Remarks
65	31/08/1940	Unspecified amount of HE bombs	Huyton, Blue Bell Lane, approx. 130m to 990m north of the Site.	Slight damage to property.
269/1	24/09/1940	1 x UXB	Huyton, rear of St Aloysius R.C. School, approx. 1km west.	In field 150 yds in rear of school.
351/1	19/10/1940	IBs	Huyton (Nr Liverpool), approx. 500m south-west of the Site.	In grounds of Huyton College. No damage.
457/1	19/11/1940	1 x HE bomb	Huyton, approx. 400m east of the Site.	No casualties, front door of Huyton Hill School blown in, and Hall damaged, other very minor damage.
767/1	10/01/1941	IBs and approx. 6 x HE bombs	Aughton, approx. 600m west of the Site.	No damage from Incendiaries, property damage by HE and four persons injured.
768/1	10/01/1941	1 x HE bomb	Huyton, approx. 95m south of the Site.	Bombs dropped on LMS Rly Line 100 yds east of Huyton Station.

5.2.5 Lancashire UXB Register

Brimstone has reviewed a collection of written incident records recording the location of UXBs in WWII-era Lancashire, held at Lancashire Archives. These records provide the date, general location and action taken of each incident, but not the type of UXB discovered. It should be noted that the locations relative to the Site below are approximate based on the information available; the precise location of each incident could not be confidently determined. Records in proximity to the Site (approximate 1km radius) have been transcribed in the table below.

UXB Register			
Date	Bombs	Location (relative to the Site)	Action Taken
24/10/1940	Unspecified	Huyton, at Whatfield Farm. 500 yds north of Belle Vale Pumping Station, approx. 1km south of the Site.	Confirmed by Police 24/10/1940. Reported to R.C. on 25/10/1940. Abandoned.
26/10/1940	Unspecified	Huyton, AA shell in field between Prison and Blue Bell Lane 200 yds south of Liverpool Road. Approx. 800m north of the Site.	Reported by police 26/07/1940. Reported to Region 27/10/1940
14/11/1940	Unspecified	Huyton, at Wheatfield Farm. Approx. 1km south of the Site.	Re-confirmed by police and reported to Region 14/11/1940. Removed 12/11/1940
08/04/1941	UXAA	Huyton, under bush by Cinder Path from Torbock Road to Wheathill House. Approx. 760m to 1km south of the Site.	Removed by BDS 08/04/1941
13/04/1941	UXAA	Huyton, in field south of Long View Drive. Approx. 1km north-east of the Site.	Removed 18/04/1941
07/05/1941	UXAA	Huyton, 300 yds west of St Johns Road and 300 yds north of St Johns Road. Approx. 700m south-east of the Site.	Removed 10/05/1941
07/05/1941	UXAA	Huyton. No exact location specified.	Removed 10/05/1941
08/05/1941	UXAA	Huyton, enclosure of the Alien Interment Camp. Approx. 160m north of the Site.	Removed 09/05/1941

5.2.6 Liverpool Bomb Census Map Tracings

Brimstone has reviewed a collection of original tracings of bomb census maps for the County Borough of Liverpool, held at the National Archives. It should be noted that as this source consists of tracings, infrastructure and roadways are often not visible. As such, it is difficult to accurately plot the precise location of the Site. Additionally, some dates and types of ordnance dropped are not included / specified. Relevant maps are displayed at **FIGURE 7**.

- Approximately five incidents are recorded within an approximate 500m radius of the Site on 12th / 13th October 1941.
- Although it has not been possible to accurately establish the precise locations of these incidents, no incidents appear to be recorded on Site; however, incidents to the east, south-east and south-west may have occurred within an approximate 100m of the Site.

5.2.7 Liverpool 'Hand Map'

Brimstone has reviewed a 'hand map' plotting areas of bomb damage in Liverpool, held at Liverpool Central Library & Record Office. This large-scale map records the approximate locations of 'serious fire damage', 'serious HE damage' and 'land mine damage'. As Huyton-within-Roby was not within the wartime County Borough of Liverpool, the Site is not covered by this source.

5.2.8 Merseyside Fire and Rescue Blitz Chronology

Brimstone has reviewed a chronological list of incidents occurring over Liverpool and the wider area during the Blitz, compiled by the Merseyside Fire and Rescue Service. The information provided with each incident is largely scarce, but sometimes includes the type of ordnance dropped and damage sustained.

One reference was found to an incident occurring within approximately 500m of the Site. This occurred on the Huyton Post Office Exchange, approximately 100m to the south of the Site.

5.2.9 Liverpool Civilian Fatalities Map

Brimstone has reviewed a contemporary map of Liverpool recording the locations of bombing incidents that resulted in at least one fatality, recently published by the Liverpool Echo and presented in **FIGURE 8**. This map was compiled using data from the Commonwealth War Graves Commission.

No fatalities are recorded on Site. The closest recorded fatalities are plotted approximately 100m south; the location of this incident is corroborative of the incident recorded on the Huyton Telephone Exchange. No information is provided regarding when this incident occurred, or the type / quantity of ordnance involved.

5.2.10 Abandoned Bomb Register

Due to the overstretched bomb disposal units during WWII, many bombs were intentionally left undisturbed. UXBs were triaged based on where they were and how big they were. If they didn't pose a significant risk, they were 'abandoned'. The locations of these bombs were recorded on the abandoned bomb register.

The abandoned bomb register is a public record document held at the Parliamentary Archives of the House of Commons, from which Brimstone has obtained a copy. The register should not be relied on for completeness or accuracy. The closest abandoned bomb is recorded approximately 6km south of the Site.

5.2.11 Secondary Source / Anecdotal Evidence

A search of online resources, as well as a review of local history publications was carried out with the intention of locating any eyewitness accounts of local bombing incidents. However, no such evidence was found.

5.3 Likelihood of UXB Contamination

Where detailed bombing records exist, it is possible to predict whether any UXBs could be found on a site. This likelihood is discussed in the following table:

Density of Bombing	
Number of Air Raids in the Vicinity:	A comparison of the bombing incident records confirms that at least 10 air raids affected the study area.
Intensity of these Air Raids:	All bombs dropped locally were likely part of small-scale and medium to large-scale indiscriminate carpet-bombing raids, all of which were carried out at night.
Bomb Strike Positions	
Closest Bomb Strikes	HE bombs: approx. 95m south. 1kg / 2kg IBs: approx. 500m south-west
Alignment of recorded Bomb Strikes:	It has not proved possible to ascertain the alignment of bomb sticks from the available record set.
Bomb Failure Rate	
Evidence to suggest that the generally accepted failure rate of 10% differs in the vicinity of the site:	None.

UXBs recorded in close proximity to the site:

Closest plotted UXB strike to the Site is approximately 160m north.

5.4 Likelihood of Subsequent UXB Detection

A range of circumstances determine whether a UXB strike location would have been identified, during and after the war. This is discussed in the following table.

Historic Access
A UXB falling on a site which was frequently accessed would have had a better chance of being found. ARP Wardens actively searched for UXBs in heavily bombed residential areas. The importance of a site or nearby buildings and infrastructure was also a factor. Many industrial facilities had fire watchers tasked with extinguishing incendiary bombs and reporting UXBs. The residential properties, including the garden areas, on Site were likely frequently accessed throughout WWII by their occupants. This anticipated frequent access levels reduces the likelihood of local air raids occurring unobserved. Any UXBs dropped on these properties would likely have been witnessed and subsequently investigated. Although access to the school structures in the east is considered likely to have been lower due the potential evacuations protocols, this is not likely to have been significant, whilst the presence of the residential properties and roadways in the surrounds will likely have provided intermittent access and observation. However, the central area of the Site comprised an area of open ground with no immediately obvious usage and is unlikely to have been accessed frequently. Nonetheless, aerial photography indicates that the Site was well maintained, indicating a degree of access. Additionally, the residential properties surrounding the Site as well as Archway Road to the north-west, likely resulted in intermittent levels of observation in this area.
Bomb Damage
As the bombing campaign continued, damaged areas became vulnerable to unreported UXBs. Bomb site wreckage or soil disturbance at a bomb crater could obscure evidence of a subsequent UXB strike. The structures on Site do not appear to evidence any signs of bomb damage i.e. tiling repairs. Furthermore, no evidence of bomb damage was evident in post-WWII aerial photography in the areas of open / undeveloped ground on Site i.e. cratering. Although it should be noted that given the Site's predominantly open wartime nature, evidence of minor damage is unlikely to have been visible within the consulted photography.
Ground Cover Type
A UXB which falls on open field could easily go unnoticed, whereas a UXB dropped on a hard-surfaced car park would have been easily observed. Any UXB strike to the structures on Site would have caused incontrovertible evidence of its incidence as it passed the structures and into the ground beneath. The same can be said for the majority of neighbouring structures and roads to where (assuming no cratering) a HE UXB entry hole would have been persistent and easily recognisable. Grassy areas were also present on Site during WWII. Aerial photography indicates that these areas were well maintained or gardens belonging to the residential structures. The anticipated intermittent frequency of access on Site likely means that these areas were not covered by dense vegetation. Therefore, evidence of a UXB in these sections of the Site is likely to have been observed and reported.

5.5 Bombing During WWI

During WWI, an estimated 9,000 German bombs were dropped on London, Eastern England and South-Eastern England during some 51 Zeppelin airship raids and 52 fixed-wing aircraft raids. London suffered the worst of the bombing with an estimated 250 tonnes of HE and incendiary bombs recorded across the Capital, over half of which fell on the City of London district.

The WWI bombing campaign waged by Germany was on a far smaller scale than the WWII campaign, in terms of the number of raids, the weight of ordnance dropped during each attack and the size of the bombs used. When coupled with the fact that most WWI bombed locations have since been redeveloped, German WWI UXB finds are extremely rare. Furthermore, most air raids took place during daylight hours and as it was the first time Britain had experienced strategic aerial bombardment, the raids often attracted public interest and even spectators, increasing the chances of any UXBs being reported.

A collection of written reports describing each air raid in the region was reviewed. The wider Site area, however, did not experience any air raids during WWI. As such, the associated UXO risk is considered negligible and will not be further addressed.

6 WWII GERMAN BOMBS

6.1 Bombs Dropped on the UK

Nazi Germany used different types of ordnance against the UK for different effects. Some types were designed to cause fires, others for their destructive blast effect and other for their penetration capability. Each type of ordnance was fitted with at least one fuze. For some bombs multiple fuzes were used. Many different types of fuzes were available for use – each with its own set of associated hazards.

Data sheets on those bombs most likely to be encountered today are included at **APPENDIX 2**.

- **HE bombs – moderate NEQ (net explosive quantity):** the most common types of HE bombs dropped were the SC (general purpose - GP) and SD (semi-armour piercing - SAP) series of bombs. The NEQ is between 30-50%. SAP bombs are engineered to attack light fortifications, whereas GP bombs are used in a mixed destructive blast and anti-personnel fragmentation role. 70% of bombs dropped on the UK were the 50kg type.
- **HE bombs – high NEQ:** blast bombs and parachute mines have bodies made of thin steel, allowing for larger HE charges. These were designed to detonate above ground, maximising the blast effect. Parachute mines were weapons slowed by parachutes and designed to detonate without penetrating the ground. Although, in some marshland areas, partially buried parachute mines have been observed. Consequently, it is highly unlikely that any unexploded blast bombs remain buried in the UK today.
- **HE bombs – low NEQ:** The PC series were armour piercing bombs used against heavy fortifications and reinforced bunkers. They were not commonly used over the UK.
- **Small incendiary bombs:** The 1kg and 2kg incendiaries were the most dropped bomb. Up to 620 x 1kg incendiaries could be packed into the largest container unit, which opened at a pre-determined height scattering its payload over a wide area. These small bombs could fully penetrate soft ground due to their small diameter. Variants of the 1kg and 2kg incendiary bombs contained a small HE charge designed for an anti-personnel role, and to increase its incendiary effect.
- **Large incendiary bombs - Thick skinned:** The C50 has a thick body and contained a mixture of incendiary liquids and white phosphorus. Another version of the C50 had a white phosphorus fill. The C50 'firepot' contained thermite incendiary containers (aka firepots) and a small HE charge.
- **Large incendiary bombs - Thin skinned:** The Flam 250 and Flam 500 models had thin steel bodies designed to break up on impact, spreading their oil-incendiary mixture, which was ignited by a small HE charge. Consequently, it is highly unlikely that any unexploded Flam bombs remain buried in the UK today. Their unreliability meant withdrawal from frontline use by January 1941.

- **Submunitions:** The SD2 ‘butterfly’ bomb was a 2kg submunition dropped on several British cities and towns. It contained a 225gram HE charge. SD2s had no ground penetration ability so the vast majority were recovered at the time. However, SD2s are still found across Britain today.
- **V1 flying bombs and V2 rockets:** In the final year of WWII Germany began using pilotless weapons against England. Both V Weapons had 1,000kg HE warheads. Due to their light-body construction, they had no penetration ability and any impact left a noticeable debris field. As such, there is negligible risk from unexploded V weapons today.

6.2 Bomb Failures

Records from September 1940 to July 1941 show that an average of 84 UXBs were dropped on civilian targets each day. Around 8% of these were time delay bombs – designed to strike the ground and start a predetermined countdown which could last days.

There is a generally accepted 10% failure rate for WWII German HE bombs. This is estimated from records gathered by bomb disposal units. These statistics do not account for UXBs that went by unnoticed.

Failures can happen for different reasons, including:

- Equipment or human error in arming the bombs before release,
- Failure of a mechanism within the fuze (out of tolerance),
- Jettisoning payloads if the bomber was under attack or crashing, or
- Partially functioned bombs (e.g. cracks in the cast TNT)

6.3 Bomb Ground Penetration

6.3.1 Introduction

Using data gathered during WWII by the Ministry of Home Security, estimations can be made about how deep a bomb is likely to penetrate the ground. Over one thousand incidents were reported by the bomb disposal units to support this research. Further tests were carried out, dropping bombs of different sizes into chalk and measuring the depths they reached. This research is held at the National Archives. The estimates are:

Bomb weight (kg)	Ground Type (m)							
	Sand		Gravel		Chalk		Clay	
	Average	Max.	Average	Max.	Average	Max.	Average	Max.
50	2.8	7.8	2.8	7.8	3.5	7.7	4.0	9.1
250	4.8	13.7	4.8	13.7	6.0	13.1	6.8	15.8
500	6.0	17.3	6.0	17.3	7.6	16.4	8.7	19.8
1,000	7.6	21.9	7.6	21.9	9.6	20.7	10.9	24.9

Different layers of geology affect penetration depths. For example, 1m of made ground, then 1m of gravel before reaching clay – as is many areas of London – is not easily calculated from the data above.

When calculating how deep a bomb could have reached, we must make three assumptions:

- **Impact velocity:** German bombing raids were carried out at altitudes in excess of 5,000m. The velocity of impact is roughly 313ms^{-1} (not accounting for resistance). It is the same velocity regardless of mass.
- **Impact angle:** strike angles of 10 to 15 degrees to the vertical. It must be assumed that the bomb was stable at the moment of ground penetration.
- **Bomb design:** Some larger German bombs were occasionally fitted with ‘kopfrings’ - a metal ring, triangular in cross section, fitted around the nose of the bomb to help prevent penetration. It must be assumed that no ‘kopfrings’ were fitted.

6.3.2 The J-Curve Effect

During WWII BDUs reported that most buried UXBs were found horizontal or upturned. This observation confirmed the 'J-curve effect'. As an HE bomb penetrates the ground, slightly offset from the vertical, its passage underground creates a 'J' shape.

This is relevant because the J-curve effect results in a horizontal offset between the buried UXB and its point of entry. This distance is estimated to be one third of the theoretical penetration depth. A low altitude attack, meaning a low impact angle, could produce an even greater offset, of up to 15m.

6.3.3 Site Specific Geology

BGS Mapping	Superficial Deposits: Till, Devensian (Diamicton)	Bedrock Deposits: Pennine Middle Coal Measures Formation (Mudstone, siltstone and sandstone)
SI Data	No recent SI data was provided by the Client. However, local BGS borehole logs were available. The closest BGS SI through the same mapped geology as the Site is located approximately 1km north-east of the Site (BGS ID: 165672). This SI (July 1989) encountered the following ground conditions: - 2.60m of made ground (grass over loose brown sandy gravelly clay / broken brick rubble). - 0.50m of very soft black silty clay. - 0.50m of firm to stiff brown clay with sandy bands. - 0.20m of loose wet brown slightly clayey slightly silty fine to medium grained sand with occasional fine gravel. - 4.20m of firm to stiff brown occasionally grey sandy clay with occasional gravel. - 1.50m of dense grey clayey weathered mudstone with coal pockets.	

6.3.4 Site Specific Maximum Bomb Penetration Depth

During WWII the Luftwaffe dropped many different types of HE bomb. The SC (general purpose) series was by far the most numerous and of this series, the SC 500 model (weighing 500kg) was the largest of the most commonly deployed and therefore this will be used as the benchmark weapon for the Site-specific bomb penetration depth calculations.

To calculate an approximate maximum bomb penetration depth, Brimstone has taken the average of the averages of the figure for the predominant Site-specific geology (clay and sand), in the table above. This gives an approximate maximum bomb penetration depth of 12.95m below WWII ground level for a 500kg HE bomb.

However, any UXB striking the structures on Site will have first passed through at least two storeys. This will have caused the bomb to lose kinetic energy prior to ground penetration. This factor, combined with the requirement for the J-Curve Effect to bring any UXB within the Site boundary, indicates that sections of the Site will have had a maximum bomb penetration depth significantly shallower than 12.95m. However, the combination of these factors makes calculating an accurate depth impossible.

NB: theoretically penetration depths could be greater if the UXB was larger, however, War Office statistics confirm that between October 1940 and May 1941 the majority of HE UXBs (>90%) were either 50kg or 250kg, with the 500kg bombs making up most of the remaining 10%.

7 UXO RISK - BRITISH/ALLIED ACTIVITY

7.1 Introduction

The table below lists potential sources of UXO (excluding enemy action). Those which are potentially relevant to the Site are discussed in the subsequent section(s).

Potential UXO Source	Potentially Significant
Army or RAF training areas / ranges	✗
Military bases and other installations	✗
Munitions and explosives factories	✗
Military storage depots	✗
Defensive fortifications	✗
Wartime site requisitions	✗
WWII defensive mining (landmines)	✗
WWII Home Guard activity	✗
Wartime anti-aircraft fire	✓

7.2 Potential Sources of UXO

7.2.1 Introduction

Research has not located any evidence of significant British or Allied army, RAF or Royal Navy activity specifically on Site and none is likely to have occurred historically. The only likely potential source of British UXO contamination is therefore WWII AA artillery fire.

During WWII, Huyton was home to three camps; an internment camp, a prisoner-of-war (POW) camp and a base for American servicemen. The internment camp was situated on the present-day Bluebell Estate, approximately 160m north of the Site. The presence of this camp is unlikely to have resulted in UXO contamination occurring on Site.

7.2.2 WWII Anti-Aircraft Fire

Anti-Aircraft (AA) Command was a British Army command established in 1939 to defend the UK during the anticipated German bombing campaign. It controlled the Territorial Army AA artillery and searchlight units. From 1940 to 1945 BDUs dealt with 7,000 unexploded AA shells in Britain. There were three main types of AA battery used for home defence (see below). Data sheets on these AA defences are included at **APPENDIX 3**.

- **Heavy Anti-Aircraft (HAA):** large calibre guns (3.7" and 4.5") for engaging high altitude bomber formations. Hundreds of permanent batteries were constructed in and around major cities and military bases during the 1930s. Some 2,000 of these guns were available during the Blitz. Each gun could fire between 10 and 20 rounds per minute and consequently HAA batteries could expend large quantities of shells during each engagement.

British time fuses were poorly manufactured during WWII and this led to high failure rate for HAA shells, up to 30%. Unexploded HAA shells had the potential to land up to 27km from their battery, although more typically landed within a 15km radius.

- **Light Anti-Aircraft (LAA):** smaller calibre guns for engaging dive bombers and low altitude intruders. As such they were mostly used to defend specific industrial and military targets which were subject to precision bomber attack. LAA guns were either .303" calibre machine guns or 20mm and 40mm calibre cannon. The latter were fitted with simply impact fuses and small incendiary or HE bursting charges.

The 40mm Bofors gun could fire 120 x HE shells / minute to a ceiling of 1,800m. Each shell was designed to self-destruct if it didn't strike an aircraft, however, inevitably some failed and fell back to earth.

- **Z (Rocket) Batteries:** a Z-Battery comprised a grid formation of 64 rocket projectors which fired 2" and later 3" Unrotated Projectile (UP) rockets to a maximum altitude of 5,800m; a ground range of some 9,000m. They were deployed in cities all around the UK from 1941 and proved to be an effective addition to the existing AA guns.

The rockets measured 0.9m (2") and 1.8m (3") in length with four stabilising fins at the base and were fitted with 3.5kg or 8.2kg HE warheads. The larger warhead had an effective airborne blast radius of up to 20m. Some variants deployed a form of aerial mine described as a "small yellow bomb" which was designed to detach from the rocket at height and descend on a parachute with the objective of becoming snagged on target aircraft and then detonating.

Unlike bombs which were designed to strike the ground, AA projectiles and rockets were designed to function in the air. Due to their shape, and centre of gravity they would often not strike the ground nose first. This coupled with the lower mass of AA UXO resulted in shallower ground penetration depths, compared to UXBs. Although, in very soft conditions, unexploded AA projectiles have been found deeper than 1.5m bgl.

20 permanent HAA batteries were active within range of the Site during WWII. LAA guns may have defended vulnerable points within range of the Site. Luftwaffe activity in the immediate vicinity was infrequent but was frequent and intense in the wider area. It is possible that an unexploded AA shell struck the Site and penetrated to a shallow depth within the undeveloped areas of the Site.

8 UXO RISK MITIGATING CIRCUMSTANCES

8.1 Introduction

Works on a UXO contaminated site could result in the partial or complete removal of UXO risk. Construction or earthworks may have uncovered any UXO contamination, which would then have been reported and removed by the authorities. A site may have been subject to an explosive ordnance clearance (EOC) task conducted by the armed forces. EOC tasks involve surveying, subsequent target investigation and removal of UXO. Although the effectiveness of historic EOC tasks will have often been unsatisfactory.

8.2 Explosive Ordnance Clearance Tasks

The division of EOD tasks has been complex throughout British military history. It used to be the case that anything under the water level would be dealt with by navy units, and anything on land would be dealt with by army units. In recent years RAF EOD capability has been discontinued, and now only the Royal Navy and the British Army have EOD units. In the army, the Royal Logistics Corps and Royal Engineer EOD units have been amalgamated to form 29 EOD & Search Group. Often taskings are assigned to either the naval or army elements based on where in the country the threat is and the nature of the threat.

Brimstone has access to a database of historic EOC tasks. This database is only complete up until the early 2000s and therefore does not include recent EOC tasks. No such database for the RAF and Royal Navy EOD units is easily accessible. A search of this database has not resulted in any Army EOC tasks in the vicinity of the Site.

UXO encounters on civilian land are often reported in the media and therefore a web search of local media outlets was also carried out. No recent incidents within close proximity to the Site were identified.

8.3 Ground Works

Post-WWII, the Site has experienced significant redevelopment. All wartime structures have since been cleared and structures including Knowsley Council offices and Huyton Library have been constructed. Hardstanding has also been laid throughout in previously undeveloped areas. Deep (>2m bgl) excavations associated with the foundations for some of the post-WWII redevelopment consisting of a six-storey structure as well further one to three storey structures may have occurred in the east of the Site. The remainder of the structures are likely to have required shallow (1-2m bgl) excavations, although deep excavations may have been required in some further areas. The grubbing out of wartime foundations and the laying of hardstanding on previously undeveloped land will have disturbed WWII-era soil to very shallow (<1m bgl) depths.

8.4 Deductions

The risk associated with any deep buried German UXBs will likely have been mitigated in the locations of possible deep excavations in the south and east of the Site. The risk associated with any very shallow buried HAA shells will have been mitigated with the clearing of pre-WWII structures and the subsequent laying of hardstanding on previously undeveloped ground.

Please note, the risk of a UXO encounter can be considered mitigated in the exact locations and down to the exact depths of any post-WWII intrusive works.

9 CONCLUSION

9.1 Accuracy of Historical Records

Occasionally, the accuracy of some historical records can prove to be poor when compared with other sources of information. One significant consequence of this can be the possibility of unrecorded German bomb strikes in the study area. The Lancashire ARP Bomb Map and written record appears to not corroborate with the remaining written recorded. Notably, the raid air recorded on 12th / 13th October 1941 consisting of five bombing incidents within the Liverpool Bomb Census Tracings, is not mentioned in the Lancashire ARP Incident Records. A further incident at Post Office Exchange approximately 100m south is also not recorded within the Lancashire ARP Incident Records.

9.2 The Risk of UXO Contamination on Site

9.2.1 Key Findings – German UXO Risk

- The Merseyside conurbation was the second most heavily bombed urban area in Britain after London due to the importance of Liverpool docks, the largest west-facing port in Britain during WWII. However, the Site was situated in the Urban District of Huyton-with-Roby, which was approximately 10km from the docks and experienced a low-to-moderate bombing density according to official Home Office bombing statistics.
- Despite this, consultation of available records indicates that at least nine air raids affected the study area (approximate 500m radius). These raids resulted in at least 10 bombing incidents within 1km of the Site, although no incidents are recorded on Site. The closest HE bomb strike is recorded approximately 95m south, the closest incendiary incident approximately 500m south-west of the Site and the closest UXB approximately 160m north. However, it should be noted that the precise locations of some incidents, namely those within the Liverpool bomb census tracings, could not be discerned.
- Consultation of post-WWII aerial photography does not display any immediately obvious evidence of bomb damage occurring i.e. structural clearance, cratering. As a result of the lack of significant damage, the areas of the Site occupied by structures likely received frequent access throughout the majority of the bombing campaign, if not entirely. Although access to the schools may have been lower due to potential evacuation occurring, structures and roadways in the surrounds will have provided at least an intermittent level of observation.
- Any UXB strike to undamaged structures will have caused incontrovertible evidence of its existence and would have almost certainly been reported at the time. Additionally, aerial photography indicates that gardens associated with residential properties present within the Site footprint were well maintained and not covered by dense vegetation, suggesting regular levels of access and heightening the possibility of a UXB strike being noticed and reported.
- However, although the consulted aerial photography indicates that this area was relatively well maintained, the same cannot be said for the grassy undeveloped area in the centre of the Site due to potential periods of infrequent access; undeveloped areas with no immediately obvious usage could often be neglected for long periods of time. Should such a period have occurred, conditions unconducive to the visual detection of UXBs i.e. vegetation may have been present in this location, which could have easily obscured a UXB entry hole. In addition, access levels to the undeveloped area will likely have been intermittent at best; a UXB is more likely to have fallen unnoticed in infrequently accessed areas as opposed to areas experiencing frequent access i.e. residential properties.

- In light of the abovementioned factors, the risk of encountering UXO on Site has been assessed to vary. Within locations of undamaged wartime structures, where wartime conditions are considered to be conducive to the obvious detection of UXBs, and adjacent well-kept garden areas, the risk has been assessed as **Low**. However, given the concentration of incidents in the wider study area, as the centre of the Site consisted of undeveloped ground, wherein conditions present could have feasibly resulted in a UXB strike falling unnoticed i.e. overgrown vegetation, a **Low-Moderate** risk of encountering UXO has been assessed. A 15m J-curve buffer has been included in the **Low-Moderate** zone.
- Note, the well-maintained nature of the **Low-Moderate** zone, as evidenced in the aerial photography, means that a likelihood of encountering UXBs is not considered significantly elevated, although a UXO Safety Awareness Briefing prior to works commencing is recommended. This variation in risk has been presented in the form of a risk map; see **FIGURE 9**.

9.2.2 Key Findings - British UXO Risk

- 20 permanent HAA batteries were active within range of the Site during WWII. LAA guns may have defended vulnerable points within range of the Site. Luftwaffe activity in the immediate vicinity was infrequent, but was frequent and intense in the wider area. However, for the same reasons as above, any such incident is unlikely to have gone unnoticed in the north and south of the Site, while such an occurrence could conceivably have gone unobserved within the undeveloped ground in the centre of the Site.
- During WWII, Huyton was home to three camps; an internment camp, a prisoner-of-war (POW) camp and a base for American servicemen. The internment camp was situated on the present day Bluebell Estate, approximately 160m north of the Site. The presence of this camp is unlikely to have resulted in UXO contamination occurring on Site.
- No evidence of historic military activity within the Site boundary has been found and it is highly unlikely that any has occurred historically. Consequently, the risk from associated UXO is Low.

9.3 Site-Specific UXO Hazards

Different types of UXO pose differing types of hazard, depending on their structural design, Net Explosive Quantity (NEQ), fill type and likely contamination depth. The table below lists the main types of UXO most often encountered on urban UK sites and their relative hazard levels.

UXO Type	NEQ (NEQ Range)	Likely Burial Depth	Hazard Posed
WWII German General Purpose HE Bombs	25kg - 220kg (most commonly deployed bomb weights)	Likely deep burial (>2m)	HIGH RISK
WWII British Heavy Anti-Aircraft Shells	1.1kg - 1.7kg	Shallow burial (1-2m)	MODERATE-HIGH RISK
WWII British Land Service Ammunition	<2kg	Shallow burial (1-2m)	
WWII German 2kg Incendiary / HE Bombs	680g incendiary hazard + ~500g explosive hazard	Shallow burial (1-2m)	
WWII German 1kg IBs	680g (incendiary, not explosive hazard)	Shallow burial (1-2m)	MODERATE RISK
WWII British Light Anti-Aircraft Shells	4g - 70g	Very shallow burial (<1m)	LOW-MODERATE RISK
Small Arms Ammunition	<1g	Very shallow burial (<1m)	LOW RISK
Inert/Practise Item	0g	Very shallow burial (<1m)	

9.4 The Likelihood of UXO Encounter

9.4.1 Introduction

This report assesses the risk of UXO in relation to the proposed works, not simply the risk that UXO remains buried on site. The likelihood of UXO encounter during intrusive ground works will vary depending on the type of UXO and the type of construction methods employed during the project. With increased soil disturbance i.e. more excavations, the likelihood of encountering UXO increases.

Within an area of elevated UXO contamination likelihood, the sub-surface volume of potential UXO contamination will comprise the natural soil / geology in between WWII ground level and the maximum bomb penetration depth. Therefore, any intrusions into this layer will be at risk of UXO encounter.

Any post-WWII fill material deposited on a site is unlikely to be contaminated with UXO and therefore the risk of encountering UXO on such a site could vary with depth.

In the wake of the initial nine-month Blitz, many cities and towns were left with vast quantities of bomb site rubble that required removal and relocation. This material was put to use for in a variety of ways, for example >750,000 tons of London's rubble was used to build runways for new RAF and USAAF airfields and much of Liverpool's rubble was used to create and maintain sea / flood defences throughout Merseyside.

It is quite possible that unexploded British AA projectiles and German 1kg incendiaries were overlooked during removal, resulting in UXO contaminated fill material ending up on otherwise low UXO risk sites, possibly many miles from any high bombing density areas.

9.4.2 German UXBs

Although most German UXBs came to rest several metres below WWII ground level, these weapons can be found at any level between just below WWII ground level and the maximum bomb penetration depth. There are a number of reasons why these heavy bombs might be found at surprisingly shallow depths.

- **Tip and run:** When enemy aircraft had to take evasive action to escape RAF fighter intercepts or AA defences, they often dropped their bomb loads from a reduced height, potentially resulting in extreme J-curve effect.
- **Deflection:** the shape of German bomb nose sections meant they were susceptible to deflection when striking surface or shallow sub-surface obstacles, occasionally resulting in shallow burial or even UXBs skidding across hardstanding.
- **Aircraft Crash Site:** if an aircraft was unable to dump its bomb load before impacting the ground, due to mechanical fault, any externally fitted bombs could have become buried on impact.

German 1kg / 2kg incendiaries were cylindrical and approximately 50mm in diameter. They had tail sections, and so landed nose first. Within soft ground this could result in full penetration of the bomb below the surface. Such UXBs are usually found close to the surface.

9.4.3 British / Allied UXO

The nature of British/Allied military activity involving LSA and SAA and the smaller size of these munitions (in relation to German HE bombs) indicates that any resulting UXO contamination on a site will be limited to shallow depths, usually within 1.5m of the surface, notwithstanding added material to raise the ground level.

Domestic military LSA and SAA contamination will either be the result of expending blinds (dud ammunition) which bury into the ground on impact or munitions purposefully buried, for a number of reasons. Either way, these types of UXO are all found at shallow depth.

9.4.4 Deductions

A slightly elevated likelihood of UXO contamination (German) and likelihood of that UXO remaining up to the present day has been identified in the centre of the Site. Therefore, some of the proposed works are considered to be exposed to a UXO encounter, albeit not a significant likelihood.



10 OVERALL RISK RATING

Ratings for the likelihood of UXO contaminating the Site, remaining within the Site up to the present day and being encountered during the proposed works, inform the overall risk rating. The UXO risk to the proposed works varies. **Low** and **Low-Moderate** risk zones have been identified. These are illustrated on a Risk Map displayed at **FIGURE 9**.

Risk Table: Low Risk				
UXO TYPE (ASSOCIATED HAZARD)	LIKELIHOOD OF UXO CONTAMINATION	LIKELIHOOD OF UXO REMAINING	LIKELIHOOD OF ENCOUNTER	OVERALL RISK RATING
WWII German 'Iron' Bombs	Low	n/a		LOW
WWII British Heavy Anti-Aircraft Shells	Low	n/a		
WWII British Land Service Ammunition	Low	n/a		
WWII German 2kg Incendiary / HE Bombs	Low	n/a		
WWII German 1kg Incendiary Bombs	Low	n/a		
WWII British Light Anti-Aircraft Shells	Low	n/a		
WWII British Small Arms Ammunition	Low	n/a		

Risk Table: Low-Moderate Risk				
UXO TYPE (ASSOCIATED HAZARD)	LIKELIHOOD OF UXO CONTAMINATION	LIKELIHOOD OF UXO REMAINING	LIKELIHOOD OF ENCOUNTER	OVERALL RISK RATING
WWII German 'Iron' Bombs	Low-Moderate	Moderate	Moderate	LOW-MODERATE
WWII British Heavy Anti-Aircraft Shells	Low-Moderate	Moderate	Moderate	
WWII British Land Service Ammunition	Low	n/a		LOW
WWII German 2kg Incendiary / HE Bombs	Low	n/a		
WWII German 1kg Incendiary Bombs	Low	n/a		
WWII British Light Anti-Aircraft Shells	Low	n/a		
WWII British Small Arms Ammunition	Low	n/a		



11 RISK MITIGATION RECOMMENDATIONS

Brimstone has identified a slightly elevated UXO risk to some of the proposed works. The measures detailed below are recommended to mitigate the risk to ALARP level.

Risk Mitigation Measure	Recommendation
UXO Safety Awareness Briefings: To all personnel conducting intrusive works on Site. An essential part of the Health & Safety Plan for a site. Conforms to the requirements of CDM2015.	Prior to all intrusive works commencing.

FIGURES: 1 - 9



BRIMSTONE

Innovation Centre Medway
Maidstone Road
Chatham
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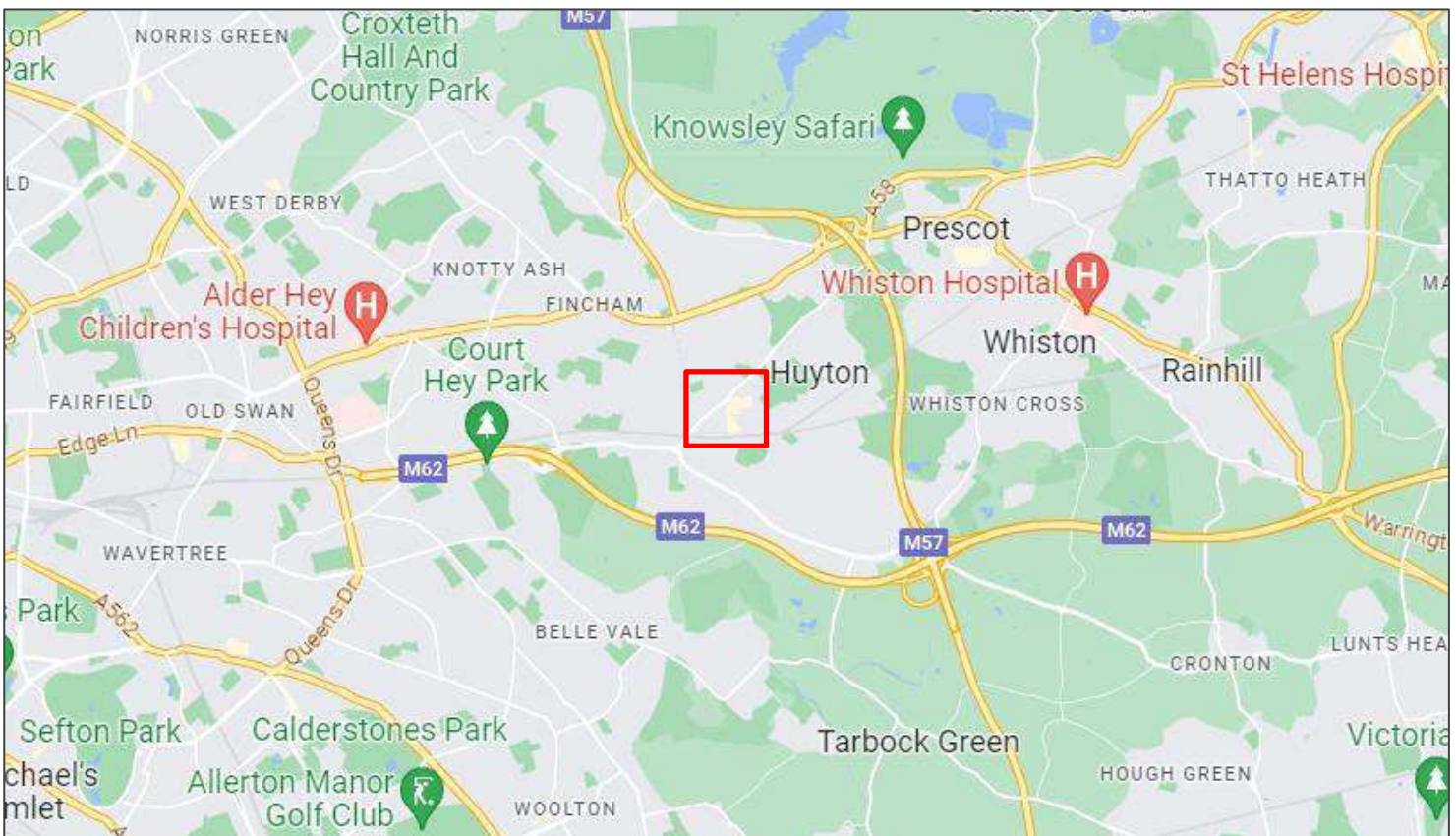
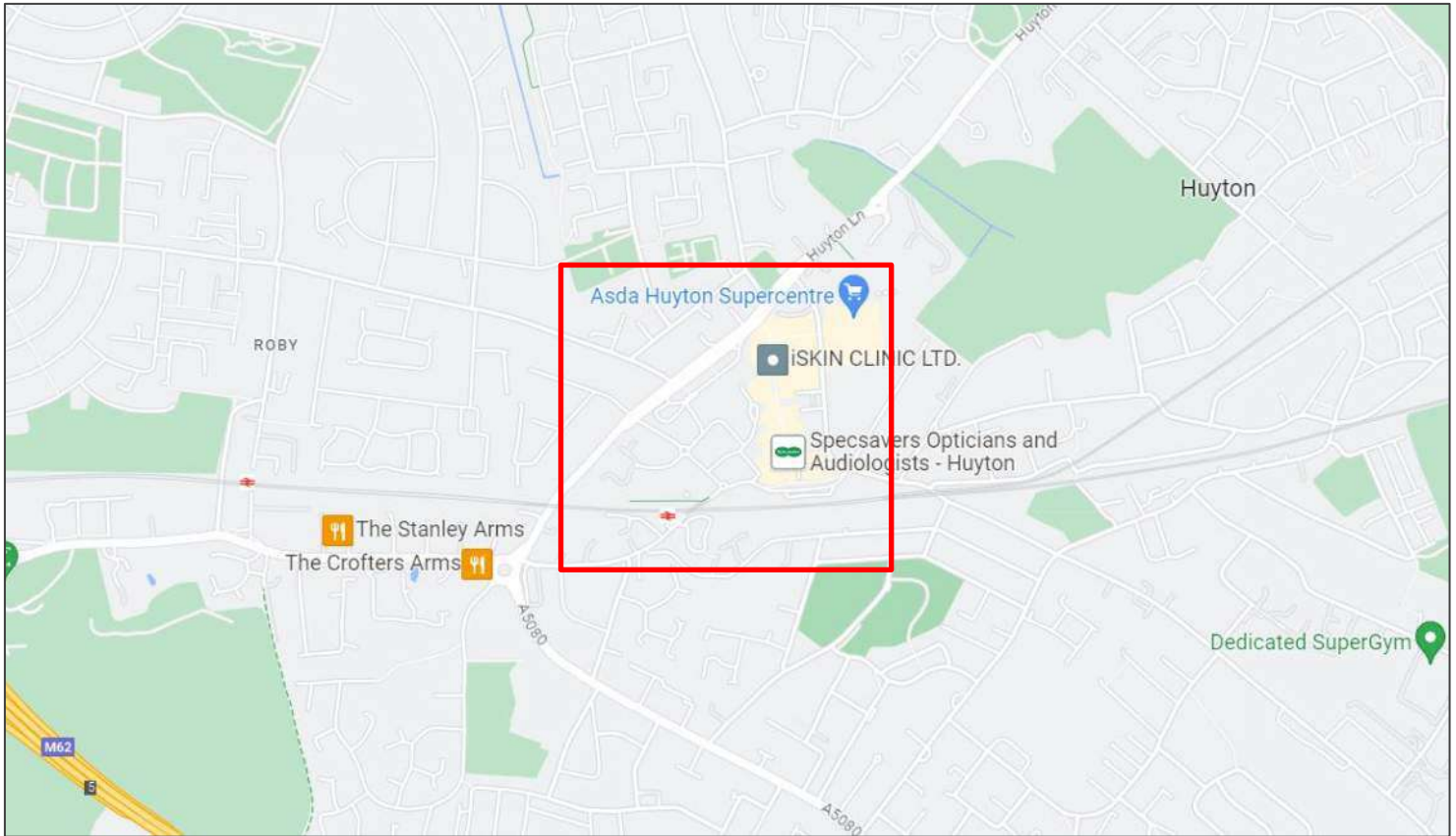
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Title:

Site Location Maps

FIGURE: 1



Project:	Civic Way, Huyton	
Client:	Genr8 Kajima Regeneration Limited	
Report Ref:	DRA-23-1581	
General Site Location:		Info Source: Google (open-source)

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Title:

Recent Aerial Photograph

FIGURE: 2

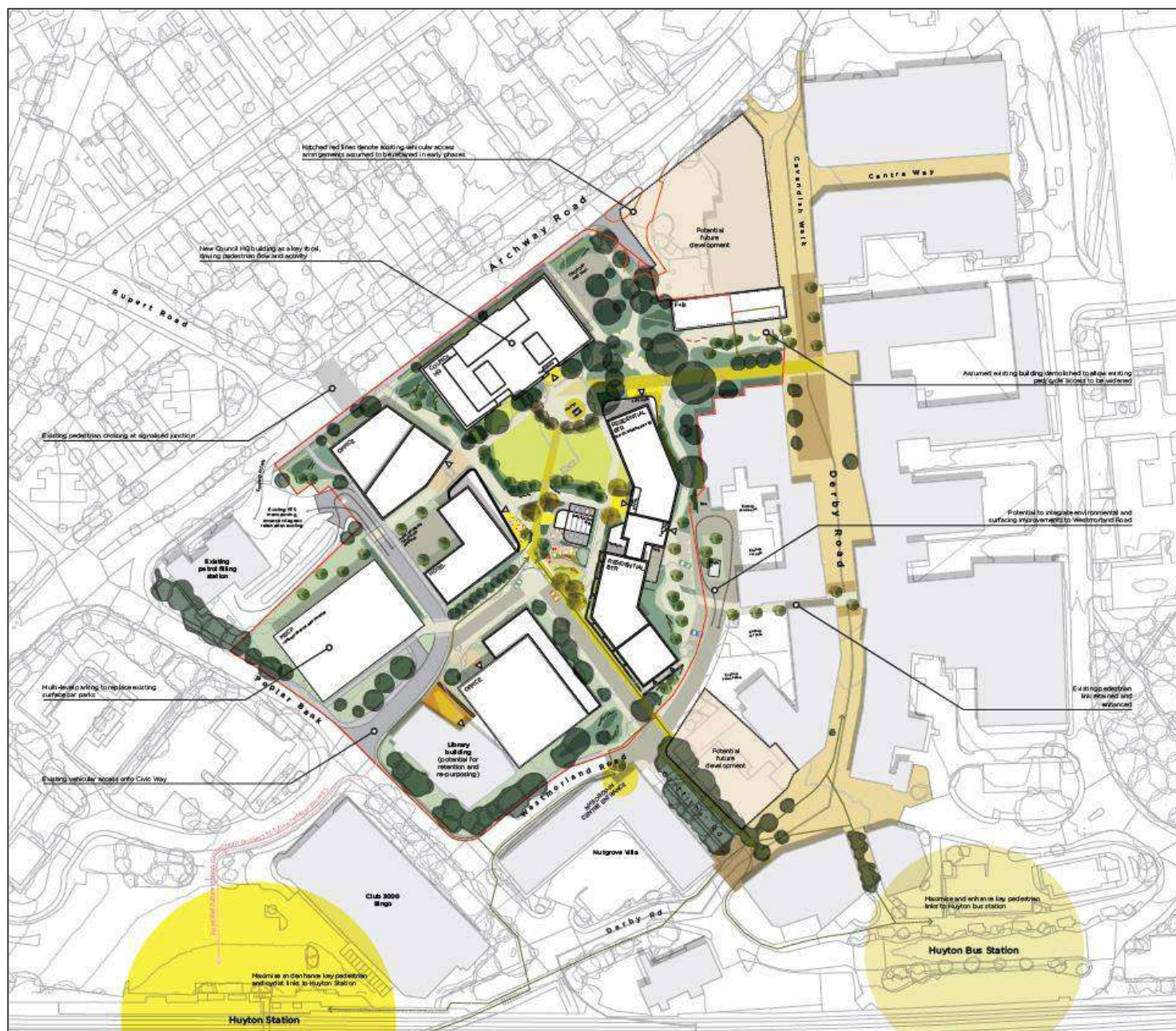


Project:	Civic Way, Huyton	
Client:	Genr8 Kajima Regeneration Limited	
Report Ref:	DRA-23-1581	
Approx. Site Boundary: 	Info Source:	Google (open-source)



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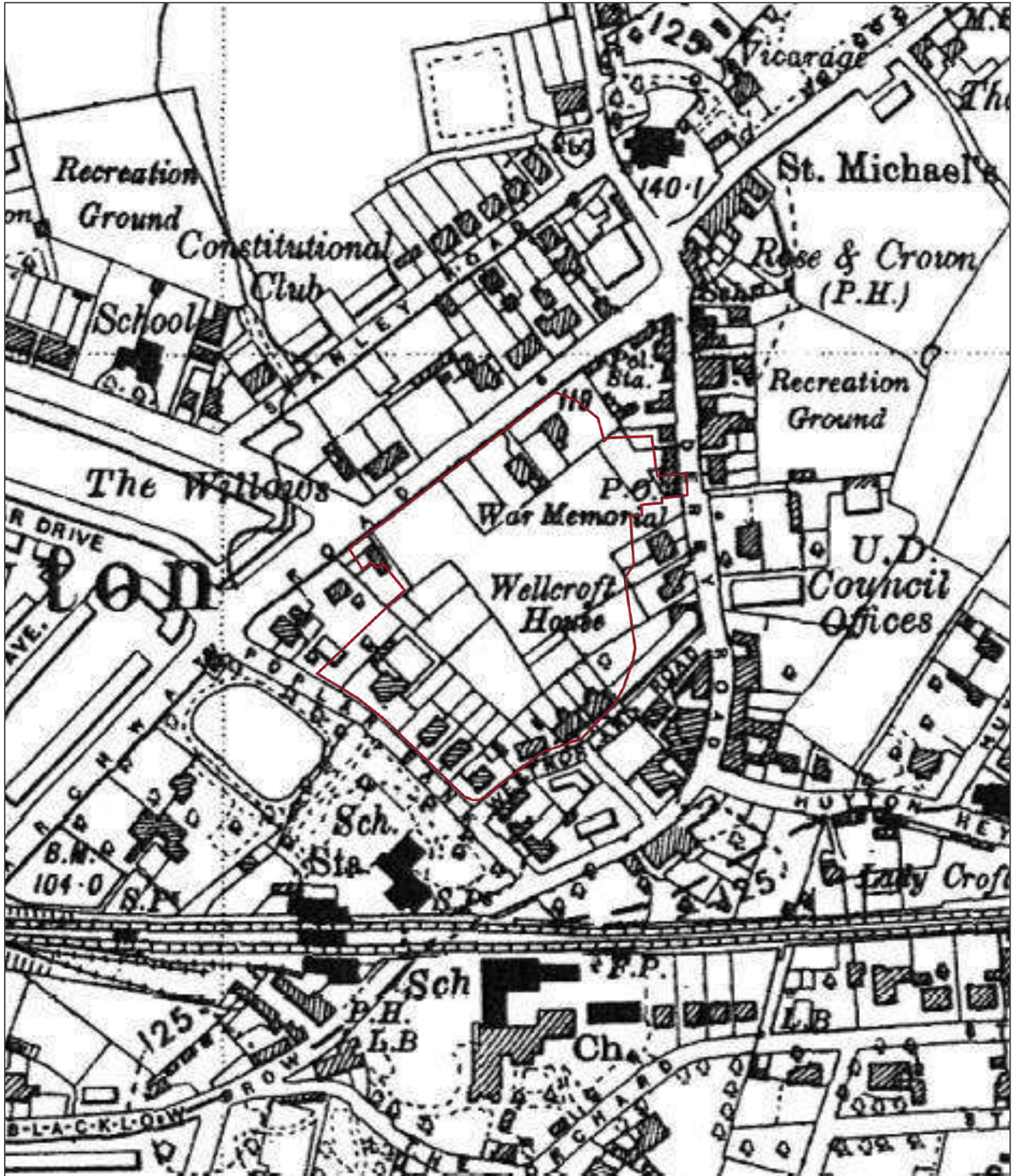




Title:

Historical OS Mapping – 1938

FIGURE: 4.1



Project:	Civic Way, Huyton
Client:	Genr8 Kajima Regeneration Limited
Report Ref:	DRA-23-1581
Approx. Site Boundary: 	Info Source: Promap

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Title:

Historical Aerial Photography – 26th March 1946

FIGURE: 5.1



Project:	Civic Way, Huyton
Client:	Genr8 Kajima Regeneration Limited
Report Ref:	DRA-23-1581
Approx. Site Boundary: 	Info Source: Historic England

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Title:

Historical Aerial Photography – 9th March 1948

FIGURE: 5.2



Project:	Civic Way, Huyton	
Client:	Genr8 Kajima Regeneration Limited	
Report Ref:	DRA-23-1581	
Approx. Site Boundary: 	Info Source:	Historic England



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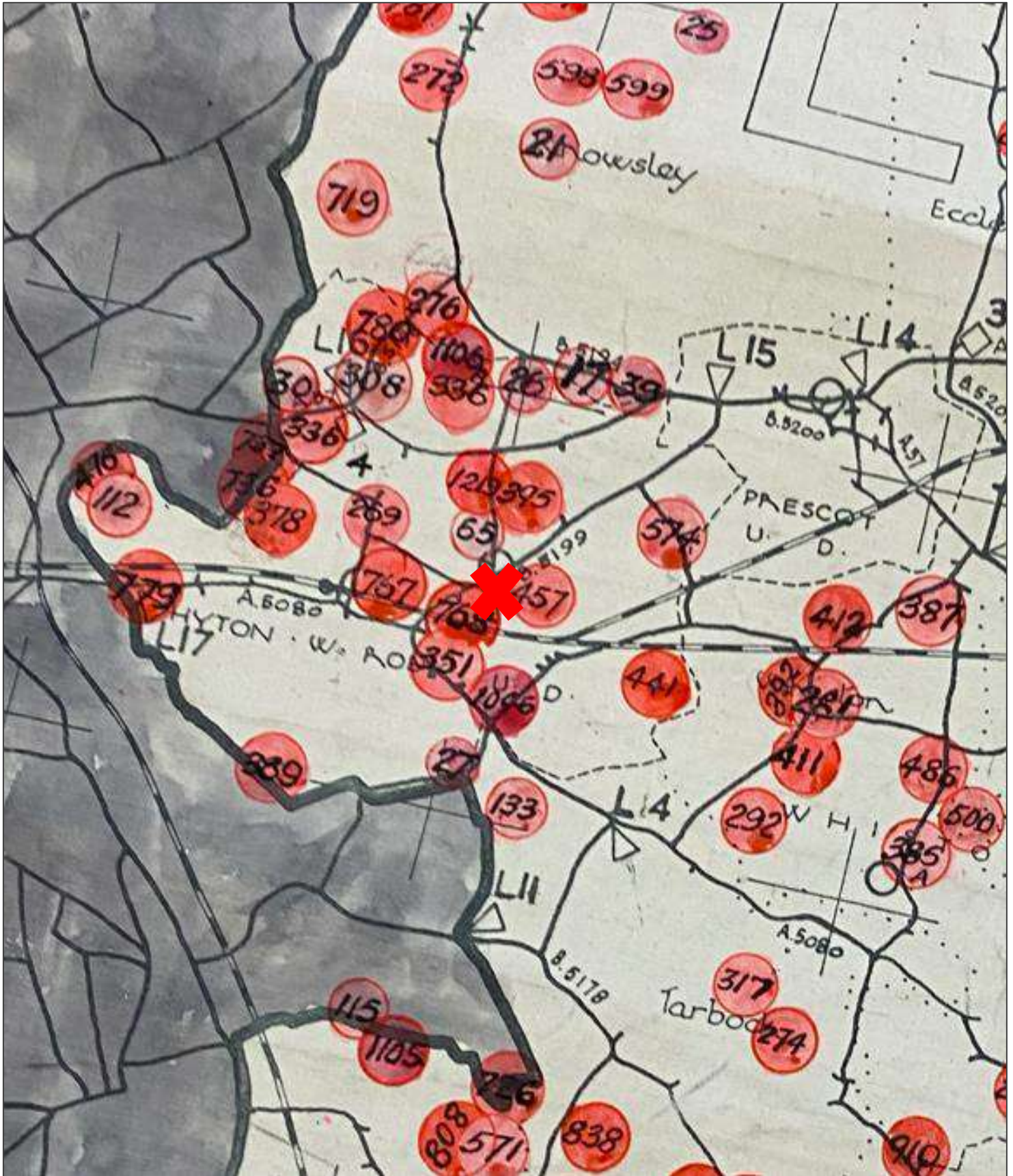
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Title:

Lancashire ARP Bomb Map

FIGURE: 6



Project:	Civic Way, Huyton	
Client:	Genr8 Kajima Regeneration Limited	
Report Ref:	DRA-23-1581	
Approx. Site Location:		Info Source: The Lancashire Archives



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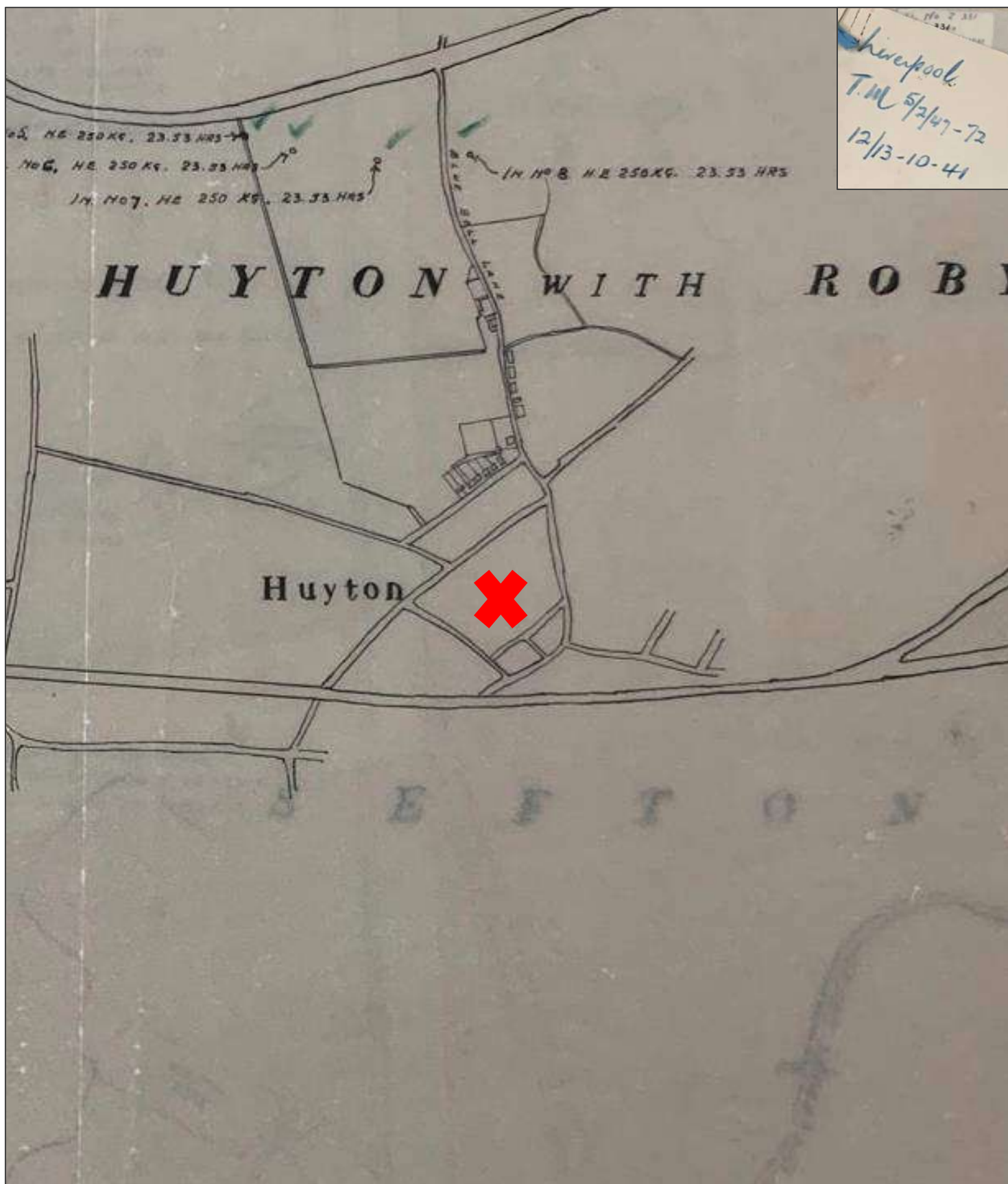
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Title:

Liverpool Bomb Census Tracings

FIGURE: 7.1



Project: Civic Way, Huyton

Client: Genr8 Kajima Regeneration Limited

Report Ref: DRA-23-1581

Approx. Site Location:

Info Source: The National Archives



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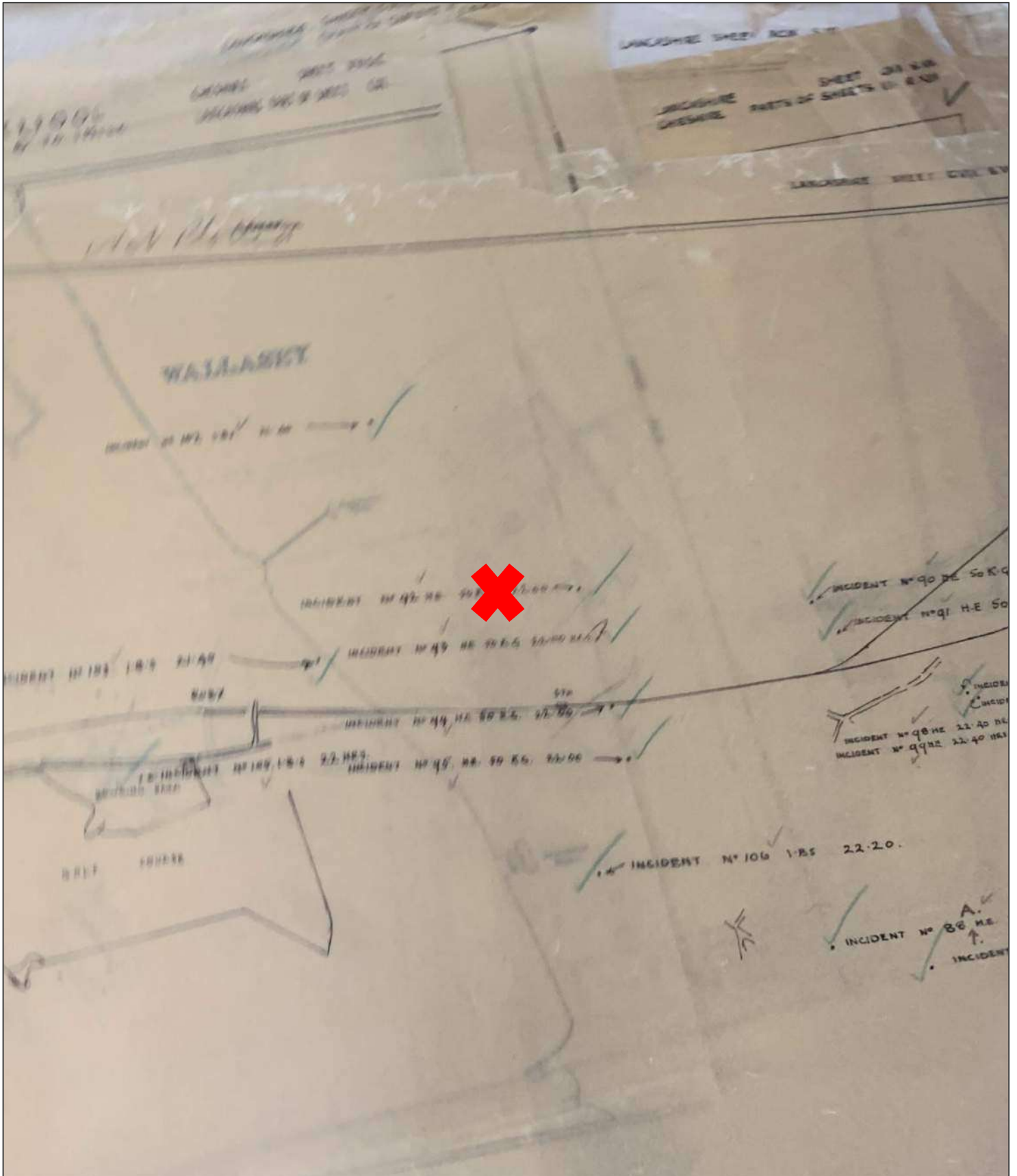
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Title:

Liverpool Bomb Census Tracings

FIGURE: 7.2



Project:	Civic Way, Huyton		
Client:	Genr8 Kajima Regeneration Limited		
Report Ref:	DRA-23-1581		
Approx. Site Location:		Info Source:	The National Archives

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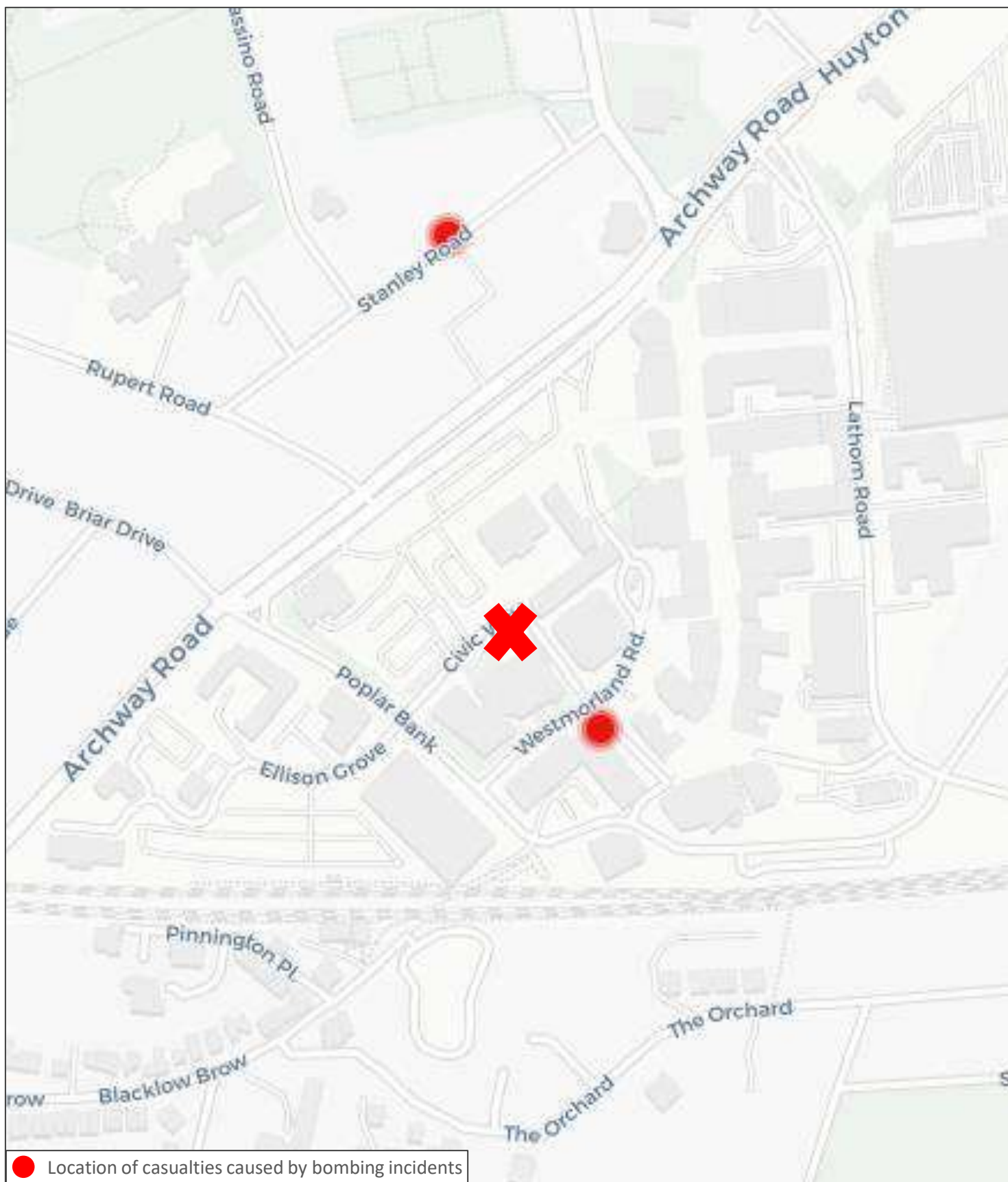
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Title:

Liverpool Echo Casualties Map

FIGURE: 8



Project:	Civic Way, Huyton	
Client:	Genr8 Kajima Regeneration Limited	
Report Ref:	DRA-23-1581	
Approx. Site Location:	✗	Info Source: Liverpool Echo

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Title:

Risk Map

FIGURE: 9.1



LOW likelihood of a UXO encounter - L

LOW-MODERATE likelihood of a UXO encounter - LM

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Client:	Genr8 Kajima Regeneration Limited	
Report Ref:	DRA-23-1581	
Approx. Site Boundary: 	Info Source:	Google (open-source)

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Title:

Risk Map

FIGURE: 9.2



LOW risk from German and HAA shells

LOW-MODERATE risk from German and HAA shells

Project:	Civic Way, Huyton	
Client:	Genr8 Kajima Regeneration Limited	
Report Ref:	DRA-23-1581	
Approx. Site Boundary:		Info Source: OpenStreetMap

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APPENDICES: 1 - 5



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Recent German UXB Finds in the UK + Historical Analysis

- **23rd May 2019** - An SC250 (standard 250kg HE bomb) was found during shallow excavations at a building site in Kingston upon Thames, London. *Historical Analysis: The UXB landed in a small residential back garden belonging to an undamaged terraced house. It came to rest approximately 3 to 4m bgl.*
- **15th May 2017** - An SC250 (standard 250kg HE bomb) was found during shallow excavations at a building site in Aston, Birmingham. *Historical Analysis: The UXB landed in a small back garden belonging to a terraced house, part of a row. It J-Curved under a neighbouring garden and came to rest at just 1.4m bgl. NB: These houses had not sustained bomb damage.*
- **2nd March 2017** - A 250kg HE bomb was found during deep excavations at a building site in Brondesbury Park, London. *Historical Analysis: UXB landed in a large residential back garden. A single storey building was built on top of the UXB post-WWII.*
- **19th January 2017** - An SD50 (semi-armour piercing 50kg HE bomb) was dredged from the Thames during barge dredging works near Westminster Bridge, London.
- **12th May 2016** - A 500kg HE bomb was found buried just 1m below the playground of the former Royal High Junior School in Bath. *Historical Analysis: The UXB landed in a plot of neglected, unmaintained vegetation in between the school gym and main school building.*
- **23rd September 2015** - A 1,000kg HE bomb was encountered by a mechanical excavator on a building site in Paradise Street, Coventry. *Historical Analysis: the UXB landed in a large residential back garden occupied by dense vegetation. A two storey building was built on top of the UXB post-WWII.*
- **10th August 2015** - A 250kg HE bomb was found immediately beneath a basement floor during refurbishment works in Temple Street, Bethnal Green (London). *Historical Analysis: The UXB struck a house that had been damaged beyond repair during a previous air raid. The existing house was then built on top of UXB post-WWII.*
- **21st May 2015** - An SC50 (general purpose 50kg HE bomb) was found during deep excavations at a construction site in Wembley, London. *Historical Analysis: UXB landed in a large residential back garden.*
- **23rd March 2015** - A 250kg HE bomb was found during deep excavations at a building site in Grange Walk, Bermondsey (London). *Historical Analysis: inconclusive - reported UXB position is likely inaccurate.*

NB: Domestic UXO finds in the UK are too numerous to list. Between 2006 and 2009, over 15,000 items of British / Allied UXO (excluding small arms ammunition) were found on UK construction sites (CIRIA).

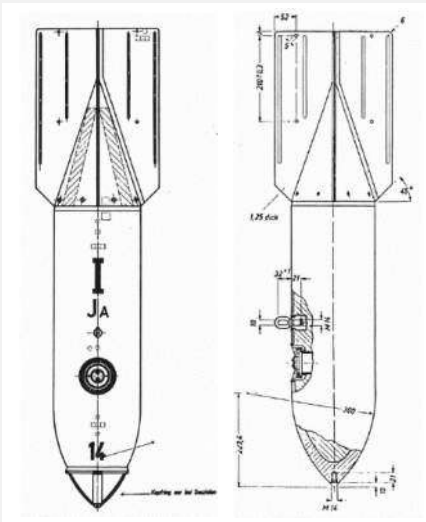
Initiation of WWII Allied Bombs

- **6th January 2014** - Mechanical excavator stuck a WWII bomb in Euskirchen (Germany) causing it to explode, killing the operator and injuring 13 more, two critically. The explosion was so large it damaged buildings 400m away.
- **1st March 2013** - During piling at a construction site in Ludwigshafen (Germany) a small buried WWII bomb exploded, injuring one worker.
- **2nd June 2010** - A British 500kg bomb detonated whilst being defused, killing three EOD engineers in Goettingen, Germany. The bomb was found as builders dug the foundations for a new sports hall. Several houses had their fronts blown off by the blast.
- **19th September 2008** - Seventeen people were injured and buildings were damaged when an excavator apparently drove over and set off a 250kg American bomb at a construction site in Hattingen, Germany.
- **23rd October 2006** - A construction worker breaking up tarmac at the side of a highway near the south-western German town of Aschaffenburg was killed when his machine struck and detonated a WWII bomb. In addition, the blast injured several motorists who were driving past.
- **2006** - A piling rig and dump truck were destroyed when a piling rig struck an Allied bomb on a construction site in Austria.
- **2003** - In the Austrian city of Salzburg, two people were killed while attempting to defuse a 250kg Allied bomb.
- **1994** - At a central Berlin construction site a piling rig struck a large WWII Allied bomb. 3 were killed and 14 more were injured. Dozens of cars in a 250m radius were wrecked, the top 10 floors of neighbouring office building collapsed and human remains were found 100m away.
- **1990** - In Wetzlar (Germany) two EOD engineers were blown up as they removed the detonator of an allied WWII UXB.

Project:	Civic Way, Huyton
Client:	Genr8 Kajima Regeneration Limited
Report Ref:	DRA-23-1581
Info Source:	Various

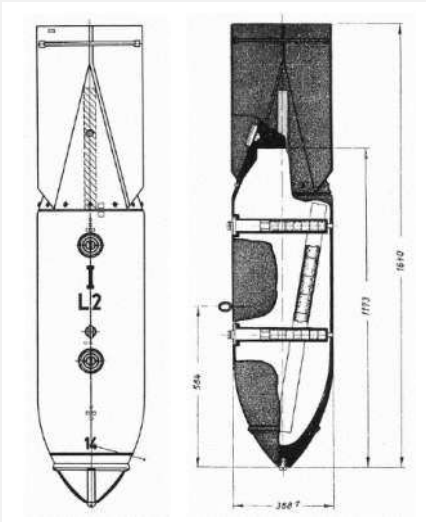
SC 50

Bomb Weight: 40-54kg (110-119lb)
Explosive Weight: 25kg (55lb)
Filling: TNT, Amatol or Trialen
Charge/Weight Ratio: 46%
Fuse Type: Electrical impact fuse or mechanical delayed action fuse
Body Dimensions: 1,100mm length x 200mm diameter
Appearance: Bomb body and tail painted grey/green with a yellow stripe on the tail unit. Steel construction.
Variants: 8 x variants. Additional fittings: Kopfring nose for limited penetration and Stabbo nose for dive-bombing.



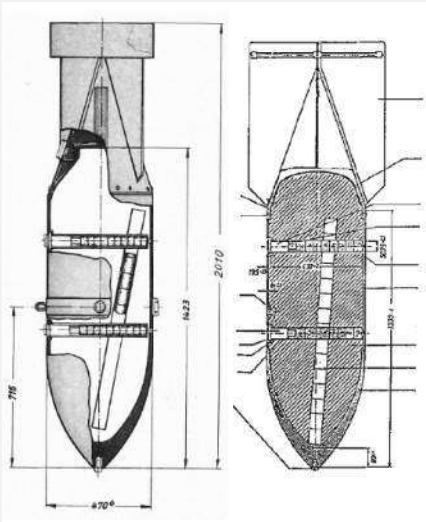
SC 250

Bomb Weight: 245-256kg (540-564lb)
Explosive Weight: 125-130kg (276-287lb)
Filling: TNT, Amatol and Trialen mix
Charge/Weight Ratio: 44%
Fuse Type: 1 or 2 electrical impact fuse(s) or mechanical delayed action fuse(s)
Body Dimensions: 1,173mm length x 368mm diameter
Appearance: Bomb body and tail painted grey/green with a yellow stripe on the tail unit. Steel construction.
Variants: 8 x variants. Kopfring nose for limited penetration. Stabbo nose for dive-bombing.



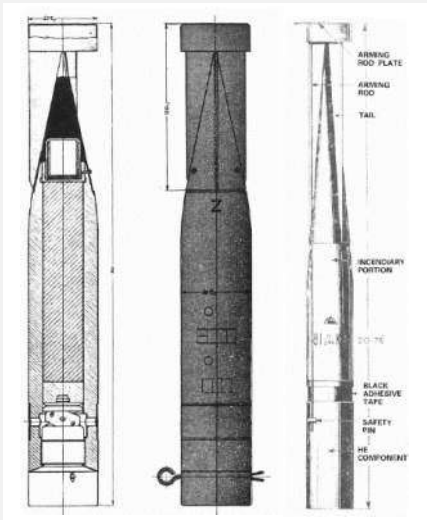
SC 500

Bomb Weight: 480-520kg (1,058-1,146lb)
Explosive Weight: 220kg (485lb)
Filling: TNT, Amatol and Trialen mix
Charge/Weight Ratio: 44%
Fuse Type: 2 electrical impact fuses or mechanical delayed action fuses
Body Dimensions: 1,423mm length x 470mm diameter
Appearance: Bomb body and tail painted grey/green or buff with a yellow stripe on the tail unit. Steel construction.
Variants: 3 x variants. Kopfring nose for limited penetration.



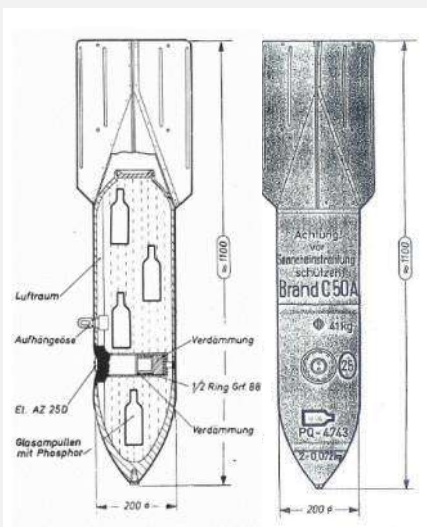
B-1E Sub-Munition

Bomb Weight: 1-1.3kg (2.2-2.87lb)
Incendiary Weight: 680g (1.4lb)
Filling: Thermite
Fuse Type: Simple impact fuse
Body Dimensions: 247mm length x 50mm diameter
Appearance: Grey body and dark green painted tail unit. Magnesium alloy case.
Operation: Small percussion charge ignites Thermite (>1,000°C burn).
Variants: Most common variant: B 2EZ (2kg) included a small HE charge
Remarks: Drop containers varied in size. The smallest cluster bomb held 36 x B-1Es and the largest 620 x B-1Es.



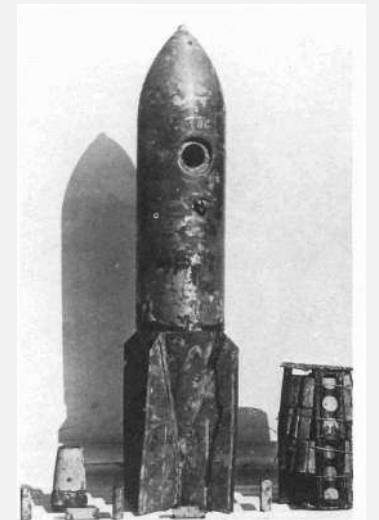
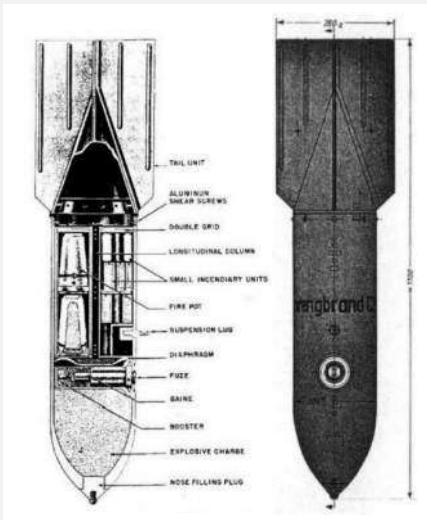
Brand C50

Bomb Weight: 41kg (90.4lb)
Incendiary Weight: 13kg (30lb)
Filling: Main fill (86% Benzine, 10% Rubber) plus 4% Phosphorus in glass bottles
Fuse Type: 1 x electrical impact fuse
Bomb Dimensions: 762mm length x 203mm diameter
Appearance: bomb body and tail painted grey or green with the rear of the bomb painted red and a red band around the centre of the body.
Variants: C 50 B: 77% White Phos fill
C 250 A: 87.7% Petroleum, 11.7% Polystyrene, 0.5% White Phos (185kg version)



Sprengr-Brand C50 - Fire Pot

Bomb Weight: 34kg (75lb)
Explosive Weight: 9kg (20lb)
Filling: TNT burster charge, 6 x Thermite containers (fire pots) and 67 x small triangular incendiary elements.
Fuse Type: 1 x electrical impact fuses or aerial burst fuse
Bomb Dimensions: 711mm length x 203mm diameter
Appearance: Bomb body and tail painted grey/green or pale blue with red base plug and red or green incendiary markings. Steel construction.
Operation: A charge blows off the base plate, firing a plume of incendiary mixture 100 yds. Approx 1 second later the HE charge detonates.



HAA Battery - 3.7" QF Shell

Shell Weight: 12.7kg

Shell Dimensions: 94mm x 438mm

Fill Weight: 1.1kg

Fill Type: TNT

Fuse Type: Mechanical Time Delay fuse

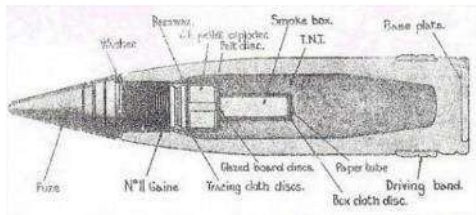
Appearance: Grey body, copper driving bands, brass neck

Rate of Fire: 10 - 20 rpm

Ceiling: 9,000 - 18,000m

Variants: HE or shrapnel shells.

Note, the 4.5" gun was also used in an HAA role throughout the UK.



LAA Battery - 40mm Bofors Shell

Shell Weight: 0.84kg

Shell Dimensions: 40mm x 180mm

Fill Weight: 70g

Fill Type: TNT

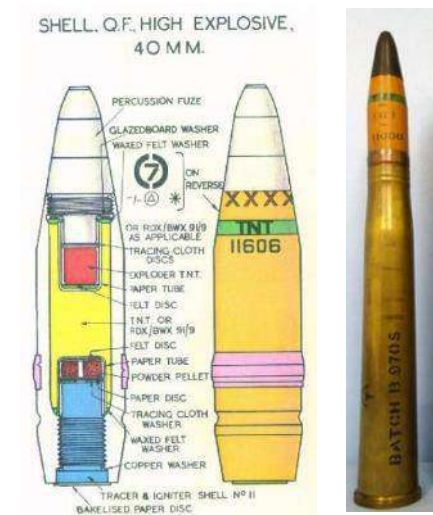
Fuse Type: Impact fuse

Appearance: Grey body, copper driving bands, brass neck

Rate of Fire: 120 rpm

Ceiling: 7,000m

Variants: HE or AP shells. Both with rear tracer compartment



Z Battery - 3" U.P Rocket

Rocket Weight: 24.5kg

Warhead Weight: 1.94kg

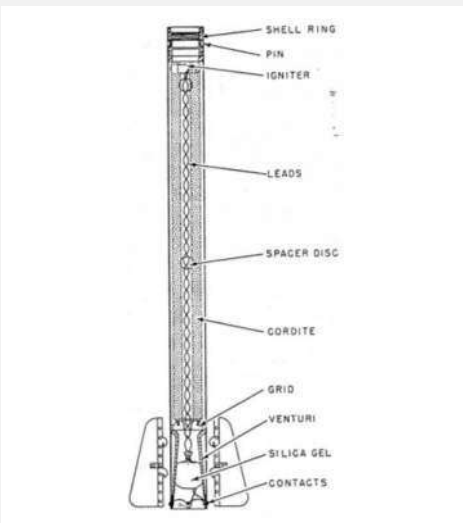
Filling: TNT warhead. Black Powder solid fuel rocket motor.

Fuse Type: Mechanical Time Delay fuse

Rocket Dimensions: 1,930mm x 76mm

Ceiling: 6,770m

Operation: Fired from single, tandem and (later) 36 x rail launchers (Z Batteries). Limited use throughout the UK.



Title:		Glossary	APPENDIX: 4
AA	Anti-Aircraft (defences)		
AFS	Auxiliary Fire Service		
AP	Anti-Personnel		
ARP	Air Raid Precautions		
ASW	Anti-Submarine Warfare		
BDU	Bomb Disposal Unit (historic term for EOD)		
Bgl	Below Ground Level		
EOC	Explosive Ordnance Clearance		
EOD	Explosive Ordnance Disposal		
FP	Fire Pot (German bomb)		
GI	Ground Investigation		
HAA	Heavy Anti-Air (gun battery)		
Ha	Hectare (10,000m2)		
HE	High Explosive		
IB	Incendiary Bomb		
Kg	Kilogram		
LAA	Light Anti Air (gun battery)		
LCC	London County Council		
LRRB	Long Range Rocket Bomb (V2)		
LSA	Land Service Ammunition		
Luftwaffe	German Air Force		
OB	Oil Bomb (German bomb)		
PM	Parachute Mine (German bomb)		
RAF	Royal Air Force		
RFC	Royal Flying Corps		
RN	Royal Navy (British)		
RNAS	Royal Naval Air Service		
ROF	Royal Ordnance Factory		
SAA	Small Arms Ammunition		
SD2	2kg AP bomb (German bomb)		
SI	Site Investigation		
U/C	Unclassified (German) bomb		
UP	Unrotating Projectile (British 3” AA rocket)		
USAAF	United States Army Air Force		
UX	Unexploded		
UXB	Unexploded Bomb		
UXO	Unexploded Ordnance		
V1	German Flying (pilotless) bomb - “Doodlebug”		
V2	German LRRB - “Big Ben”		
WAAF	Women’s Auxiliary Air Force		
WWI	World War One		
WWII	World War Two		

Project:	Civic Way, Huyton
Client:	Genr8 Kajima Regeneration Limited
Report Ref:	DRA-23-1581
Info Source:	n/a



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Project:	Civic Way, Huyton
Client:	Genr8 Kajima Regeneration Limited
Report Ref:	DRA-23-1581
Info Source:	n/a



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Appendix B – 2023 Envirocheck Report

Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

313640178_1_1

Customer Reference:

0051610

National Grid Reference:

344180, 390840

Slice:

A

Site Area (Ha):

2.95

Search Buffer (m):

1000

Site Details:

Site at
Civic Way
Huyton
L36 9GD

Client Details:

Mr B Happold
Buro Happold Limited
17 Newman Street
London
W1T 1PD

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	9
Hazardous Substances	-
Geological	10
Industrial Land Use	12
Sensitive Land Use	21
Data Currency	22
Data Suppliers	27
Useful Contacts	28

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client. In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents					
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 1		2	2	2
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 2		Yes		
Pollution Incidents to Controlled Waters	pg 2			2	14
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 5				1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 5			1	2
Water Abstractions	pg 5				(*1)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 6	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 6	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 6	Yes	n/a	n/a	n/a
Source Protection Zones	pg 6	1			
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 6		2	8	9

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 9				1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 9	2	n/a	n/a	n/a
Local Authority Recorded Landfill Sites	pg 9				1
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS 1:625,000 Solid Geology	pg 10	Yes	n/a	n/a	n/a
BGS Recorded Mineral Sites	pg 10				4
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 10	Yes	n/a	n/a	n/a
Mining Instability	pg 10	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 10	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 11	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 11	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 11	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 12		21	8	63
Fuel Station Entries	pg 19		1	1	2
Gas Pipelines					
Underground Electrical Cables					
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt	pg 21				1
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 21	1	1		
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (S)	0	1	344177 390844
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (E)	17	1	344300 390844
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (E)	67	1	344350 390900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	112	1	344350 390750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (NE)	185	1	344350 391100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NE (N)	208	1	344300 391150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A14NW (NE)	299	1	344550 391050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	347	1	344500 390550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NE (SE)	381	1	344500 390500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SE (N)	486	1	344200 391450
1	Local Authority Pollution Prevention and Controls Name: Johnsons Dry Cleaners Location: 47 Derby Road, Huyton, L36 9uq Authority: Knowsley Metropolitan Borough Council, Environmental Health and Consumer Protection Division Permit Reference: Not Supplied Dated: 8th October 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning Status: Permitted Positional Accuracy: Manually positioned to the address or location	A13NE (E)	62	2	344321 390854
2	Local Authority Pollution Prevention and Controls Name: Dales / Asda Huyton Petrol Filling Station Location: Derby Road, Huyton, LIVERPOOL, Merseyside, L36 9YE Authority: Knowsley Metropolitan Borough Council, Environmental Health and Consumer Protection Division Permit Reference: B/1198/1.2/01 Dated: 29th January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Permitted Positional Accuracy: Automatically positioned to the address	A13NE (NE)	83	2	344334 390982
3	Local Authority Pollution Prevention and Controls Name: Huyton Dry Cleaners Location: 7 Tarbock Road, Knowsley, L36 5xn Authority: Knowsley Metropolitan Borough Council, Environmental Health and Consumer Protection Division Permit Reference: B/0806/7/1 Dated: 8th October 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning Status: Permitted Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	408	2	343792 390492

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	Local Authority Pollution Prevention and Controls Name: Repsol Anglo Petroleum Huyton Service Station Location: Twickenham Drive, Liverpool, Merseyside, L36 4QG Authority: Knowsley Metropolitan Borough Council, Environmental Health and Consumer Protection Division Permit Reference: Not Given Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Site Closed Positional Accuracy: Automatically positioned to the address	A7NE (SW)	479	2	343727 390456
5	Local Authority Pollution Prevention and Controls Name: Q8 Petrol Filling Station Location: 34 Tarbock Road, Huyton, LIVERPOOL, Merseyside, L36 5XW Authority: Knowsley Metropolitan Borough Council, Environmental Health and Consumer Protection Division Permit Reference: 04/02021/Epa Dated: 29th January 1999 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Authorisation revoked Positional Accuracy: Automatically positioned to the address	A7NE (SW)	529	2	343772 390354
6	Local Authority Pollution Prevention and Controls Name: Shell Crescent Service Station Location: Liverpool Road, Huyton, LIVERPOOL, Merseyside, L36 3RN Authority: Knowsley Metropolitan Borough Council, Environmental Health and Consumer Protection Division Permit Reference: B/1298/1.2/03 Dated: 29th January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Permitted Positional Accuracy: Automatically positioned to the address	A17NE (NW)	994	2	343664 391798
	Nearest Surface Water Feature	A13NE (E)	216	-	344499 390904
7	Pollution Incidents to Controlled Waters Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage - Wrong Connection Note: Not Supplied Incident Date: 29th October 1991 Incident Reference: 91440095 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SE (NE)	296	3	344400 391200
8	Pollution Incidents to Controlled Waters Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage - Wrong Connection Note: Not Supplied Incident Date: 21st October 1991 Incident Reference: 91440089 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A18SE (N)	477	3	344400 391400
9	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Merseyside Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Alt; Sewage Incident Date: 2nd February 1996 Incident Reference: 96440014 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Blocked Sewer Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	512	3	343800 391300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Merseyside Authority: Environment Agency, North West Region Pollutant: Oils - Vegetable Oil Note: Alt; Vegetable Oil And Heat Incident Date: 14th November 1996 Incident Reference: 96440160 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SE (NE)	520	3	344500 391400
11	Pollution Incidents to Controlled Waters Property Type: Connection To Surface Drains Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Sewage - Wrong Connection Note: Not Supplied Incident Date: 14th August 1991 Incident Reference: 91440063 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A18SW (NW)	532	3	343900 391400
12	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Merseyside Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: River Alt; Crude Sewage Incident Date: 18th June 1996 Incident Reference: 96440087 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Blocked Sewer Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	592	3	343800 391400
13	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Merseyside Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Alt; Sewage From Manhole Incident Date: 8th May 1996 Incident Reference: 96440094 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Blocked Sewer Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	652	3	343700 391400
14	Pollution Incidents to Controlled Waters Property Type: No Premises Identified Location: River Alt, Upstream Liverpool Road, Merseyside Authority: Environment Agency, North West Region Pollutant: General Biodegradable : Tree Cuttings Note: Not Supplied Incident Date: 1st November 1999 Incident Reference: 33853 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unauthorised Activity : Other Activity Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	893	3	343700 391700
15	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Storm Sewage Note: Alder Brook Incident Date: 11th September 1995 Incident Reference: 95440147 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Poor Operational Practice Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7NW (W)	913	3	343200 390500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Petrol Note: Not Supplied Incident Date: 7th January 1995 Incident Reference: 95440007 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Leaking Underground Pipe Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	952	3	343600 391700
17	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Merseyside Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Alt; Vehicle Washings Incident Date: 14th November 1996 Incident Reference: 96440159 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A23SW (N)	959	3	344000 391900
18	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Petrol Note: Not Supplied Incident Date: 16th March 1995 Incident Reference: 95440096 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Burst/Leaking Stores Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	970	3	343705 391795
18	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Petrol Note: Not Supplied Incident Date: 16th January 1995 Incident Reference: 95440014 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Leaking Underground Pipe Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	973	3	343700 391795
18	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Sewerage Location: A57 Road Liverpool Road Junction With, Seth Powell Way, HUYTON Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Alt; Silt Incident Date: 13th March 1997 Incident Reference: 97440042 Catchment Area: Alt Receiving Water: Freshwater Stream/River Cause of Incident: Poor Operational Practice Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	974	3	343705 391800
18	Pollution Incidents to Controlled Waters Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 6th October 1993 Incident Reference: 93450121 Catchment Area: Alt Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	977	3	343700 391800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
18	Pollution Incidents to Controlled Waters Property Type: Petrol/Fuelling Stations Location: Shell Crescent Petrol Station, LIVERPOOL Authority: Environment Agency, North West Region Pollutant: Oils - Petrol Note: Not Supplied Incident Date: 5th January 1998 Incident Reference: CE980033 Catchment Area: Alt Receiving Water: Freshwater Stream/River Cause of Incident: Other Cause Incident Severity: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	979	3	343705 391805
	River Quality Name: Alt GQA Grade: River Quality D Reach: Qsl At Liverpool Road To Stockbridge Ln Estimated Distance (km): 1.1 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A17NE (NW)	951	3	343730 391787
19	Substantiated Pollution Incident Register Authority: Environment Agency - North West Region, South Area Incident Date: 24th July 2014 Incident Reference: 1260219 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Contaminated Water: Other Contaminated Water	A18SW (NW)	499	3	343858 391327
20	Substantiated Pollution Incident Register Authority: Environment Agency - North West Region, South Area Incident Date: 3rd December 2003 Incident Reference: 205038 Water Impact: Category 3 - Minor Incident Air Impact: Category 2 - Significant Incident Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Oils - Petrol	A7NE (SW)	512	3	343740 390400
21	Substantiated Pollution Incident Register Authority: Environment Agency - North West Region, South Area Incident Date: 12th September 2013 Incident Reference: 1158726 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Specific Waste Materials: Commercial Waste Pollutant: Specific Waste Materials: Household Waste	A15SW (E)	995	3	345211 390545
	Water Abstractions Operator: B I C C Limited Licence Number: 2569031010 Permit Version: Not Supplied Location: Borehole, Huyton Quarry, LIVERPOOL Authority: Environment Agency, North West Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 218 Yearly Rate (m3): 9092 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A10NW (E)	1282	3	345500 390500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Principle Bedrock Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: 300-550 mm/year Baseflow Index: <40% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: Low	A13NE (S)	0	4	344177 390844
	Groundwater Vulnerability Map Combined Classification: Principle Bedrock Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, No Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: 300-550 mm/year Baseflow Index: <40% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: Low	A13NE (NE)	0	4	344210 390915
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Principal Aquifer	A13NE (S)	0	4	344177 390844
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A13NE (S)	0	4	344177 390844
22	Source Protection Zones Name: Not Supplied Source: Environment Agency, Head Office Reference: Not Supplied Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.	A13NE (S)	0	3	344177 390844
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
23	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 51.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A13NE (E)	216	5	344499 390904
24	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 91.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A14NW (E)	243	5	344524 390950

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A14NW (NE)	342	5	344557 391120
26	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A14NW (NE)	354	5	344609 391056
27	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 180.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A18SW (NW)	360	5	343898 391184
28	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 708.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Alt Catchment Name: Alt Primacy: 1	A18SW (N)	403	5	344112 391358
29	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 76.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A14NW (NE)	480	5	344703 391150
30	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A19SW (NE)	482	5	344547 391326
31	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 43.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Alt Catchment Name: Alt Primacy: 1	A19SW (NE)	483	5	344548 391327
32	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 32.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Alt Catchment Name: Alt Primacy: 1	A18SW (NW)	497	5	343861 391326
33	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 103.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A19SW (NE)	505	5	344590 391322

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 193.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Alt Catchment Name: Alt Primacy: 1	A19SW (NE)	505	5	344590 391322
35	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A17SE (NW)	511	5	343829 391320
36	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 519.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Alt Catchment Name: Alt Primacy: 1	A17SE (NW)	514	5	343828 391323
37	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 47.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Alt Catchment Name: Alt Primacy: 1	A19SW (NE)	551	5	344749 391211
38	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 61.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A19SW (NE)	588	5	344692 391338
39	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 51.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A19SW (NE)	638	5	344752 391349
40	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 74.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Alt Primacy: 1	A19SW (NE)	675	5	344803 391347
41	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 39.8 Watercourse Level: Underground Permanent: True Watercourse Name: River Alt Catchment Name: Alt Primacy: 1	A17NE (NW)	999	5	343705 391828

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	Historical Landfill Sites Licence Holder: Tushingham Metallic Brick Works Location: Knowsley, Merseyside Name: Brickfields Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD16806 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste: Deposited Waste included Inert Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: GDO M209	A14SE (E)	957	3	345168 390532
	Local Authority Landfill Coverage Name: Knowsley Metropolitan Borough Council - Has supplied landfill data		0	6	344177 390844
	Local Authority Landfill Coverage Name: Merseyside Waste Disposal Authority - Has supplied landfill data		0	7	344177 390844
43	Local Authority Recorded Landfill Sites Location: Brickfields, Knowsley Reference: GDO209 Authority: Knowsley Metropolitan Borough Council Last Reported Status: Closed Types of Waste: Putrescible Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A14SE (E)	971	6	345184 390535

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Triassic Rocks (Undifferentiated)	A13NE (S)	0	1	344177 390844
44	BGS Recorded Mineral Sites Site Name: John'S Road Sand Pits Location: Huyton Quarry, Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95195 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Wilmslow Sandstone Formation Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	693	1	344593 390174
44	BGS Recorded Mineral Sites Site Name: John'S Road Sand Pits Location: Huyton Quarry, Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95196 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Wilmslow Sandstone Formation Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	737	1	344622 390141
45	BGS Recorded Mineral Sites Site Name: Roby Location: Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95181 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Chester Pebble Beds Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	870	1	343261 390459
46	BGS Recorded Mineral Sites Site Name: Roby Location: Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95182 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Chester Pebble Beds Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	894	1	343273 390378
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13NE (S)	0	8	344177 390844
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13NE (S)	0	-	344177 390844
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	344210 390915
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	25	1	344300 390935
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	344210 390915
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	Contemporary Trade Directory Entries Name: Klick Location: 22, Derby Road, Huyton, Liverpool, L36 9UJ Classification: Photographic Processors Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	3	-	344278 390918
48	Contemporary Trade Directory Entries Name: Styleprint Location: 12, Archway Road, Liverpool, L36 9XB Classification: Printers Status: Active Positional Accuracy: Automatically positioned to the address	A13NW (N)	40	-	344144 390968
49	Contemporary Trade Directory Entries Name: Brighthouse Location: 58-62, Derby Road, Huyton, Liverpool, L36 9UL Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (SE)	47	-	344291 390776
50	Contemporary Trade Directory Entries Name: Card Factory Location: Unit 13, Cavendish Walk, Derby Road, Huyton, Liverpool, L36 9YG Classification: Greeting Card Publishers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	57	-	344310 390968
50	Contemporary Trade Directory Entries Name: Goldcraft Location: Unit 25, Cavendish Walk, Derby Road, Huyton, Liverpool, L36 9YG Classification: Jewellery Manufacturers & Repairers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	73	-	344308 390994
50	Contemporary Trade Directory Entries Name: The Fragrance Shop Location: Unit 23, Cavendish Walk, Derby Road, Huyton, Liverpool, L36 9YG Classification: Perfume Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	82	-	344322 390994
50	Contemporary Trade Directory Entries Name: Wilkinsons Location: Unit 20, Cavendish Walk, Derby Road, Huyton, Liverpool, L36 9YG Classification: Hardware Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	115	-	344348 391014
51	Contemporary Trade Directory Entries Name: Kirkby Blinds Direct Ltd Location: Lansdowne Way, Liverpool, Merseyside, L36 9YB Classification: Blinds, Awnings & Canopies Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A13SE (E)	83	-	344335 390810
51	Contemporary Trade Directory Entries Name: Johnson Cleaners (UK) Ltd Location: 47-49, Derby Road, Huyton, Liverpool, L36 9UQ Classification: Dry Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (E)	89	-	344357 390855
51	Contemporary Trade Directory Entries Name: Phone World Location: 28 Lansdowne Way, Liverpool, Merseyside, L36 9YB Classification: Mobile Phone Accessories and Car Kits Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A13SE (E)	96	-	344348 390808
51	Contemporary Trade Directory Entries Name: Is Blinds Location: Liverpool, Merseyside, L36 9YB Classification: Blinds, Awnings & Canopies Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A13SE (E)	98	-	344350 390832
51	Contemporary Trade Directory Entries Name: Village Electrics Location: Lansdowne Way, Liverpool, L36 9YB Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned in the proximity of the address	A13SE (E)	101	-	344353 390809

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	Contemporary Trade Directory Entries Name: Max Spielmann Location: 9, Lansdowne Way, Liverpool, Merseyside, L36 9YB Classification: Photographic Processors Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (E)	105	-	344357 390823
52	Contemporary Trade Directory Entries Name: The Kirkby Blinds Location: 30, SHERBORNE SQUARE, LIVERPOOL, L36 9UR Classification: Blinds, Awnings & Canopies Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (E)	98	-	344381 390910
53	Contemporary Trade Directory Entries Name: T J May & Sons Ltd Location: Blacklow Brow, Liverpool, L36 5XE Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	104	-	344064 390663
54	Contemporary Trade Directory Entries Name: Fleet Support Direct Ltd Location: St Marys Road, Huyton, Liverpool, Merseyside, L36 5UY Classification: Road Haulage Services Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A13SE (S)	180	-	344226 390554
55	Contemporary Trade Directory Entries Name: Asda Petrol Location: Huyton Lane, Liverpool, L36 7TX Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (E)	197	-	344474 390965
56	Contemporary Trade Directory Entries Name: T J May & Sons Ltd Location: Pinnington Place, Liverpool, Merseyside, L36 5XA Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (SW)	200	-	343967 390621
57	Contemporary Trade Directory Entries Name: Cubex Location: 21, Huyton Church Road, Liverpool, L36 5SH Classification: Gate Manufacturers - Automated Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (E)	222	-	344496 390844
58	Contemporary Trade Directory Entries Name: Dream Clean Location: 46, The Orchard, Huyton, Liverpool, L36 5UZ Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (SE)	225	-	344306 390550
59	Contemporary Trade Directory Entries Name: Yew Trees Huyton Core Rehab Unit Location: 1, Capper Grove, Liverpool, L36 7YT Classification: Hospitals Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	243	-	344334 391171
60	Contemporary Trade Directory Entries Name: One Stop Mobility Location: 81, Fernbank Avenue, Liverpool, L36 9UD Classification: Disability Equipment - Manufacturers & Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	312	-	343753 390770
61	Contemporary Trade Directory Entries Name: Wignall Scaffolding Location: 21, Greenhill Place, Liverpool, L36 5RU Classification: Scaffolding & Work Platforms Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NW (S)	336	-	344147 390385
62	Contemporary Trade Directory Entries Name: Ironing Made Easy Location: 8, Grinton Crescent, Liverpool, L36 9UA Classification: Ironing & Home Laundry Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	389	-	343675 390779

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
63	Contemporary Trade Directory Entries Name: Laundreze Location: 7, Tarbock Road, Huyton, Liverpool, L36 5XN Classification: Dry Cleaners Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	408	-	343793 390492
63	Contemporary Trade Directory Entries Name: Laxton Distribution Services Ltd Location: 11, Tarbock Road, Huyton, Liverpool, Merseyside, L36 5XN Classification: Distribution Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	421	-	343792 390474
64	Contemporary Trade Directory Entries Name: Liverpool Jet Washing Solutions Location: 45, Tarbock Road, Huyton, Liverpool, L36 5XN Classification: Power Washing Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NW (SW)	471	-	343840 390370
65	Contemporary Trade Directory Entries Name: Clean & Clear Cleaning Location: 59, Tarbock Road, Huyton, Liverpool, L36 5XN Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NW (SW)	475	-	343880 390333
66	Contemporary Trade Directory Entries Name: Park Garage Location: Tarbock Rd, Huyton, Liverpool, Merseyside, L36 5XW Classification: Garage Services Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A7NE (SW)	490	-	343796 390384
66	Contemporary Trade Directory Entries Name: J W Mason Location: 32, Tarbock Road, Huyton, Liverpool, L36 5XW Classification: Blacksmiths & Forgemasters Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	509	-	343768 390382
66	Contemporary Trade Directory Entries Name: Paramount Car Centre Location: 34, Tarbock Road, Huyton, Liverpool, L36 5XW Classification: Car Dealers - Used Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	528	-	343772 390354
66	Contemporary Trade Directory Entries Name: Save Service Station Location: 34, Tarbock Road, Huyton, Liverpool, L36 5XW Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	529	-	343772 390354
66	Contemporary Trade Directory Entries Name: Tarbock Service Station Ltd Location: 34, Tarbock Road, Huyton, Liverpool, L36 5XW Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	529	-	343772 390354
67	Contemporary Trade Directory Entries Name: Murco Petroleum Ltd Location: Twickenham Dr, Liverpool, Merseyside, L36 4QG Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A7NE (SW)	516	-	343678 390454
68	Contemporary Trade Directory Entries Name: Roby Fascias & Gutters Location: 1, Roby Mount Avenue, Liverpool, L36 4HP Classification: Fascias and Soffits Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SE (W)	543	-	343556 390603
69	Contemporary Trade Directory Entries Name: O M S Vehicle Solutions Ltd Location: 132, Crosswood Crescent, Liverpool, L36 2QQ Classification: Vehicle Inspection Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NE (NW)	555	-	343603 391152

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
69	Contemporary Trade Directory Entries Name: Oms Vehicle Solutions Location: 132, Crosswood Crescent, Liverpool, L36 2QQ Classification: Breakdown and Recovery Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NE (NW)	555	-	343603 391152
70	Contemporary Trade Directory Entries Name: Simply Roller Blinds Location: 180 Rupert Rd, Liverpool, Merseyside, L36 9TD Classification: Blinds, Awnings & Canopies Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A12NE (W)	582	-	343527 391047
71	Contemporary Trade Directory Entries Name: Britannia Property Preservation Location: 1, Belfield Crescent, Liverpool, L36 5TR Classification: Damp & Dry Rot Control Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SW (S)	591	-	344142 390130
72	Contemporary Trade Directory Entries Name: Dengas Location: 29, Molyneux Close, Liverpool, L36 6DL Classification: Gas Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	620	-	344896 390810
73	Contemporary Trade Directory Entries Name: Simply Blinds Location: Unit 3, Crossvale Business Park, Crossvale Road, Liverpool, L36 0UY Classification: Blinds, Awnings & Canopies Status: Active Positional Accuracy: Automatically positioned to the address	A8SE (S)	625	-	344367 390132
73	Contemporary Trade Directory Entries Name: Whittakers (Huyton) Ltd Location: 135, Tarbock Road, Huyton, Liverpool, L36 5TF Classification: Brush Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	658	-	344348 390091
74	Contemporary Trade Directory Entries Name: Simply Blinds Location: 103, Rupert Road, Liverpool, L36 9TD Classification: Blinds, Awnings & Canopies Status: Inactive Positional Accuracy: Automatically positioned to the address	A12NW (W)	685	-	343432 391089
75	Contemporary Trade Directory Entries Name: Skinlogica Laser & Beauty Clinic Location: 159, Tarbock Road, Huyton, Liverpool, L36 5TG Classification: Electrolysis Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	733	-	344422 390037
76	Contemporary Trade Directory Entries Name: Hydro Dry Location: 13, Attlee Road, Liverpool, Merseyside, L36 6BG Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	740	-	345023 390936
76	Contemporary Trade Directory Entries Name: Hydro Dry Carpet Cleaning Location: 13, Attlee Road, Liverpool, L36 6BG Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NE (E)	740	-	345023 390936
77	Contemporary Trade Directory Entries Name: Electrical Domestics Location: 27, Acacia Avenue, Liverpool, L36 5TN Classification: Domestic Appliances - Servicing, Repairs & Parts Status: Active Positional Accuracy: Automatically positioned to the address	A8SW (S)	764	-	343861 390016
77	Contemporary Trade Directory Entries Name: Leymac Ltd Location: 31-33, Acacia Avenue, LIVERPOOL, L36 5TN Classification: Mechanical Engineers Status: Active Positional Accuracy: Automatically positioned to the address	A8SW (S)	766	-	343838 390023

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
77	Contemporary Trade Directory Entries Name: Pressed 4 U Location: 35, Acacia Avenue, Liverpool, L36 5TN Classification: Ironing & Home Laundry Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A7SE (SW)	767	-	343829 390026
77	Contemporary Trade Directory Entries Name: North West Dry Rot Location: MERSEYCAR, 39, ACACIA AVENUE, HUYTON, L36 5TN Classification: Damp & Dry Rot Control Status: Active Positional Accuracy: Automatically positioned to the address	A7SE (SW)	769	-	343814 390031
77	Contemporary Trade Directory Entries Name: Acacia Supplies Ltd Location: 39a, Acacia Avenue, Liverpool, Merseyside, L36 5TN Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address	A7SE (SW)	770	-	343814 390031
78	Contemporary Trade Directory Entries Name: St Bartholomews Day Assessment & Treatment Centre Location: Station Road, Huyton, Liverpool, L36 4HU Classification: Hospitals Status: Inactive Positional Accuracy: Automatically positioned to the address	A12SW (W)	769	-	343306 390662
79	Contemporary Trade Directory Entries Name: A1 Location: Liverpool, Merseyside, L36 5tt Classification: Waste Disposal Services Status: Active Positional Accuracy: Manually positioned within the geographical locality	A8SE (S)	776	-	344249 389951
80	Contemporary Trade Directory Entries Name: Beesley & Fildes Location: Wilson Road, Liverpool, Merseyside, L36 6AF Classification: Builders' Merchants Status: Active Positional Accuracy: Manually positioned to the address or location	A14SE (E)	783	-	344981 390519
81	Contemporary Trade Directory Entries Name: Aqua Bloc (Uk) Ltd Location: Montgomery Road, Huyton, Liverpool, Merseyside, L36 7UZ Classification: Damp & Dry Rot Control Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A18NW (N)	813	-	343963 391740
82	Contemporary Trade Directory Entries Name: M K Autos Location: 3, De Silva Street, Liverpool, L36 6BD Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A14SE (E)	830	-	345053 390592
82	Contemporary Trade Directory Entries Name: Safe Seal Windows North West Location: Unit 14, Elm St, Liverpool, Merseyside, L36 6BE Classification: Window Frames - Sales & Service Status: Inactive Positional Accuracy: Manually positioned to the address or location	A14SE (E)	837	-	345060 390592
82	Contemporary Trade Directory Entries Name: Pr Cars Location: Unit 14, Elm Street, Liverpool, L36 6BE Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	837	-	345060 390592
82	Contemporary Trade Directory Entries Name: M & D Autos Location: 7, De Silva Street, Liverpool, L36 6BD Classification: Mot Testing Centres Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	837	-	345060 390592
82	Contemporary Trade Directory Entries Name: Eurotyre Services Location: Unit 2/4, Elm Street, Liverpool, L36 6BE Classification: Tyre Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address	A14SE (E)	837	-	345060 390592

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
82	Contemporary Trade Directory Entries Name: Eurotyre Services Location: Unit 2/4, Elm Street, Liverpool, Merseyside, L36 6BE Classification: Tyre Dealers Status: Inactive Positional Accuracy: Manually positioned to the address or location	A14SE (E)	837	-	345060 390592
82	Contemporary Trade Directory Entries Name: Aura Discount Plastics Location: Unit 12-14, Elm Street, Liverpool, Merseyside, L36 6BE Classification: Fascias and Soffits Status: Inactive Positional Accuracy: Manually positioned to the address or location	A14SE (E)	837	-	345060 390592
82	Contemporary Trade Directory Entries Name: W R Electrical Wholesale Location: Unit 20, Elm St, Liverpool, Merseyside, L36 6BE Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Manually positioned to the address or location	A14SE (E)	837	-	345060 390591
82	Contemporary Trade Directory Entries Name: T & M Autos Location: Unit 6, Elm Street, Liverpool, L36 6BE Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A14SE (E)	845	-	345068 390590
82	Contemporary Trade Directory Entries Name: H I S Ltd Location: 22 Elm Street, Huyton, Liverpool, L36 6BA Classification: Mechanical Engineers Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	861	-	345084 390589
82	Contemporary Trade Directory Entries Name: J & L Taxi Location: 10 Elm St, Liverpool, L36 6BE Classification: Meter Manufacturers & Suppliers Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A14SE (E)	879	-	345095 390558
83	Contemporary Trade Directory Entries Name: Stay Fresh Location: 9, Anzio Road, Liverpool, L36 7YA Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A18NW (N)	875	-	343947 391800
84	Contemporary Trade Directory Entries Name: P Jennings Gas Services Location: 57, Church Road, Roby, LIVERPOOL, L36 9TN Classification: Fireplaces & Mantelpieces Status: Active Positional Accuracy: Automatically positioned to the address	A17SW (W)	883	-	343270 391220
85	Contemporary Trade Directory Entries Name: Ambassador Location: 5, Lilac Grove, Liverpool, L36 5XS Classification: Car Engine Tuning & Diagnostic Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SW (S)	885	-	343871 389883
86	Contemporary Trade Directory Entries Name: Ats Euromaster Ltd Location: ATS LTD, WILSON ROAD, HUYTON, L36 6AN Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A9NE (E)	887	-	345075 390476
87	Contemporary Trade Directory Entries Name: Camerons Location: 9, Pine Close, Huyton, LIVERPOOL, L36 3RR Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A17NE (NW)	889	-	343714 391705
88	Contemporary Trade Directory Entries Name: B Perry Associates Location: 3, Pear Tree Road, Liverpool, L36 5UB Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A3NE (S)	896	-	344186 389826

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
89	Contemporary Trade Directory Entries Name: K C Location: 7, Longview Drive, Liverpool, L36 6DY Classification: Blinds, Awnings & Canopies Status: Inactive Positional Accuracy: Automatically positioned in the proximity of the address	A19NE (NE)	910	-	344890 391597
90	Contemporary Trade Directory Entries Name: Cambrian Cleaning Location: 7, Silverstone Drive, LIVERPOOL, L36 4QT Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A7SE (SW)	923	-	343587 389992
91	Contemporary Trade Directory Entries Name: Grange Cleaning Services Ltd Location: 67, Twickenham Drive, Liverpool, L36 4QG Classification: Cleaning Services - Commercial Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	924	-	343379 390177
92	Contemporary Trade Directory Entries Name: Youngs Animal Feeds Ltd - Huyton Branch Location: Unit 1, Superstop Building, Wilson Road, LIVERPOOL, L36 6AN Classification: Pet Foods & Animal Feeds Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NE (SE)	935	-	345080 390367
92	Contemporary Trade Directory Entries Name: Forward Autos Location: Unit 3 Wilson Business Centre, Wilson Rd, Liverpool, L36 6AF Classification: Garage Services Status: Inactive Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	935	-	345079 390366
92	Contemporary Trade Directory Entries Name: Finestra Location: Unit 1, Wilson Business Centre, Wilson Road, Liverpool, L36 6AF Classification: Window Frames - Sales & Service Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NE (SE)	935	-	345080 390367
92	Contemporary Trade Directory Entries Name: Regal Windows & Conservatories Location: Unit 1, Wilson Business Centre, Wilson Road, Liverpool, Merseyside, L36 6AF Classification: Window Frame Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NE (SE)	935	-	345080 390367
92	Contemporary Trade Directory Entries Name: Stone Impressions Ltd Location: Unit 4, Superstop Building, Wilson Road, LIVERPOOL, L36 6AN Classification: Stone Products - Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A9NE (SE)	935	-	345080 390367
92	Contemporary Trade Directory Entries Name: Re-Cyclers Organisation Ltd Location: Unit 4, Superstop Building, Wilson Road, Liverpool, L36 6AN Classification: Reclaiming - Waste Products Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NE (SE)	935	-	345080 390367
92	Contemporary Trade Directory Entries Name: Miller Garage Services Location: Unit 3 Wilson Business Centre, Wilson Rd, Liverpool, L36 6AF Classification: Garage Services Status: Inactive Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	936	-	345080 390366
93	Contemporary Trade Directory Entries Name: 32 Signal Squadron 32 Signal Regiment V Location: Alamein Territorial Army Centre, Liverpool Road, Huyton, Liverpool, L36 3RW Classification: Hospitals Status: Inactive Positional Accuracy: Automatically positioned to the address	A23SW (N)	952	-	343973 391887
93	Contemporary Trade Directory Entries Name: Blue Bell (Taxi Meters) Location: Liverpool Road, Huyton, Liverpool, L36 3RW Classification: Meter Manufacturers & Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address	A23SW (N)	952	-	343973 391887

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
93	Contemporary Trade Directory Entries Name: Blue Bell Service Station Location: Liverpool Road, Huyton, Liverpool, L36 3RW Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A23SW (N)	959	-	344017 391904
94	Contemporary Trade Directory Entries Name: Air Care Location: 9, Wallace Drive, Liverpool, L36 1TJ Classification: Air Compressors Status: Inactive Positional Accuracy: Automatically positioned to the address	A19NE (NE)	965	-	344939 391625
95	Contemporary Trade Directory Entries Name: Huyton Heat Treatment 2010 Ltd Location: Unit 6, Brickfields, Liverpool, L36 6HY Classification: Heat Treatment - Metals Status: Inactive Positional Accuracy: Automatically positioned to the address	A15SW (E)	985	-	345196 390526
95	Contemporary Trade Directory Entries Name: Interfit Ltd Location: Unit 7, Brickfields, Liverpool, L36 6HY Classification: Tyre Manufacturers & Distributors Status: Inactive Positional Accuracy: Automatically positioned to the address	A15SW (E)	995	-	345211 390546
95	Contemporary Trade Directory Entries Name: First Class Tyres & Auto Care Location: Unit 7, Brickfields, Liverpool, L36 6HY Classification: Tyre Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address	A15SW (E)	995	-	345211 390546
96	Contemporary Trade Directory Entries Name: Shell Service Station Location: Liverpool Road, Huyton, Liverpool, Merseyside, L36 3RN Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address	A17NE (NW)	994	-	343664 391798
96	Contemporary Trade Directory Entries Name: Shell Location: Liverpool Road, Huyton, Liverpool, L36 3RN Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Automatically positioned to the address	A17NE (NW)	994	-	343664 391798
96	Contemporary Trade Directory Entries Name: Shell Crescent Location: LIVERPOOL ROAD, HUYTON, L36 3RN Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address	A17NE (NW)	994	-	343664 391798
97	Fuel Station Entries Name: Asda Huyton Location: Archway Road , Huyton , Liverpool, Merseyside, L36 7TX Brand: ASDA Premises Type: Hypermarket Status: Open Positional Accuracy: Manually positioned to the address or location	A13SW (W)	30	-	344049 390823
98	Fuel Station Entries Name: Huyton Service Station Location: Twickenham Drive , Huyton , Liverpool, Merseyside, L36 4QG Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Automatically positioned to the address	A7NE (SW)	479	-	343727 390456
99	Fuel Station Entries Name: Tarbuck Road Service Station Location: 34, Tarbuck Road , Huyton , Liverpool, Merseyside, L36 5XW Brand: Obsolete Premises Type: Not Applicable Status: Obsolete Positional Accuracy: Automatically positioned to the address	A7NE (SW)	529	-	343772 390354

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
100	Fuel Station Entries Name: Shell Crescent Location: Liverpool Road Cuper Crescent, Huyton , Liverpool, Merseyside, L36 3RN Brand: SHELL Premises Type: Petrol Station Status: Open Positional Accuracy: Automatically positioned to the address	A17NE (NW)	994	-	343664 391798

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
101	Areas of Adopted Green Belt Authority: Knowsley Metropolitan Borough Council Plan Name: Proposal Map Status: Adopted Plan Date: 6th January 2016	A7NW (W)	893	6	343237 390460
102	Nitrate Vulnerable Zones Name: Alt Nvz Description: Surface Water Source: Environment Agency, Head Office	A13NE (S)	0	4	344177 390844
103	Nitrate Vulnerable Zones Name: Dittton Brook (Halewood To Mersey Estuary) Nvz Description: Surface Water Source: Environment Agency, Head Office	A13SE (E)	49	4	344300 390800

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices Environment Agency - Head Office Halton Borough Council - Environmental Health Department St Helens Metropolitan Borough Council - Environmental Protection Department Knowsley Metropolitan Borough Council - Department of Planning and Development Liverpool City Council - Liverpool Environmental Health & Trading Standards Division	June 2020 October 2017 October 2017 September 2017 September 2017	Annually Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Discharge Consents Environment Agency - North West Region	April 2023	Quarterly
Enforcement and Prohibition Notices Environment Agency - North West Region	March 2013	
Integrated Pollution Controls Environment Agency - North West Region	January 2009	
Integrated Pollution Prevention And Control Environment Agency - North West Region	January 2023	Quarterly
Local Authority Integrated Pollution Prevention And Control St Helens Metropolitan Borough Council - Environmental Health Department Liverpool City Council - Liverpool Environmental Health & Trading Standards Division Knowsley Metropolitan Borough Council - Environmental Health and Consumer Protection Division Halton Borough Council - Environmental Health Department	December 2014 December 2015 January 2015 November 2014	Variable Variable Variable Variable
Local Authority Pollution Prevention and Controls St Helens Metropolitan Borough Council - Environmental Health Department Liverpool City Council - Liverpool Environmental Health & Trading Standards Division Knowsley Metropolitan Borough Council - Environmental Health and Consumer Protection Division Halton Borough Council - Environmental Health Department	December 2014 December 2015 January 2015 November 2014	Annual Rolling Update Annually Annual Rolling Update Not Applicable
Local Authority Pollution Prevention and Control Enforcements St Helens Metropolitan Borough Council - Environmental Health Department Liverpool City Council - Liverpool Environmental Health & Trading Standards Division Knowsley Metropolitan Borough Council - Environmental Health and Consumer Protection Division Halton Borough Council - Environmental Health Department	December 2014 December 2015 January 2015 November 2014	Variable Variable Variable Variable
Nearest Surface Water Feature Ordnance Survey	April 2023	
Pollution Incidents to Controlled Waters Environment Agency - North West Region	January 2000	
Prosecutions Relating to Authorised Processes Environment Agency - North West Region	July 2015	
Prosecutions Relating to Controlled Waters Environment Agency - North West Region	March 2013	
Registered Radioactive Substances Environment Agency - North West Region	June 2016	As notified
River Quality Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points Environment Agency - Head Office	April 2012	
River Quality Chemistry Sampling Points Environment Agency - Head Office	April 2012	
Substantiated Pollution Incident Register Environment Agency - North West Region - South Area	April 2023	Quarterly
Water Abstractions Environment Agency - North West Region	April 2023	Quarterly

Agency & Hydrological	Version	Update Cycle
Water Industry Act Referrals Environment Agency - North West Region	October 2017	
Groundwater Vulnerability Map Environment Agency - Head Office	June 2018	As notified
Bedrock Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Superficial Aquifer Designations Environment Agency - Head Office	January 2018	Annually
Source Protection Zones Environment Agency - Head Office	September 2022	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	February 2023	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	February 2023	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	February 2023	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	February 2023	Quarterly
Flood Defences Environment Agency - Head Office	August 2022	Quarterly
OS Water Network Lines Ordnance Survey	April 2023	Quarterly
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites Environment Agency - Head Office	March 2023	Quarterly
Integrated Pollution Control Registered Waste Sites Environment Agency - North West Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency - North West Region - South Area	January 2023	Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency - North West Region - South Area	January 2023	Quarterly
Local Authority Landfill Coverage Halton Borough Council - Environmental Health Department Knowsley Metropolitan Borough Council Liverpool City Council - Liverpool Environmental Health & Trading Standards Division Merseyside Waste Disposal Authority St Helens Metropolitan Borough Council	February 2003 February 2003 February 2003 February 2003 February 2003	Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Halton Borough Council - Environmental Health Department Knowsley Metropolitan Borough Council Liverpool City Council - Liverpool Environmental Health & Trading Standards Division Merseyside Waste Disposal Authority St Helens Metropolitan Borough Council	October 2018 October 2018 October 2018 October 2018 October 2018	
Registered Landfill Sites Environment Agency - North West Region - South Area	March 2006	Not Applicable
Registered Waste Transfer Sites Environment Agency - North West Region - South Area	April 2018	
Registered Waste Treatment or Disposal Sites Environment Agency - North West Region - South Area	June 2015	
Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	March 2023	Bi-Annually
Explosive Sites Health and Safety Executive	March 2017	
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements Knowsley Metropolitan Borough Council St Helens Metropolitan Borough Council Liverpool City Council Halton Borough Council	August 2015 February 2016 January 2016 March 2023	Variable Variable Variable Variable
Planning Hazardous Substance Consents Halton Borough Council Knowsley Metropolitan Borough Council St Helens Metropolitan Borough Council Liverpool City Council	August 2015 August 2015 February 2016 January 2016	Variable Variable Variable Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	June 2023	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	February 2023	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	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	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	September 2022	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	September 2022	Annually
Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	April 2023	Quarterly
Fuel Station Entries Catalist Ltd - Experian	June 2023	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Underground Electrical Cables National Grid	February 2023	Bi-Annually

Sensitive Land Use	Version	Update Cycle
Ancient Woodland Natural England	April 2023	Bi-Annually
Areas of Adopted Green Belt Halton Borough Council Knowsley Metropolitan Borough Council Liverpool City Council St Helens Metropolitan Borough Council	July 2022 July 2022 July 2022 July 2022	Quarterly Quarterly Quarterly Quarterly
Areas of Unadopted Green Belt Halton Borough Council Knowsley Metropolitan Borough Council Liverpool City Council St Helens Metropolitan Borough Council	July 2022 July 2022 July 2022 July 2022	Quarterly Quarterly Quarterly Quarterly
Areas of Outstanding Natural Beauty Natural England	April 2023	Bi-Annually
Environmentally Sensitive Areas Natural England	January 2017	
Forest Parks Forestry Commission	May 2023	Not Applicable
Local Nature Reserves Natural England	March 2023	Bi-Annually
Marine Nature Reserves Natural England	April 2023	Bi-Annually
National Nature Reserves Natural England	February 2023	Bi-Annually
National Parks Natural England	February 2018	Bi-Annually
Nitrate Sensitive Areas Natural England	April 2023	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA) Environment Agency - Head Office	April 2016 March 2023	Bi-Annually
Ramsar Sites Natural England	March 2023	Bi-Annually
Sites of Special Scientific Interest Natural England	March 2023	Bi-Annually
Special Areas of Conservation Natural England	April 2023	Bi-Annually
Special Protection Areas Natural England	April 2023	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	
Stantec UK Ltd	

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	Knowsley Metropolitan Borough Council - Environmental Health and Consumer Protection Division Municipal Buildings, Cherryfield Drive, Kirkby, Knowsley, Merseyside, L32 1TX	Telephone: 0151 443 4731 Fax: 0151 289 7488 Website: www.knowsley.gov.uk
3	Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
4	Environment Agency - Head Office Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	Ordnance Survey Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	Knowsley Metropolitan Borough Council Archway Road, Huyton, Liverpool, Merseyside, L36 9YU	Telephone: 0151 489 6000 Fax: 0151 443 2298 Website: www.knowsley.gov.uk
7	Merseyside Waste Disposal Authority 2nd Floor, North House, 17 North John Street, Liverpool, Merseyside, L2 5QY	Telephone: 0151 2551444 Fax: 0151 2271848 Email: enquiries@merseysidewda.gov.uk
8	The Coal Authority - Property Searches 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
9	Liverpool City Council 5th floor, Steers House, Canning Place, Liverpool, Merseyside, L1 8JA	Telephone: 0151 227 3911 Fax: 0151 709 1481 Website: www.liverpool.gov.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.

Envirocheck[®] Report:

Mining and Ground Stability Datasheet

Order Details:

Order Number:

313640178_1_1

Customer Reference:

0051610

National Grid Reference:

344180, 390840

Slice:

A

Site Area (Ha):

2.95

Search Buffer (m):

1000

Site Details:

Site at
Civic Way
Huyton
L36 9GD

Client Details:

Mr B Happold
Buro Happold Limited
17 Newman Street
London
W1T 1PD

Report Section and Details	Page Number
Summary	-
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer selected. For ease of reference, the report is broken down into 4 sections of data; Mining and Natural Cavities Data, Historical Land Use Information (1:2,500), Historical Land Use Information (1:10,000) and Ground Stability Data (1:50,000).	
Mining and Natural Cavities Data	1
The Mining and Natural Cavities Data section features data sets related to the existence of mining areas and their potential hazards; and details of naturally formed cavities. Data sets within this section are not plotted, with the exception of BGS Recorded Mineral Sites and Potential Mining Areas which feature on the Historical Land Use Information (1:10,000) map.	
Historical Land Use Information (1:2,500)	3
The Historical Land Use Information (1:2,500) section contains data captured from analysis carried out by Landmark of 1:1,250 and 1:2,500 scale historical Ordnance Survey mapping, identifying areas where, historically, the land uses were potentially contaminative. For the purpose of this Envirocheck module, only historical data relating to mining and ground stability has been included and plotted on the corresponding Historical Land Use Information (1:2,500) map. This section also includes the Subterranean Features data set, which details various man-made and man-used underground spaces obtained from the Subterranea Britannica society.	
Historical Land Use Information (1:10,000)	4
The Historical Land Use (1:10,000) section covers data captured from the systematic analysis carried out by Landmark of 1:10, 560 and 1:10,000 scale historical Ordnance Survey mapping dating back to the mid-19th century, identifying potentially contaminative past industrial land uses. For the purpose of this Envirocheck module, only data relating to mining and ground stability has been included and plotted on the accompanying Historical Land Use Information (1:10,000) map.	
Ground Stability Data (1:50,000)	7
The Ground Stability (1:50,000) section includes the BGS Geosure data suite, reporting features to 250m and plotted onto 3 separate maps. Also reported is brine subsidence, brine mining and salt mining data sets, of which Brine Pumping and Salt Mining Related Features are plotted, and subsidence insurance claims and insurance investigations data, which is not plotted.	
Historical Map List	8
The Historical Map List section details the historical mapping that has been analysed for your site, in relation to the Historical Land Use Information sections.	
Data Currency	9
Data Suppliers	10
Useful Contacts	11

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The brine subsidence data relating to the Droitwich area as provided in this report is derived from JPB studies and physical monitoring undertaken annually over more than 35 years. For more detailed interpretation contact enquiries@jpb.co.uk. JPB retain the copyright and intellectual rights to this data and accept no liability for any loss or damage, including in direct or consequential loss, arising from the use of this data.

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Report Version v53.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
Mining and Natural Cavities Data					
BGS Recorded Mineral Sites	pg 1				4
Coal Mining Affected Areas	pg 1	Yes	n/a	n/a	n/a
Man Made Mining Cavities					
Mining Instability	pg 1	Yes	n/a	n/a	n/a
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential Mining Areas	pg 1			1	1
Historical Land Use Information (1:2,500)					
Extractive Industries or Potential Excavations from 1855-1909 (100m)	pg 3		1	n/a	n/a
Extractive Industries or Potential Excavations from 1893-1915 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1906-1937 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1924-1949 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1950-1980 (100m)				n/a	n/a
Subterranean Features (100m)				n/a	n/a
Historical Land Use Information (1:10,000)					
Air Shafts					
Disturbed Ground					
General Quarrying	pg 4				4
Heap, unknown constituents					
Mineral Railway	pg 4				1
Mining & quarrying general	pg 4				1
Mining of coal & lignite	pg 4				1
Quarrying of sand & clay, operation of sand & gravel pits	pg 4				3
Former Marshes					
Potentially Infilled Land (Non-Water)	pg 4				8
Potentially Infilled Land (Water)	pg 4			11	33
Ground Stability Data (1:50,000)					
CBSCB Compensation District			n/a	n/a	n/a
Brine Pumping Related Features					
Brine Subsidence Solution Area					
Potential for Collapsible Ground Stability Hazards	pg 7	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 7	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 7	Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 7	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 7	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 7	Yes		n/a	n/a
Salt Mining Related Features					

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	BGS Recorded Mineral Sites Site Name: John'S Road Sand Pits Location: Huyton Quarry, Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95195 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Wilmslow Sandstone Formation Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	693	1	344593 390174
1	BGS Recorded Mineral Sites Site Name: John'S Road Sand Pits Location: Huyton Quarry, Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95196 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Wilmslow Sandstone Formation Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	737	1	344622 390141
2	BGS Recorded Mineral Sites Site Name: Roby Location: Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95181 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Chester Pebble Beds Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	870	1	343261 390459
3	BGS Recorded Mineral Sites Site Name: Roby Location: Huyton-With-Roby, Merseyside Source: British Geological Survey, National Geoscience Information Service Reference: 95182 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Chester Pebble Beds Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A7NW (SW)	894	1	343273 390378
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13NE (S)	0	2	344177 390844
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13NE (S)	0	3	344177 390844
	Non Coal Mining Areas of Great Britain No Hazard				
4	Potential Mining Areas Name: Huyton with Roby Ceased Operation: Not Supplied Commodity: Coal Reference: Not Supplied Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A14NW (NE)	286	4	344555 391005

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	Potential Mining Areas Name: Moss Croft Ceased Operation: 1910 Commodity: Coal; Probably Bastians Reference: 5578 Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A14NE (E)	680	4	344957 391001

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	Extractive Industries or Potential Excavations from 1855-1909 Use: W First Map Published 1892 Date: Last Map Published Not Applicable Date:	A13NE (N)	86	-	344238 391043

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	General Quarrying Use: Not Supplied Date of Mapping: 1850 - 1894	A7NW (W)	850	-	343271 390487
8	General Quarrying Use: Not Supplied Date of Mapping: 1850	A7NW (SW)	895	-	343273 390377
9	General Quarrying Use: Not Supplied Date of Mapping: 1850	A15SW (E)	950	-	345220 390747
10	General Quarrying Use: Not Supplied Date of Mapping: 1850	A15SW (E)	978	-	345255 390802
11	Mineral Railway Use: Not Supplied Date of Mapping: 1850 - 1956	A14SE (E)	894	-	345156 390712
12	Mining & quarrying general Use: Not Supplied Date of Mapping: 1908	A19SW (NE)	679	-	344819 391332
13	Mining of coal & lignite Use: Not Supplied Date of Mapping: 1850	A14SW (E)	508	-	344747 390699
14	Quarrying of sand & clay, operation of sand & gravel pits Use: Not Supplied Date of Mapping: 1850	A7NE (SW)	521	-	343694 390428
15	Quarrying of sand & clay, operation of sand & gravel pits Use: Not Supplied Date of Mapping: 1850	A14SE (E)	657	-	344881 390618
16	Quarrying of sand & clay, operation of sand & gravel pits Use: Not Supplied Date of Mapping: 1894	A9NW (SE)	664	-	344580 390201
17	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A14SW (E)	508	-	344747 390699
18	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A7NE (SW)	521	-	343694 390428
19	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A14SE (E)	657	-	344881 390618
20	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A9NW (SE)	664	-	344580 390201
21	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A19SW (NE)	679	-	344819 391332
22	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1990	A7NW (W)	850	-	343271 390487
23	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A15SW (E)	950	-	345220 390747
24	Potentially Infilled Land (Non-Water) Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1991	A15SW (E)	978	-	345255 390802
25	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1908	A12SE (SW)	287	-	343799 390685
26	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12NE (W)	351	-	343758 391008
27	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12NE (NW)	377	-	343750 391052

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12NE (NW)	385	-	343748 391064
29	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A18SW (N)	385	-	344131 391343
30	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A18SW (N)	430	-	344063 391369
31	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A7NE (SW)	447	-	343808 390430
32	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12SE (SW)	453	-	343716 390506
33	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A18SE (N)	462	-	344374 391394
34	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A14NW (E)	464	-	344747 390933
35	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A14NW (E)	476	-	344737 391057
36	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A19SW (NE)	594	-	344537 391464
37	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SE (S)	605	-	344314 390137
38	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12SE (SW)	614	-	343519 390513
39	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A17SE (NW)	623	-	343629 391298
40	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A14NE (E)	631	-	344914 390904
41	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A8SW (S)	665	-	344130 390056
42	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A17SE (NW)	673	-	343584 391324
43	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A19SW (NE)	686	-	344842 391315
44	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A17SE (NW)	698	-	343620 391395
45	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A14SE (E)	722	-	345001 390828
46	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A8SW (S)	723	-	344028 390010
47	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A7NW (SW)	724	-	343410 390484
48	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A14SE (E)	731	-	344952 390598

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SW (S)	735	-	344058 389993
50	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14NE (E)	737	-	344998 391093
51	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A14SE (E)	743	-	344953 390560
52	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A19SW (NE)	772	-	344794 391497
53	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A14SE (E)	777	-	344975 390521
54	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12NW (W)	790	-	343307 391026
55	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A17SE (NW)	811	-	343512 391448
56	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A8SW (S)	823	-	343836 389962
57	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A19NW (NE)	830	-	344647 391673
58	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A9NE (SE)	904	-	345000 390291
59	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12NW (W)	936	-	343183 391133
60	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11NE (W)	941	-	343130 390909
61	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A19SE (NE)	950	-	345091 391416
62	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11NE (W)	972	-	343134 391087
63	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A11SE (W)	973	-	343099 390670
64	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A9NE (SE)	973	-	345104 390333
65	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A11NE (W)	983	-	343128 391110
66	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1928	A19NE (NE)	993	-	345020 391582
67	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A9SE (SE)	997	-	344868 390001
68	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A19NW (NE)	999	-	344686 391842

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	CBSCB Compensation District The site does not fall within the brine compensation area.				
	Brine Subsidence Solution Area The site does not fall within the brine subsidence solution area.				
69	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
70	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
71	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
72	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	344210 390915
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	25	1	344300 390935
73	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (S)	0	1	344177 390844
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	344210 390915

The following mapping has been analysed for Historical Land Use Information (1:2,500):

1:2,500	Mapsheet	Published Date
Lancashire And Furness	107_10	1892
Lancashire And Furness	107_14	1892
Lancashire And Furness	107_10	1907
Lancashire And Furness	107_14	1907
Lancashire And Furness	107_10	1927
Lancashire And Furness	107_14	1927
Ordnance Survey Plan	SJ4391	1952

The following mapping has been analysed for Historical Land Use Information (1:10,000):

1:10,560	Mapsheet	Published Date
Lancashire And Furness	107_00	1850
Cheshire	014_00	1881
Cheshire	015_00	1881
Lancashire And Furness	107_SW	1894
Lancashire And Furness	107_SW	1908
Lancashire And Furness	107_SW	1928
Ordnance Survey Plan	SJ48NE	1955
Ordnance Survey Plan	SJ48NW	1956
Ordnance Survey Plan	SJ49SE	1956
Ordnance Survey Plan	SJ49SW	1956
1:10,000	Mapsheet	Published Date
Ordnance Survey Plan	SJ48NW	1982
Ordnance Survey Plan	SJ48NE	1990
Ordnance Survey Plan	SJ49SW	1990
Ordnance Survey Plan	SJ49SE	1991

Mining and Cavities Data	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	June 2023	Bi-Annually
Coal Mining Affected Areas The Coal Authority - Property Searches	February 2023	Annual Rolling Update
Man Made Mining Cavities Stantec UK Ltd	December 2022	Bi-Annually
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Natural Cavities Stantec UK Ltd	December 2022	Bi-Annually
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Historical Land Use Information (1:2,500)	Version	Update Cycle
Subterranean Features Landmark Information Group Limited	June 2022	Bi-Annually
Ground Stability Data (1:50,000)	Version	Update Cycle
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Brine Subsidence Solution Area Johnson Poole & Bloomer	December 2020	

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
British Geological Survey	 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
The Coal Authority	
Ove Arup	
Stantec UK Ltd	
Wardell Armstrong	
Johnson Poole & Bloomer	

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	The Coal Authority - Property Searches 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
3	Ove Arup & Partners Central Square, Forth Street, Newcastle upon Tyne, Tyne and Wear, NE1 3PL	Telephone: 0191 261 6080 Fax: 0191 261 7879
4	Landmark Information Group Limited Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9960 Fax: 0844 844 9951 Email: customerservice@promap.co.uk Website: www.landmarkinfo.co.uk
-	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

Geology 1:50,000 Maps Legends

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian
	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	SSA	Shirdley Hill Sand Formation	Sand	Not Supplied - Devensian

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	CHES	Chester Formation	Sandstone	Not Supplied - Olenekian
	CHES	Chester Formation	Sandstone, Pebbly (Gravelly)	Not Supplied - Olenekian
	WLSF	Wilmslow Sandstone Formation	Sandstone	Not Supplied - Early Triassic
	KNSF	Kinnerton Sandstone Formation	Sandstone	Not Supplied - Early Triassic
	PMCM	Pennine Middle Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	PMCM	Pennine Middle Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	PLCM	Pennine Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	PLCM	Pennine Lower Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	OL	Old Lawrence Rock	Sandstone	Not Supplied - Westphalian
	RHR	Ravenhead Rock	Sandstone	Not Supplied - Westphalian
	ETM	Etruria Formation	Mudstone, Sandstone and Conglomerate	Not Supplied - Westphalian
	ETM	Etruria Formation	Mudstone	Not Supplied - Westphalian
		Faults		
		Rock Segments		

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Geology 1:50,000 Maps

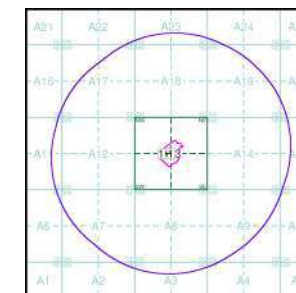
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	1
Map Sheet No:	097
Map Name:	Runcorn
Map Date:	1977
Bedrock Geology:	Available
Superficial Geology:	Available
Artificial Geology:	Not Available
Faults:	Not Supplied
Landslip:	Not Available
Rock Segments:	Not Supplied

Geology 1:50,000 Maps - Slice A

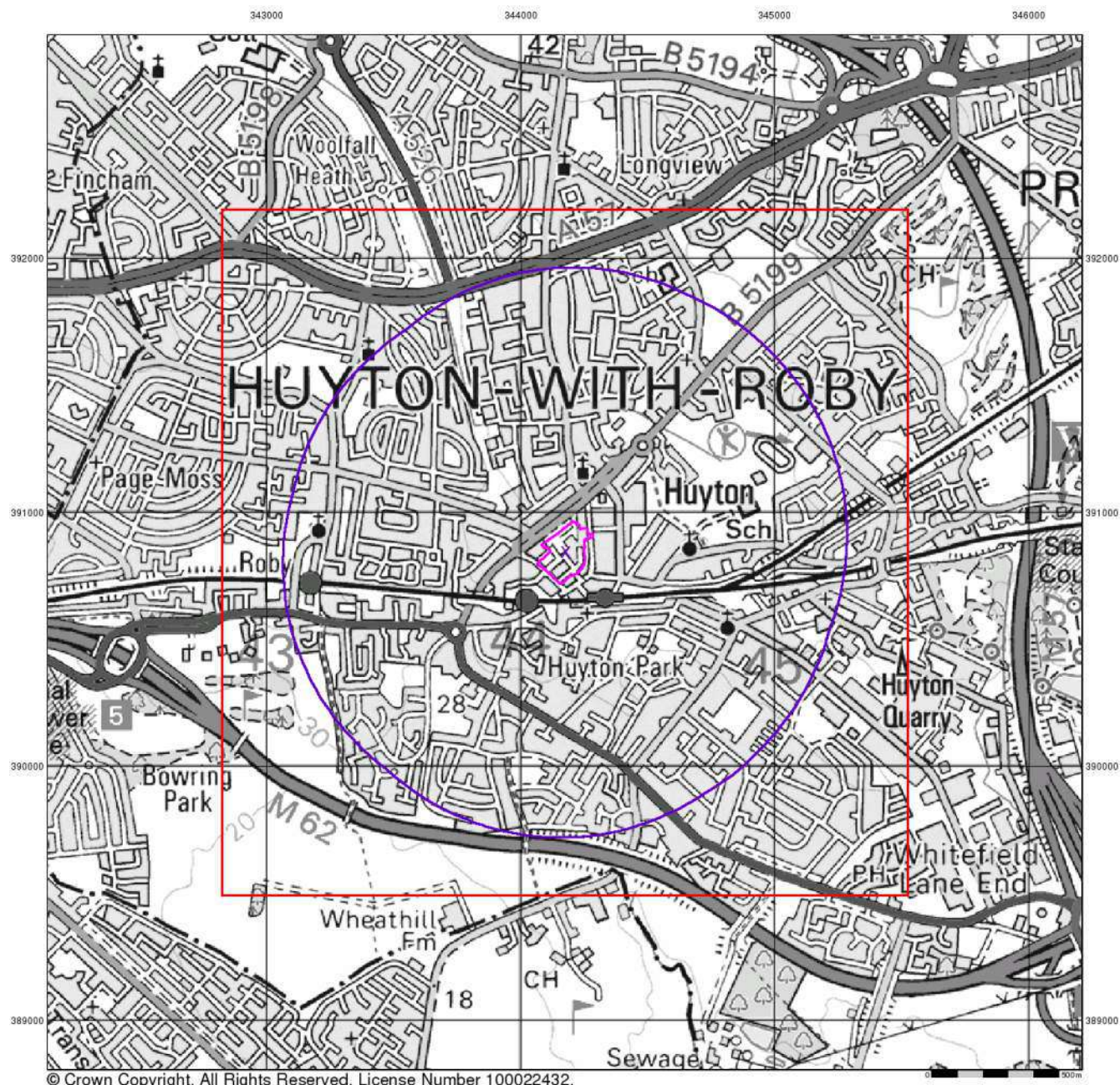


Order Details:

Order Number:	313640178_1_1
Customer Reference:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	1000

Site Details:

Site at, Civic Way, Huyton, L36 9GD



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Artificial Ground and Landslip

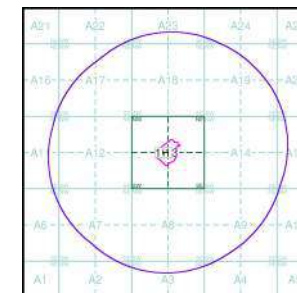
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions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

Artificial ground includes:

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

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

Artificial Ground and Landslip Map - Slice A



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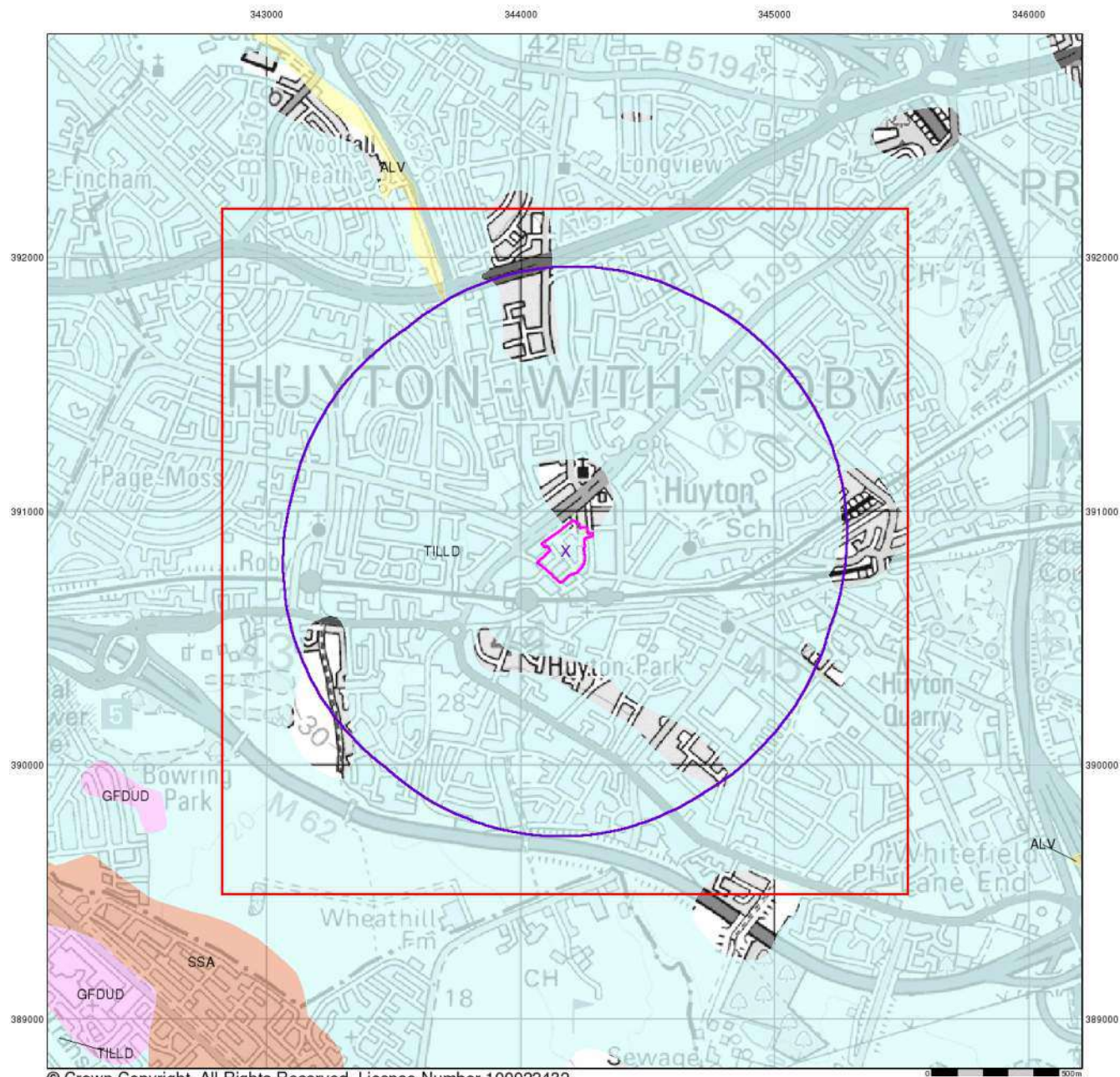
Order Number: 313640178_1_1
 Customer Reference: 0051610
 National Grid Reference: 344180, 390840
 Slice: A
 Site Area (Ha): 2.95
 Search Buffer (m): 1000

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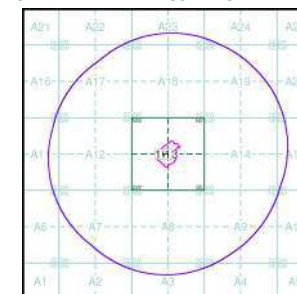
Superficial Geology

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

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

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

Superficial Geology Map - Slice A



Order Details:

Order Number: 313640178_1_1
 Customer Reference: 0051610
 National Grid Reference: 344180, 390840
 Slice: A
 Site Area (Ha): 2.95
 Search Buffer (m): 1000

Site Details:

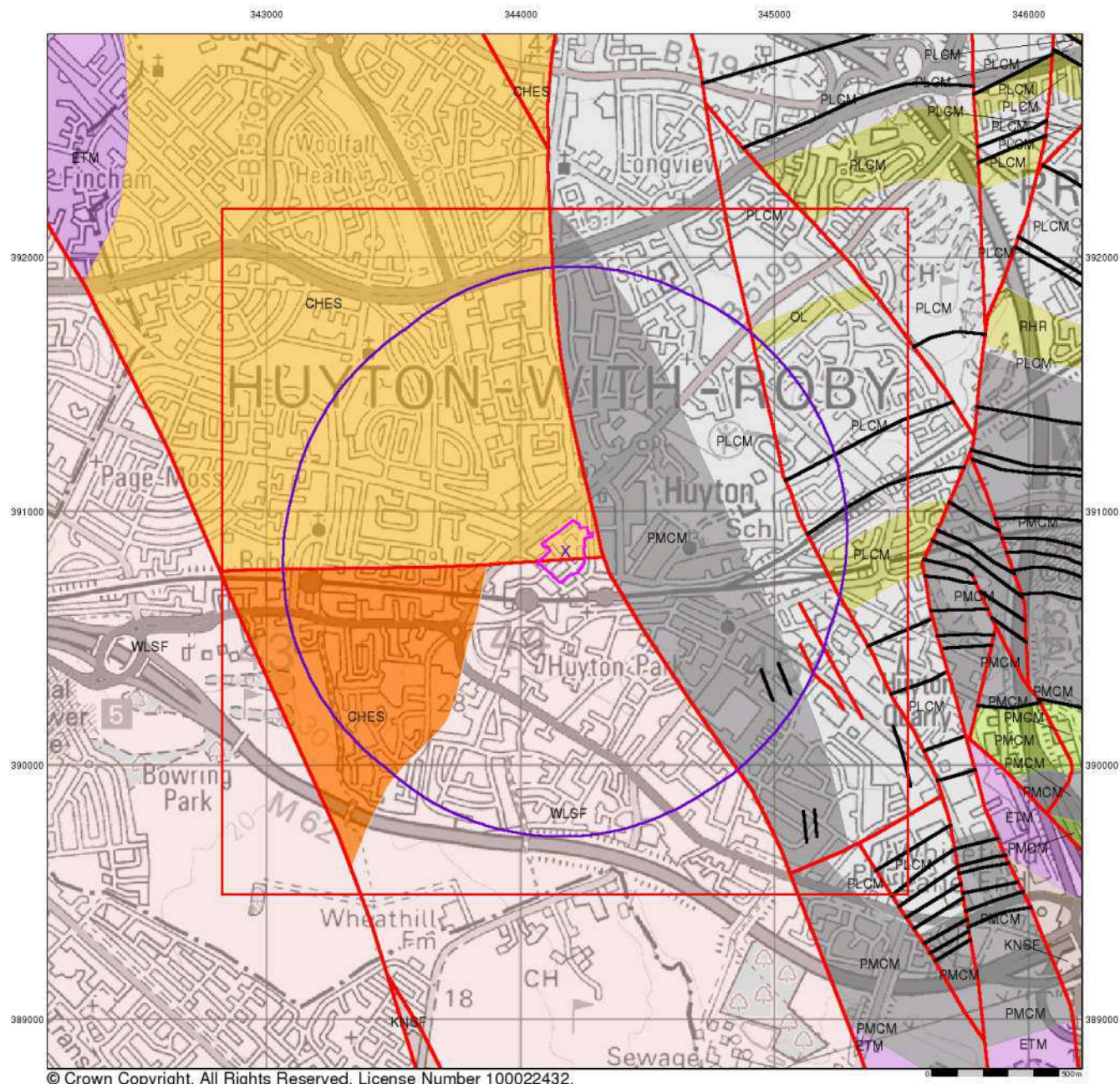
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Bedrock and Faults

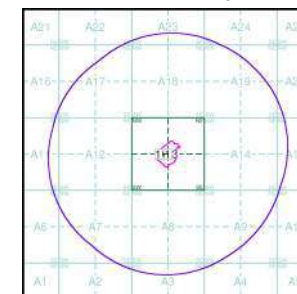
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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

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

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

Bedrock and Faults Map - Slice A



Order Details:

Order Number: 313640178_1_1
 Customer Reference: 0051610
 National Grid Reference: 344180, 390840
 Slice: A
 Site Area (Ha): 2.95
 Search Buffer (m): 1000

Site Details:

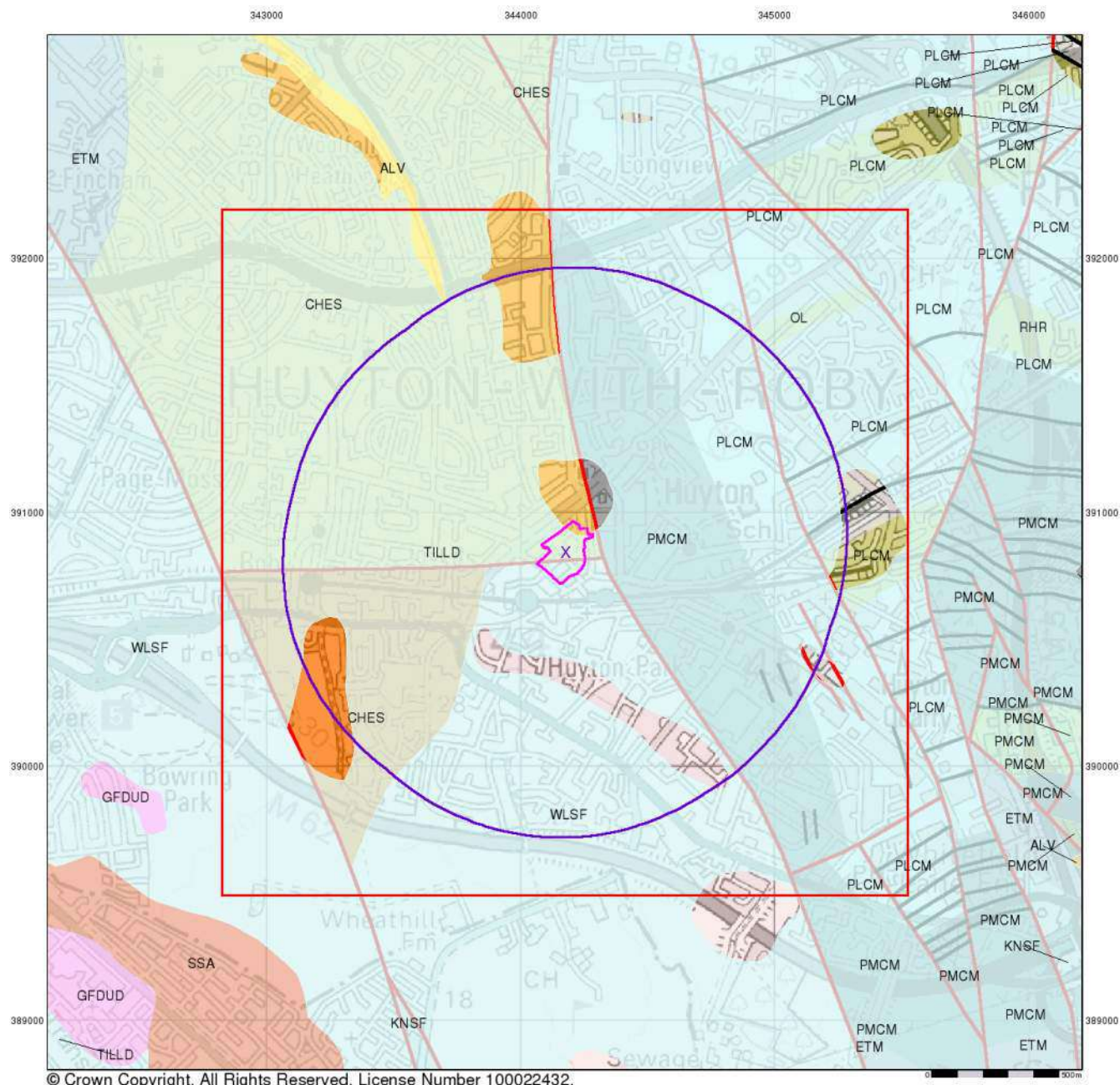
Site at, Civic Way, Huyton, L36 9GD

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Combined Surface Geology

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

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

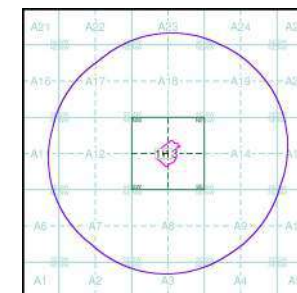
Additional Information

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

Contact

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

Combined Geology Map - Slice A



Order Details:

Order Number: 313640178_1_1
Customer Reference: 0051610
National Grid Reference: 344180, 390840
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Groundwater Vulnerability

General

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

Agency and Hydrological

Bedrock Aquifers

-  High Vulnerability, Principal Aquifer
-  High Vulnerability, Secondary Aquifer
-  Medium Vulnerability, Principal Aquifer
-  Medium Vulnerability, Secondary Aquifer
-  Low Vulnerability, Principal Aquifer
-  Low Vulnerability, Secondary Aquifer

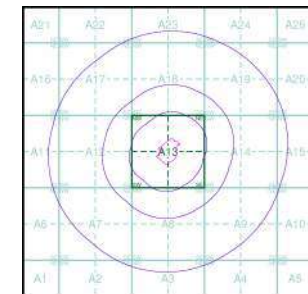
Superficial Aquifers

-  High Vulnerability, Principal Aquifer
-  High Vulnerability, Secondary Aquifer
-  Medium Vulnerability, Principal Aquifer
-  Medium Vulnerability, Secondary Aquifer
-  Low Vulnerability, Principal Aquifer
-  Low Vulnerability, Secondary Aquifer

 Unproductive Aquifer

 Soluble Rock

Site Sensitivity Context Map - Slice A

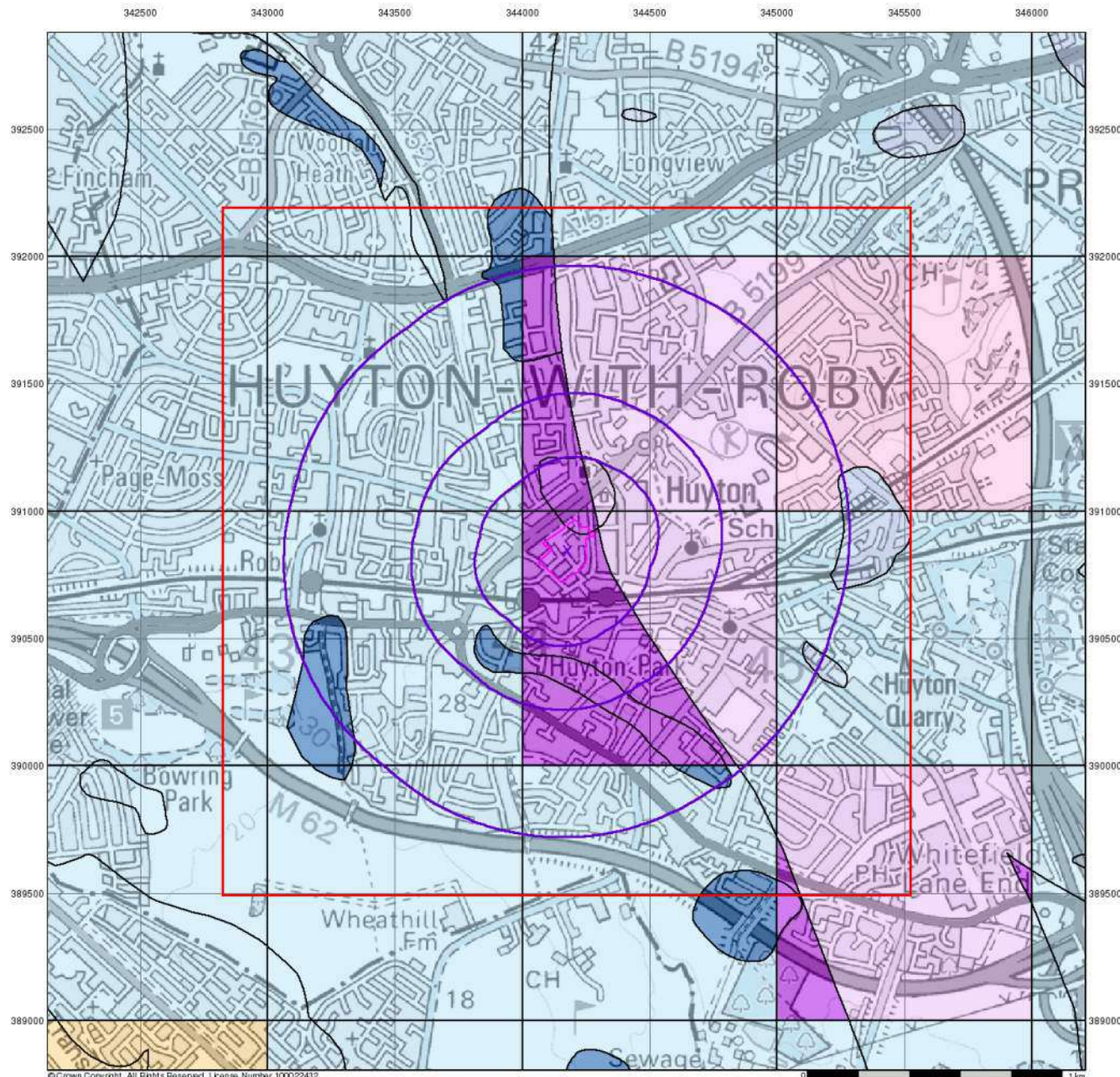


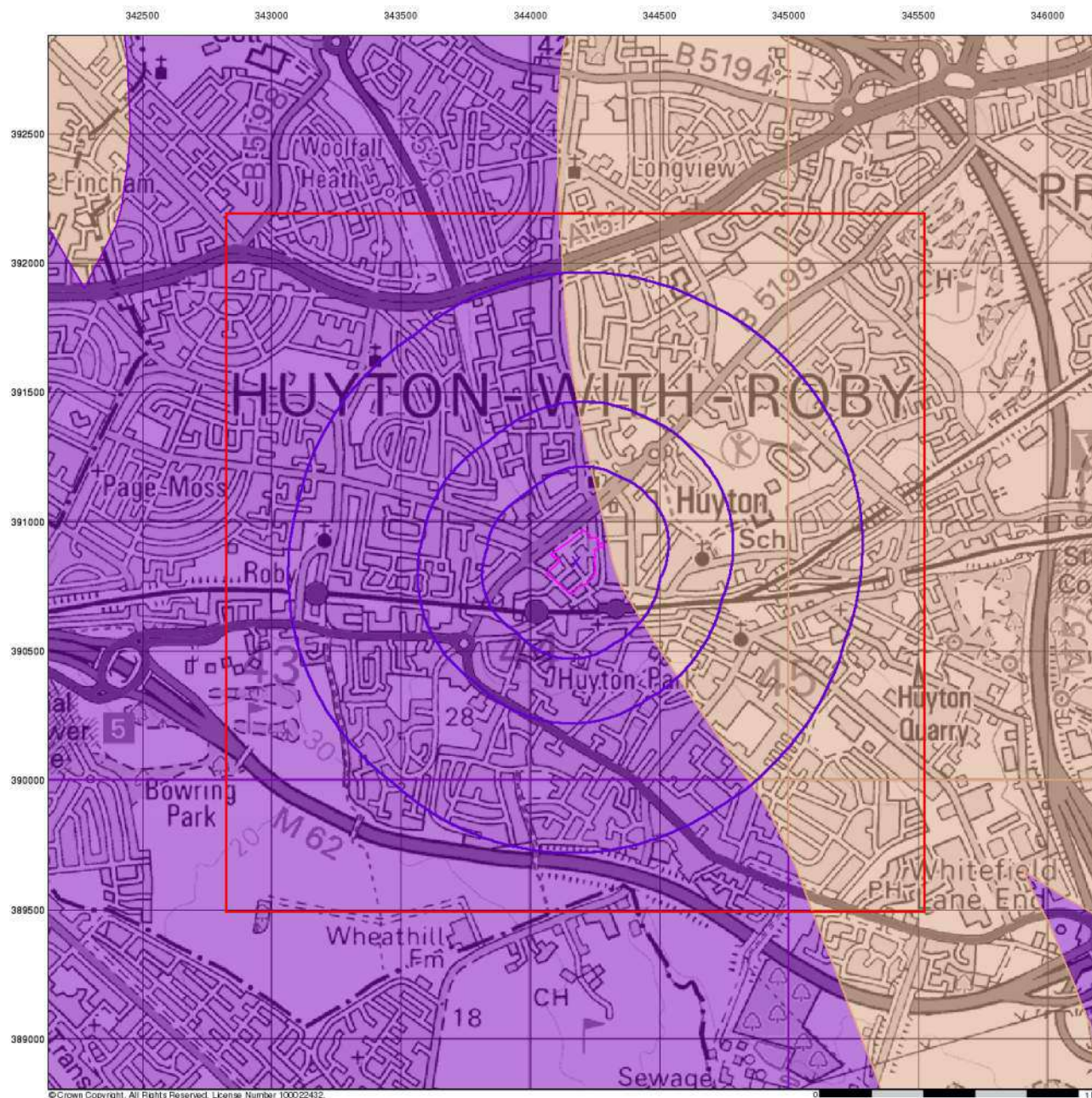
Order Details

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 Slice: A
 Site Area (Ha): 2.95
 Search Buffer (m): 1000

Site Details

Site at, Civic Way, Huyton, L36 9GD





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Bedrock Aquifer Designation

General

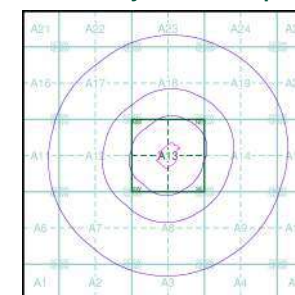
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



Order Details

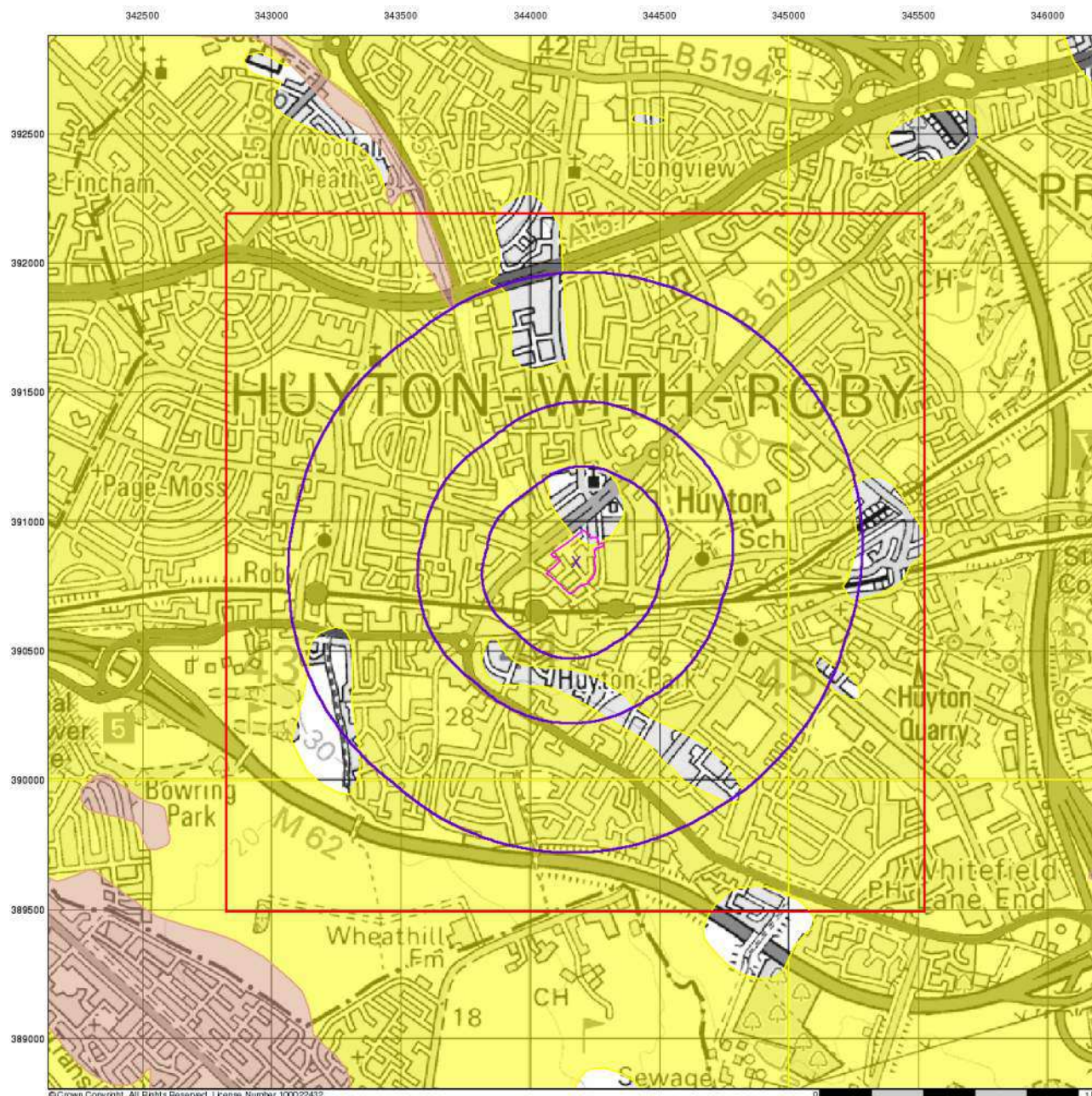
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 Site Area (Ha): 2.95
 Search Buffer (m): 1000

Site Details

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Superficial Aquifer Designation

General

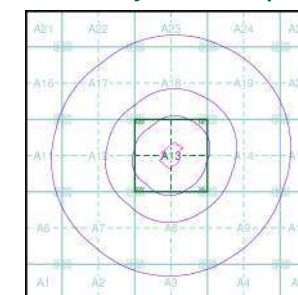
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- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



Order Details

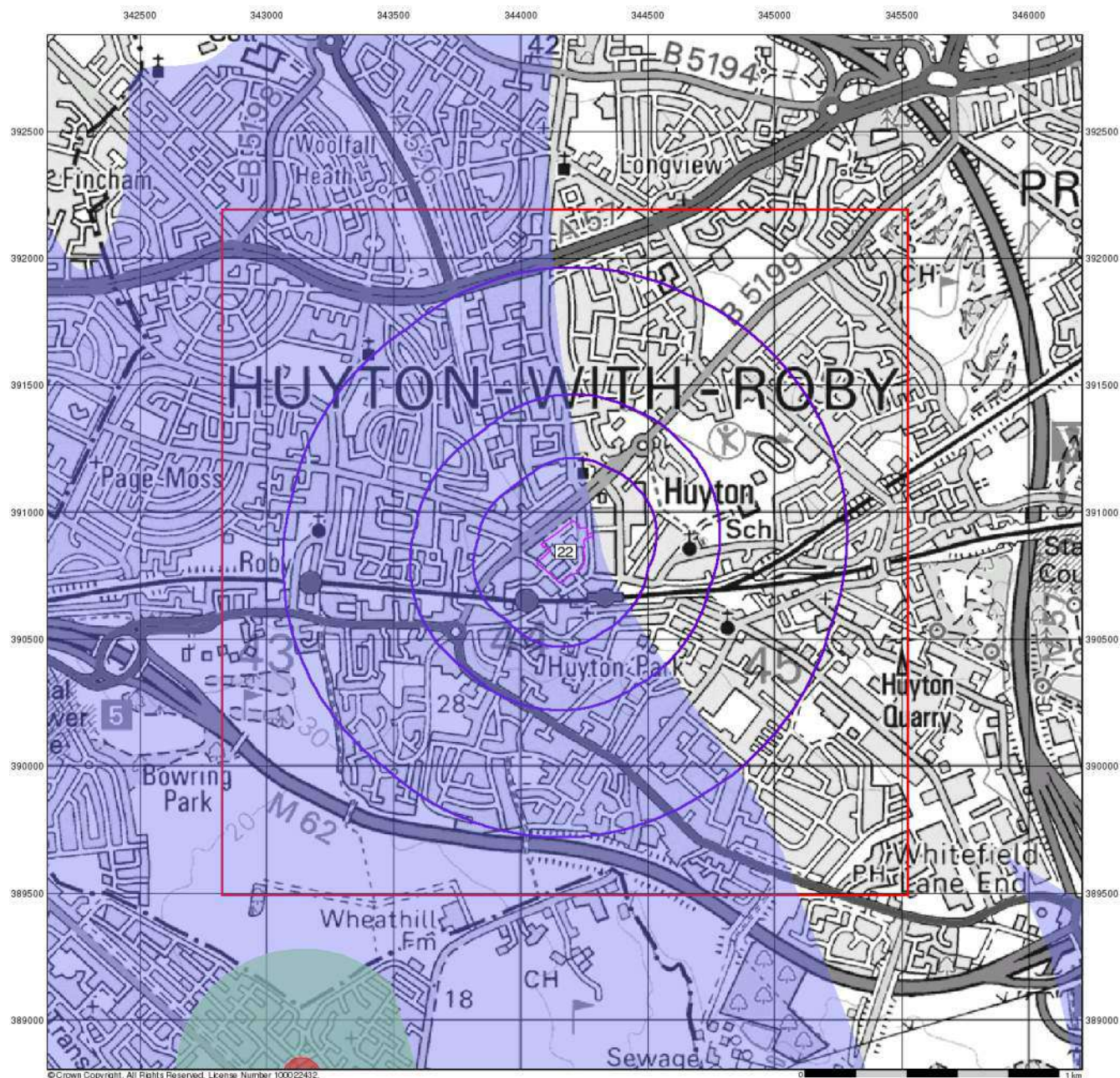
Order Number: 313640178_1_1
 Customer Ref: 0051610
 National Grid Reference: 344180, 390840
 Slice: A
 Site Area (Ha): 2.95
 Search Buffer (m): 1000

Site Details

Site at, Civic Way, Huyton, L36 9GD

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Source Protection Zones

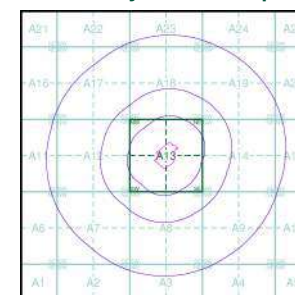
General

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

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



Order Details

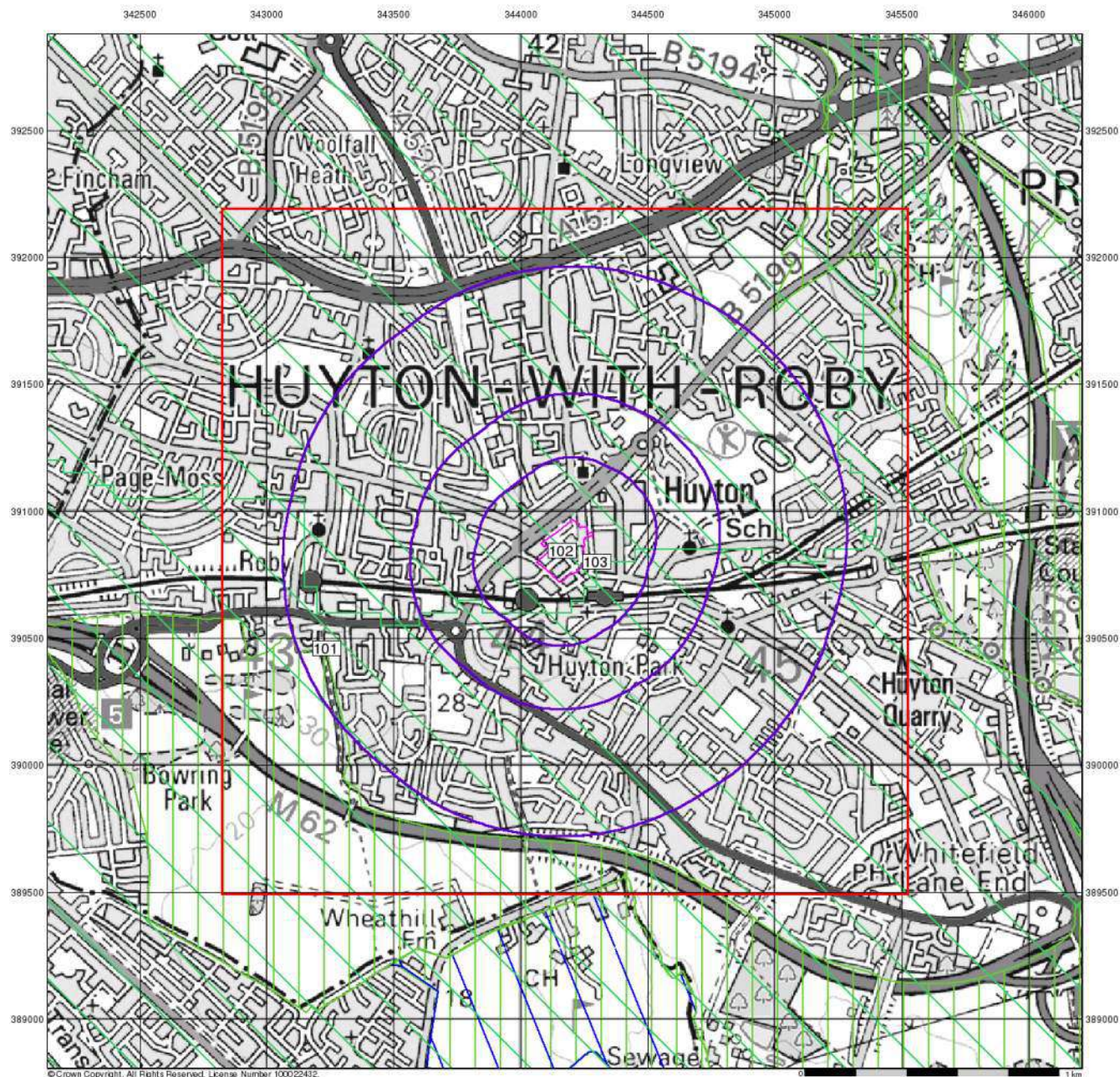
Order Number: 313640178_1_1
 Customer Ref: 0051610
 National Grid Reference: 344180, 390840
 Slice: A
 Site Area (Ha): 2.95
 Search Buffer (m): 1000

Site Details

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Sensitive Land Uses

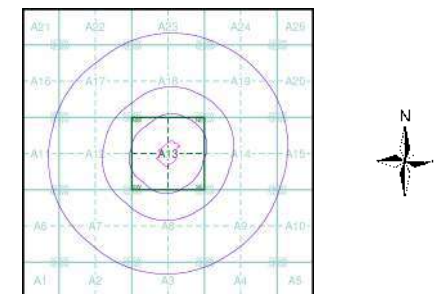
General

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

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A

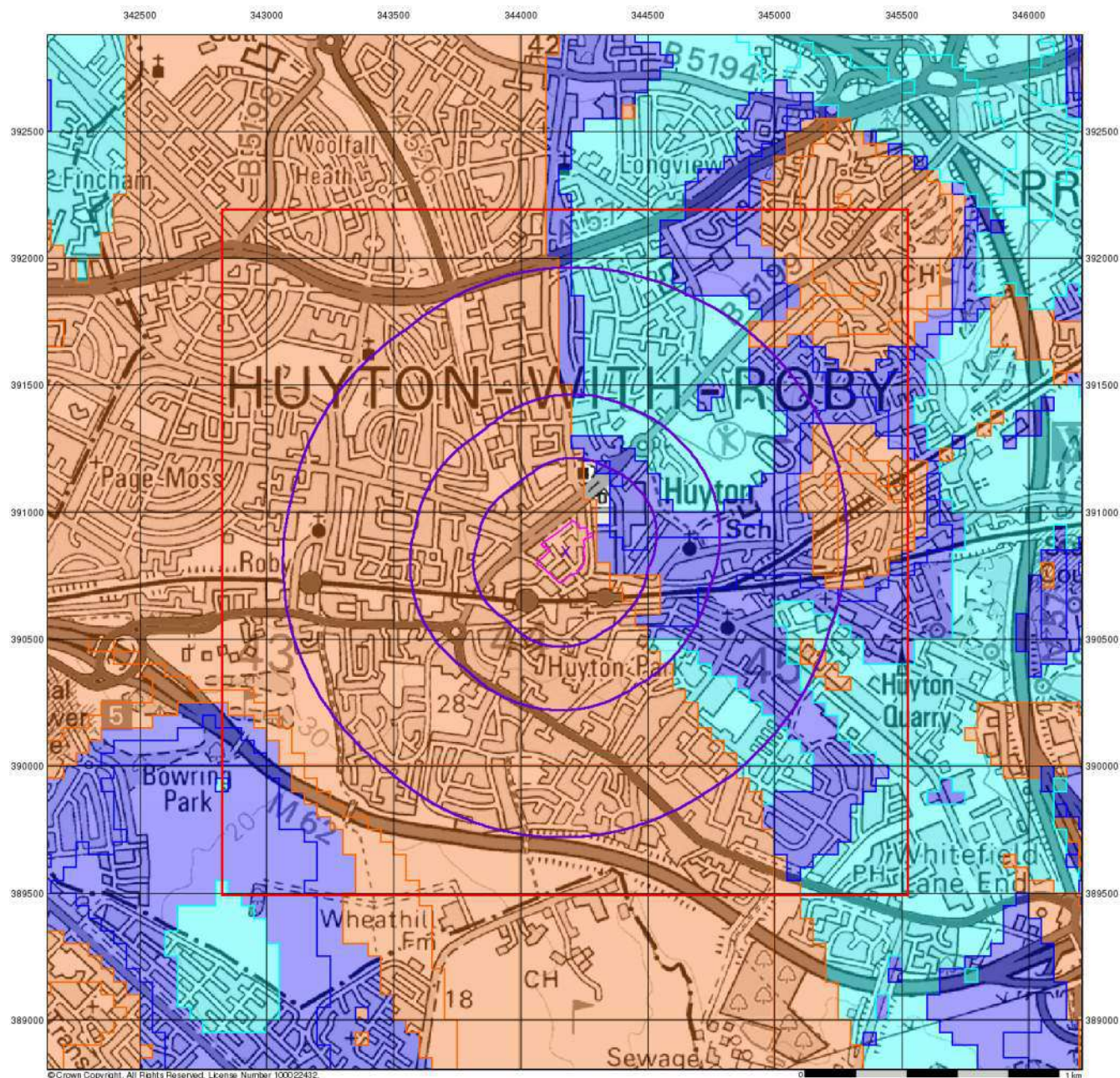


Order Details

Order Number: 313640178_1_1
 Customer Ref: 0051610
 National Grid Reference: 344180, 390840
 Slice: A
 Site Area (Ha): 2.95
 Search Buffer (m): 1000

Site Details

Site at, Civic Way, Huyton, L36 9GD



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BGS Flood GFS Data

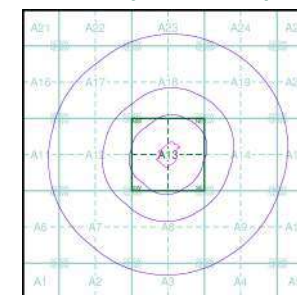
General

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

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 1000

Site Details

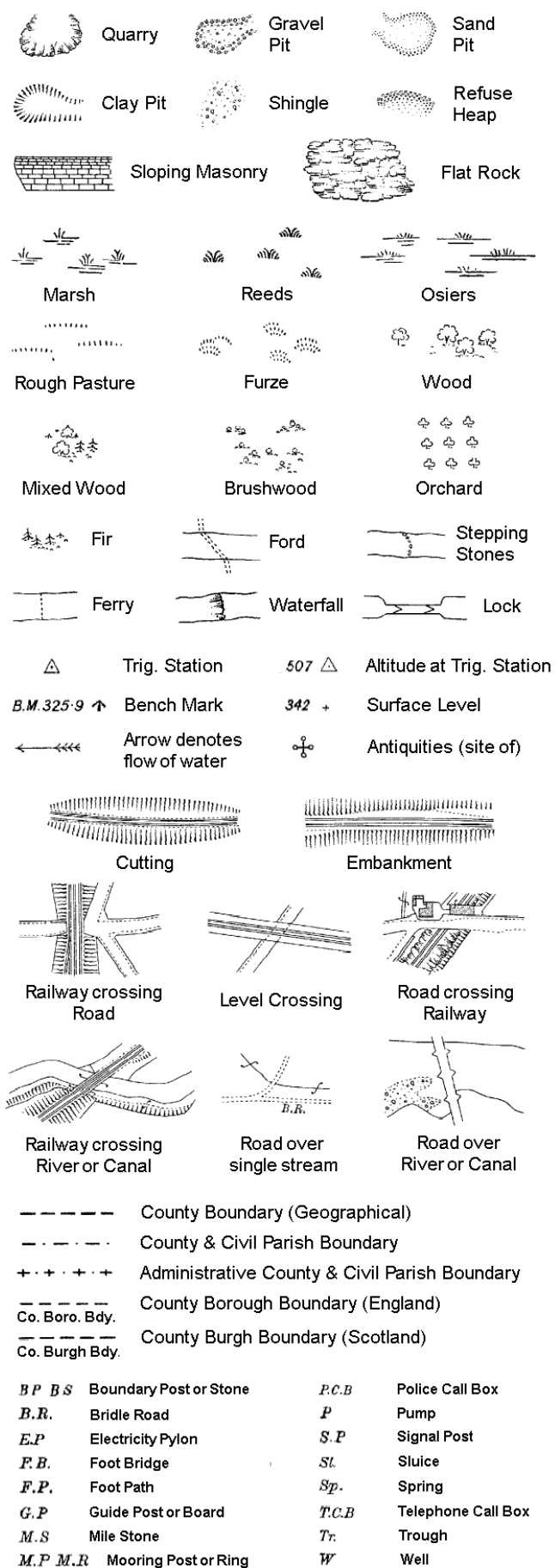
Site at, Civic Way, Huyton, L36 9GD

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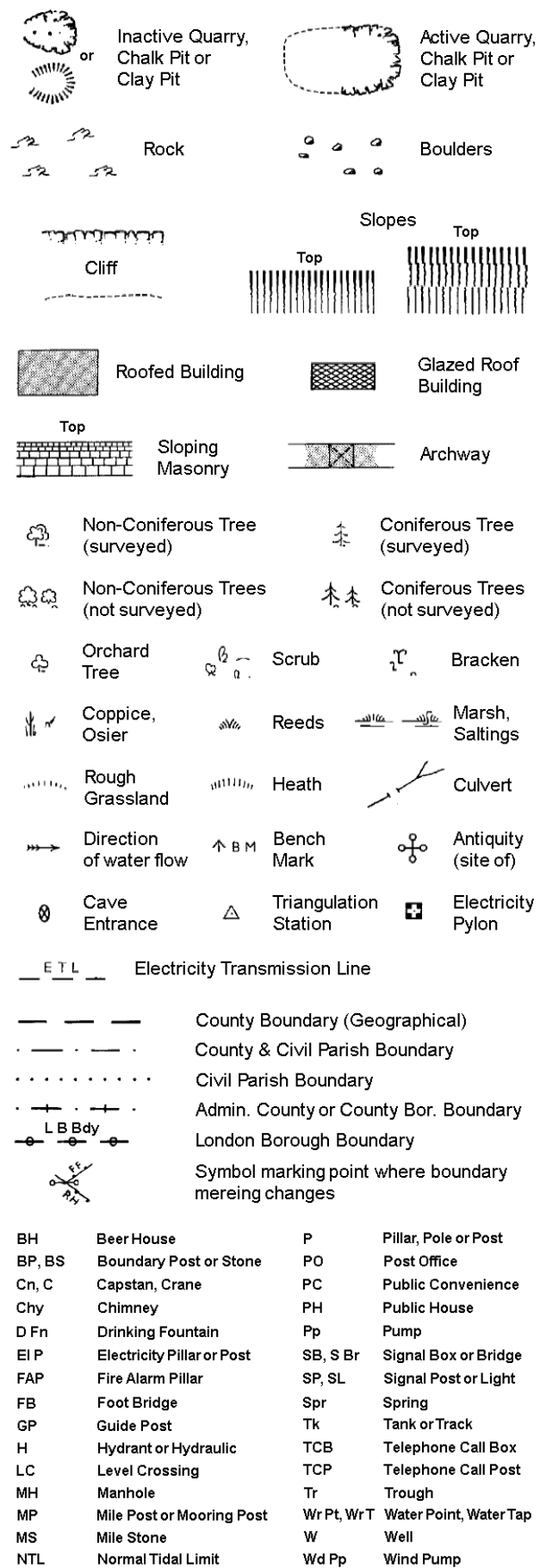
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Historical Mapping Legends

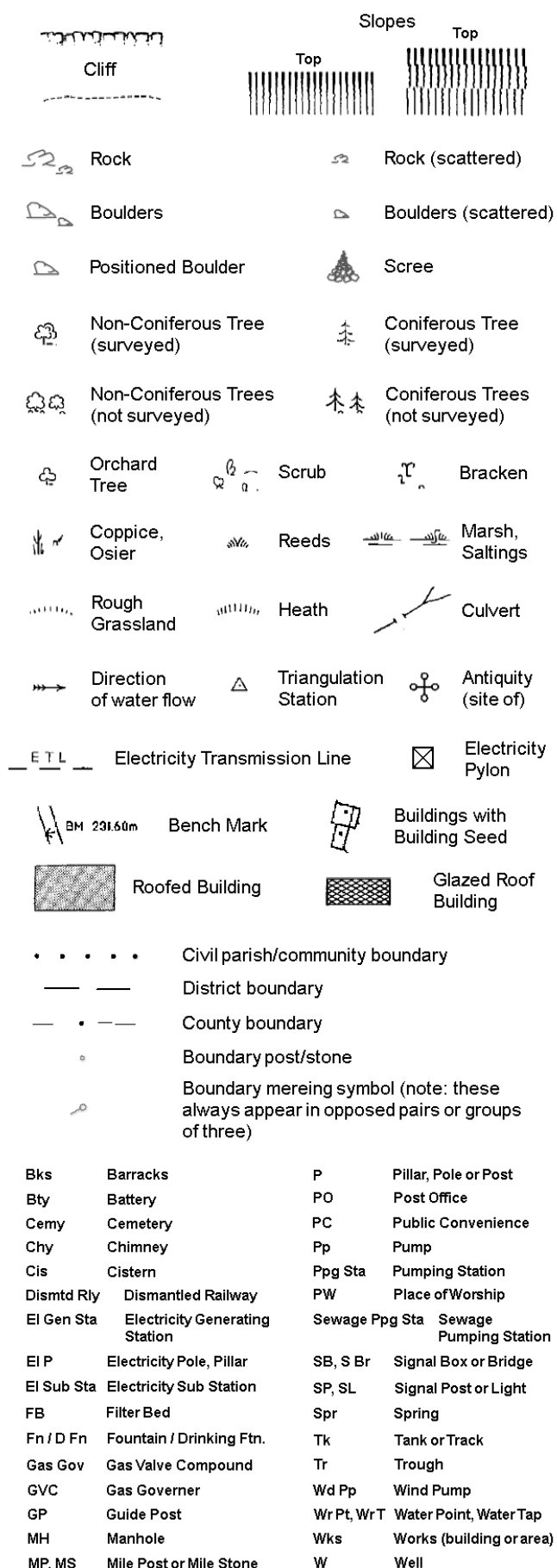
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



Ordinance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



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



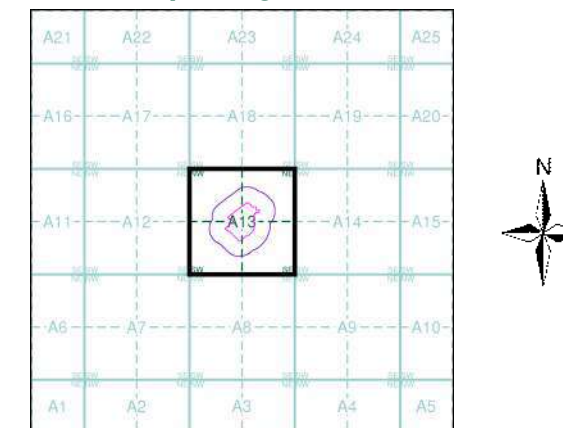
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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1892	2
Lancashire And Furness	1:2,500	1907	3
Lancashire And Furness	1:2,500	1927	4
Ordnance Survey Plan	1:1,250	1951 - 1952	5
Ordnance Survey Plan	1:2,500	1952 - 1953	6
Ordnance Survey Plan	1:1,250	1959 - 1967	7
Ordnance Survey Plan	1:2,500	1960 - 1967	8
Ordnance Survey Plan	1:1,250	1964 - 1976	9
Ordnance Survey Plan	1:2,500	1970	10
Ordnance Survey Plan	1:1,250	1972 - 1975	11
Additional SIMs	1:1,250	1984 - 1989	12
Large-Scale National Grid Data	1:1,250	1993	13
Large-Scale National Grid Data	1:1,250	1993	14
Large-Scale National Grid Data	1:1,250	1995	15
Large-Scale National Grid Data	1:1,250	1996	16

Historical Map - Segment A13



Order Details

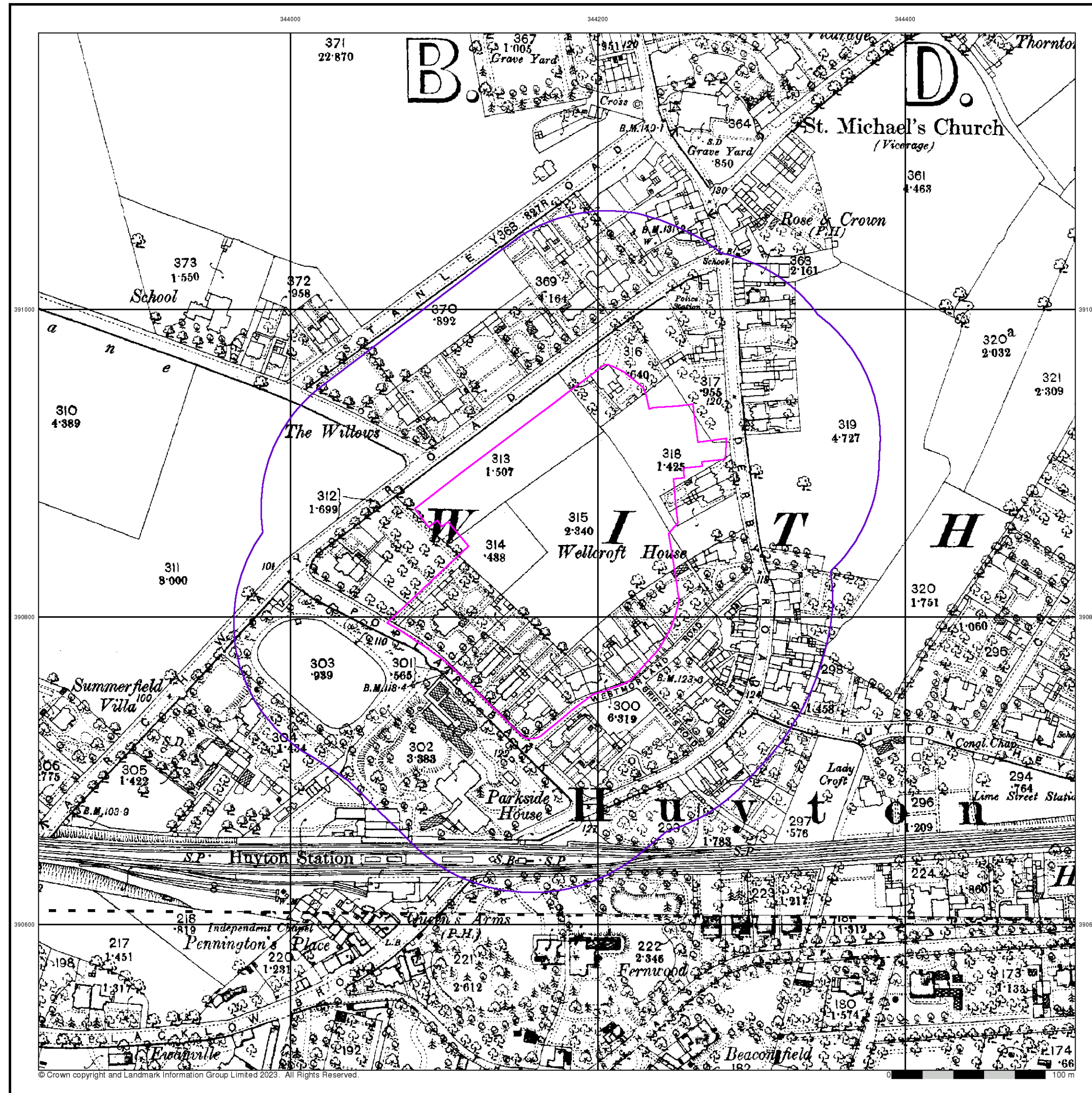
Order Number:	313640178_1_1
Customer Ref:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	100

Site Details

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344000 344200 344400

371 22·870

373 1·550

372 1·958

369 1·164

368 1·892

367 1·005

364 1·850

361 1·463

320^a 2·032

321 2·309

319 4·727

318 1·425

315 2·340

314 1·488

313 1·507

312 1·699

311 8·000

303 1·939

301 1·565

302 3·383

300 6·319

299 1·783

298 1·458

297 1·578

296 1·209

294 1·764

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3 1·209

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0 100 m

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Lancashire And Furness

Published 1892

Source map scale - 1:2,500

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Map Name(s) and Date(s)

107_10
1892
1:2,500

107_14
1892
1:2,500

Historical Map - Segment A13

A21 A22 A23 A24 A25

A16 A17 A18 A19 A20

A11 A12 A13 A14 A15

A6 A7 A8 A9 A10

A1 A2 A3 A4 A5

N

Order Details

Order Number:	313640178_1_1
Customer Ref:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	100

Site Details

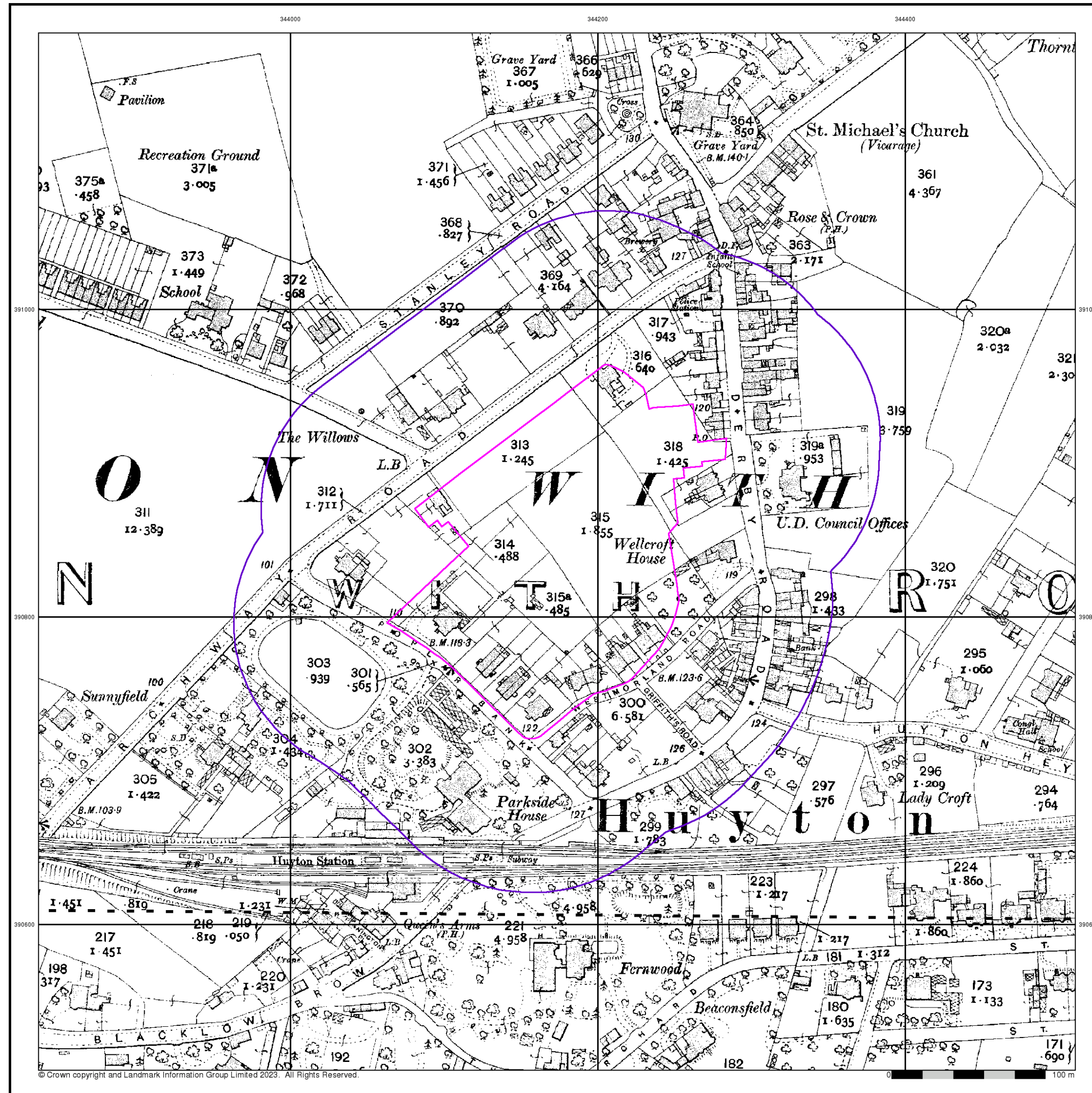
Site at, Civic Way, Huyton, L36 9GD

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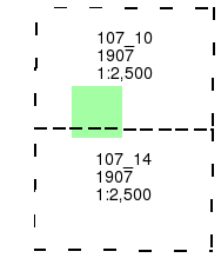
Lancashire And Furness

Published 1907

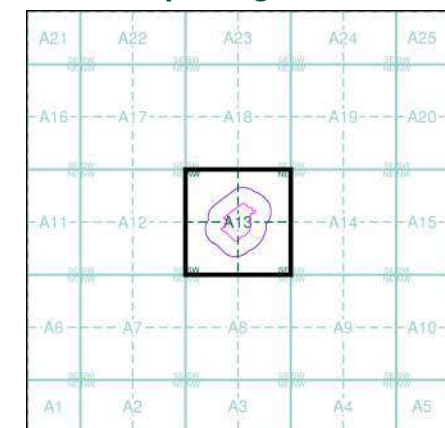
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



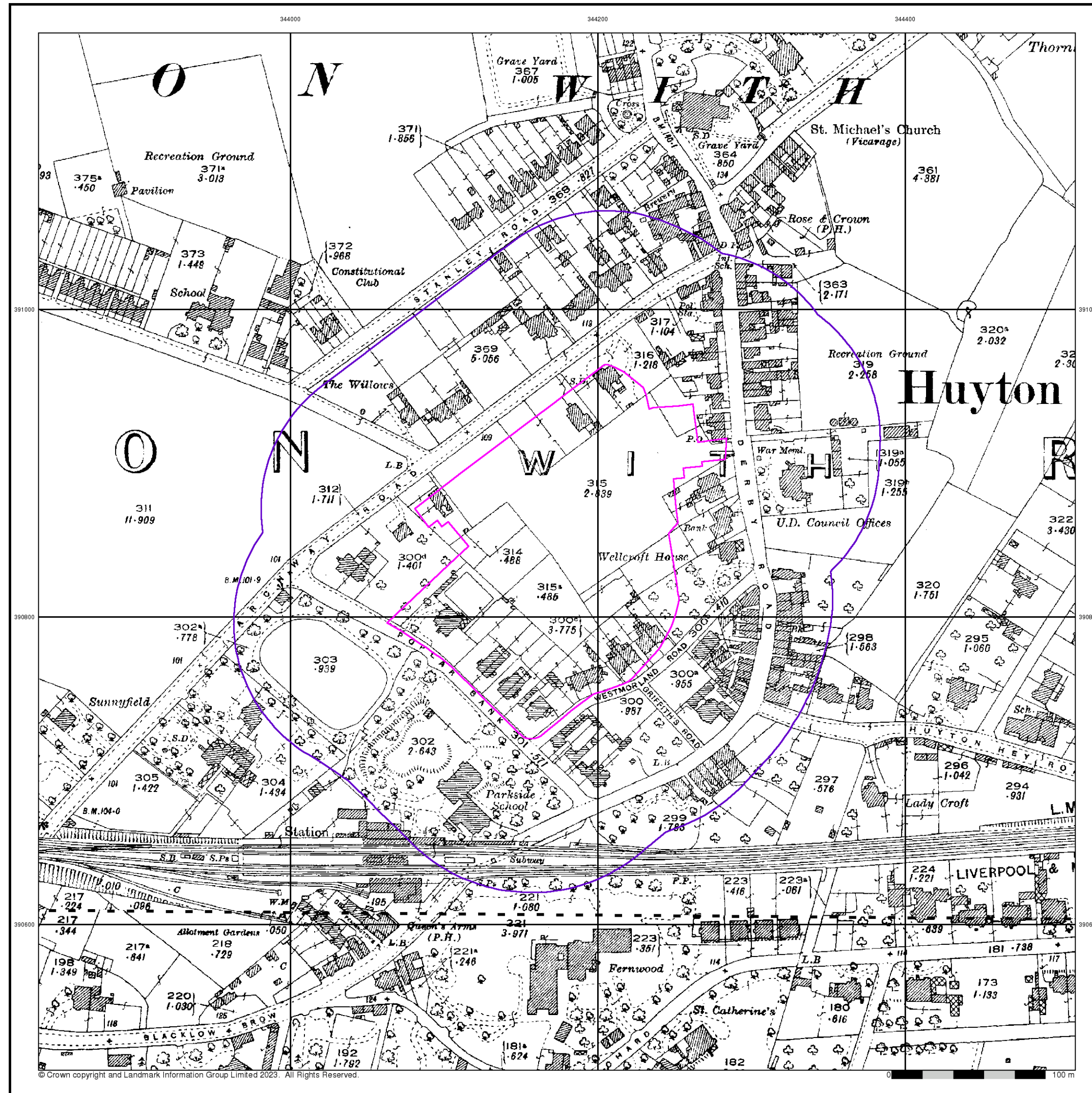
Historical Map - Segment A13



Order Details	
Order Number:	313640178_1_1
Customer Ref:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	100

Site Details

Site at, Civic Way, Huyton, L36 9GD



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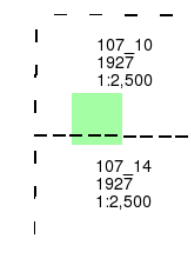
Lancashire And Furness

Published 1927

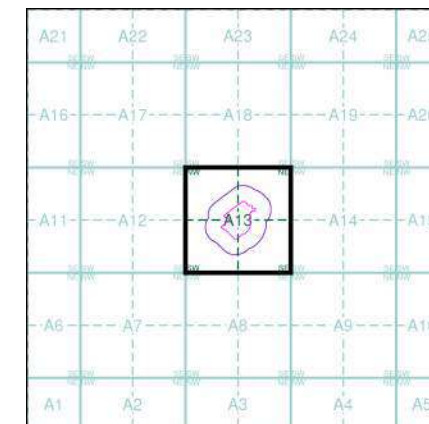
Source map scale - 1:2,500

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13

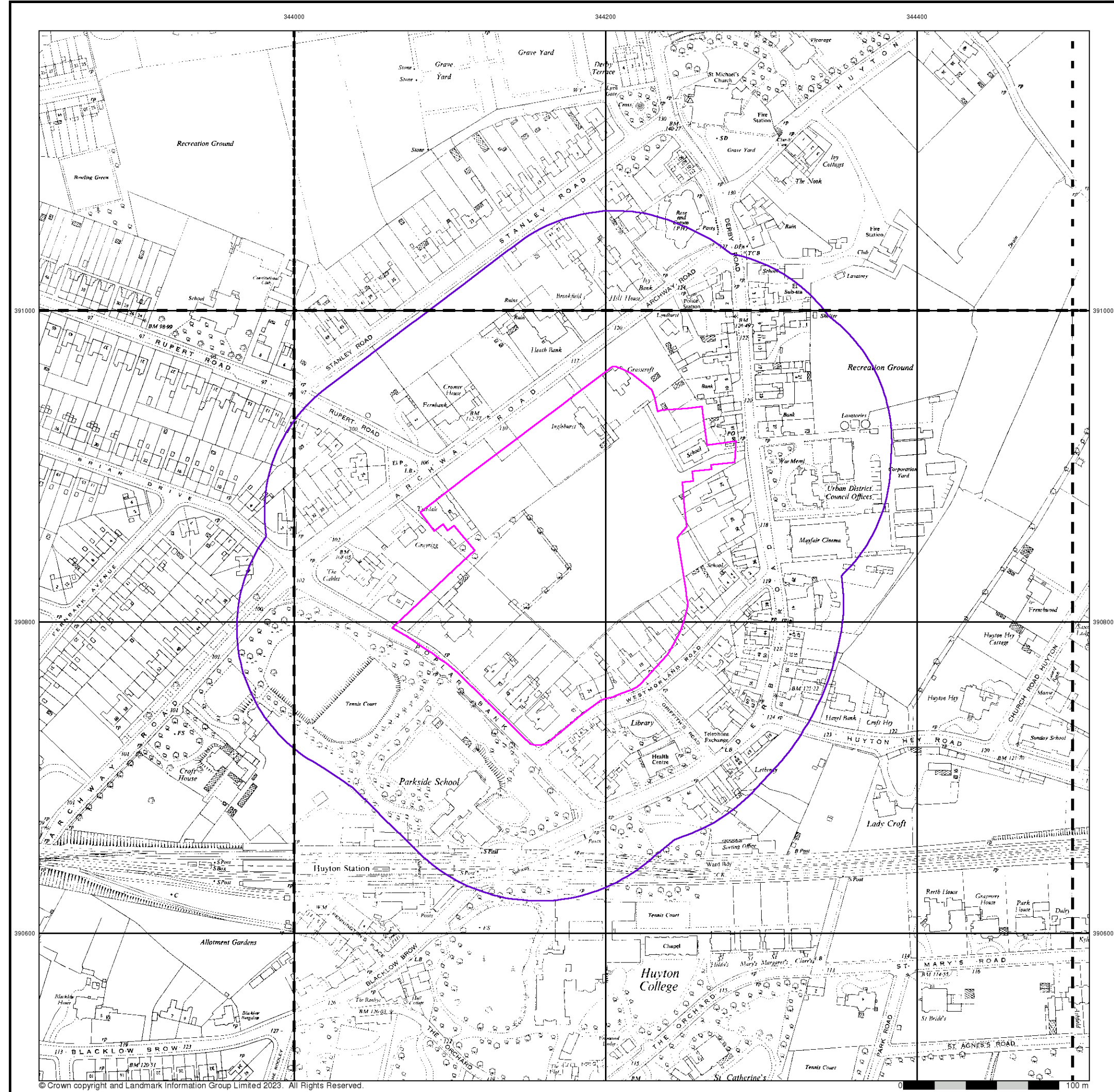


Order Details

Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 100

Site Details

Site at, Civic Way, Huyton, L36 9GD



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Ordnance Survey Plan

Published 1951 - 1952

Source map scale - 1:1,250

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ4391SE 1952 1:1,250	SJ4491SW 1952 1:1,250	SJ4491SE 1952 1:1,250
SJ4390NE 1951 1:1,250	SJ4490NW 1951 1:1,250	SJ4490NE 1951 1:1,250

Historical Map - Segment A13

Order Details

Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 100

Site Details

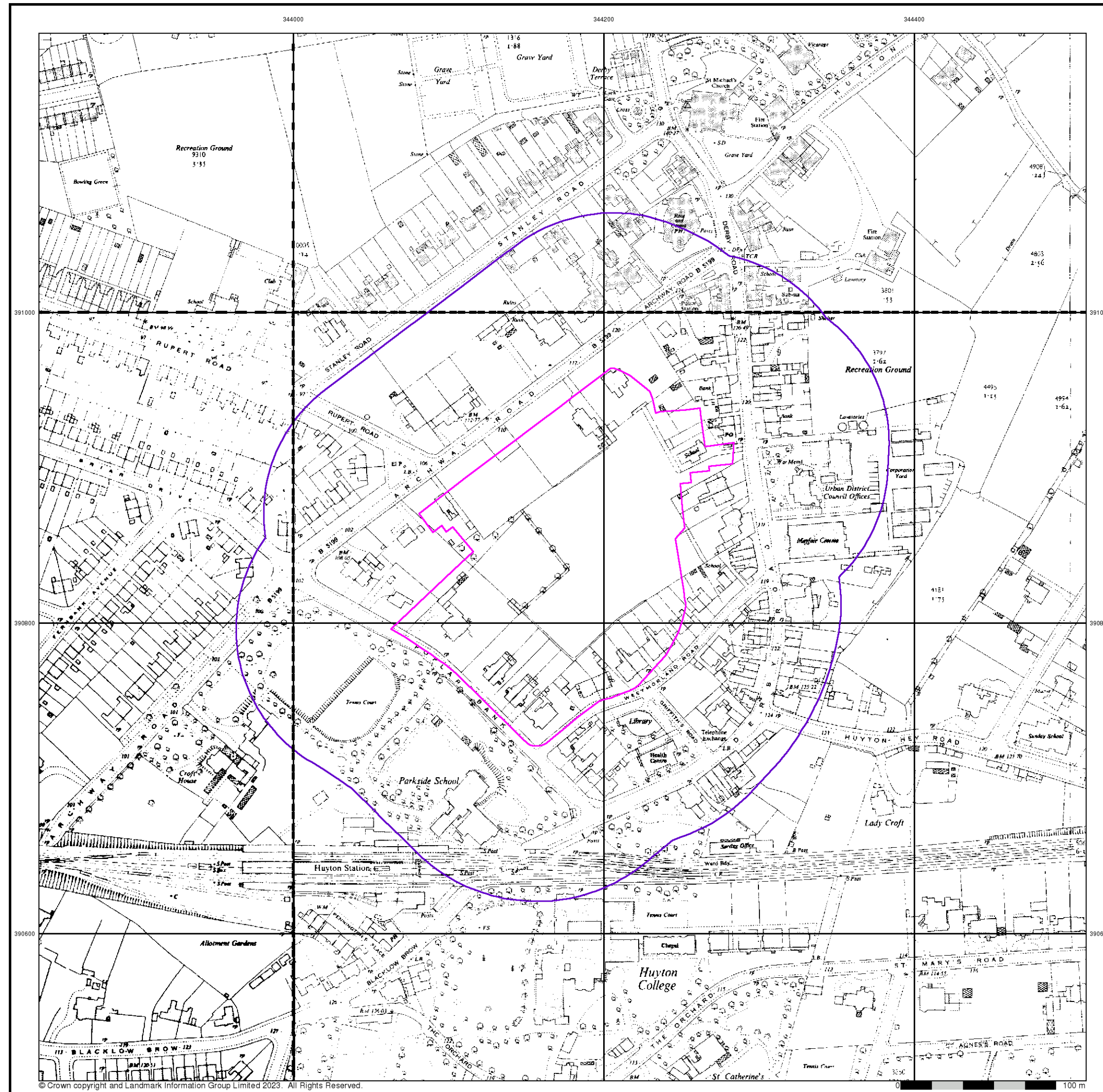
Site at, Civic Way, Huyton, L36 9GD

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Ordnance Survey Plan

Published 1952 - 1953

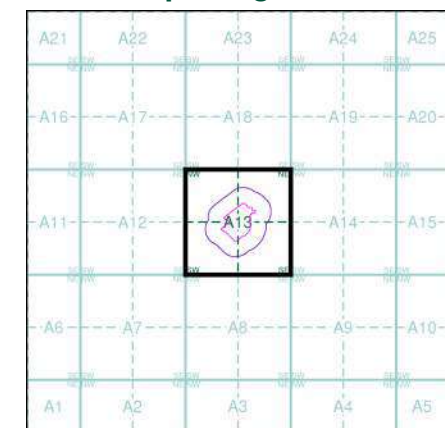
Source map scale - 1:2,500

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ4391	SJ4491
1952	1953
12,500	12,500
SJ4390	SJ4490
1952	1952
12,500	12,500

Historical Map - Segment A13

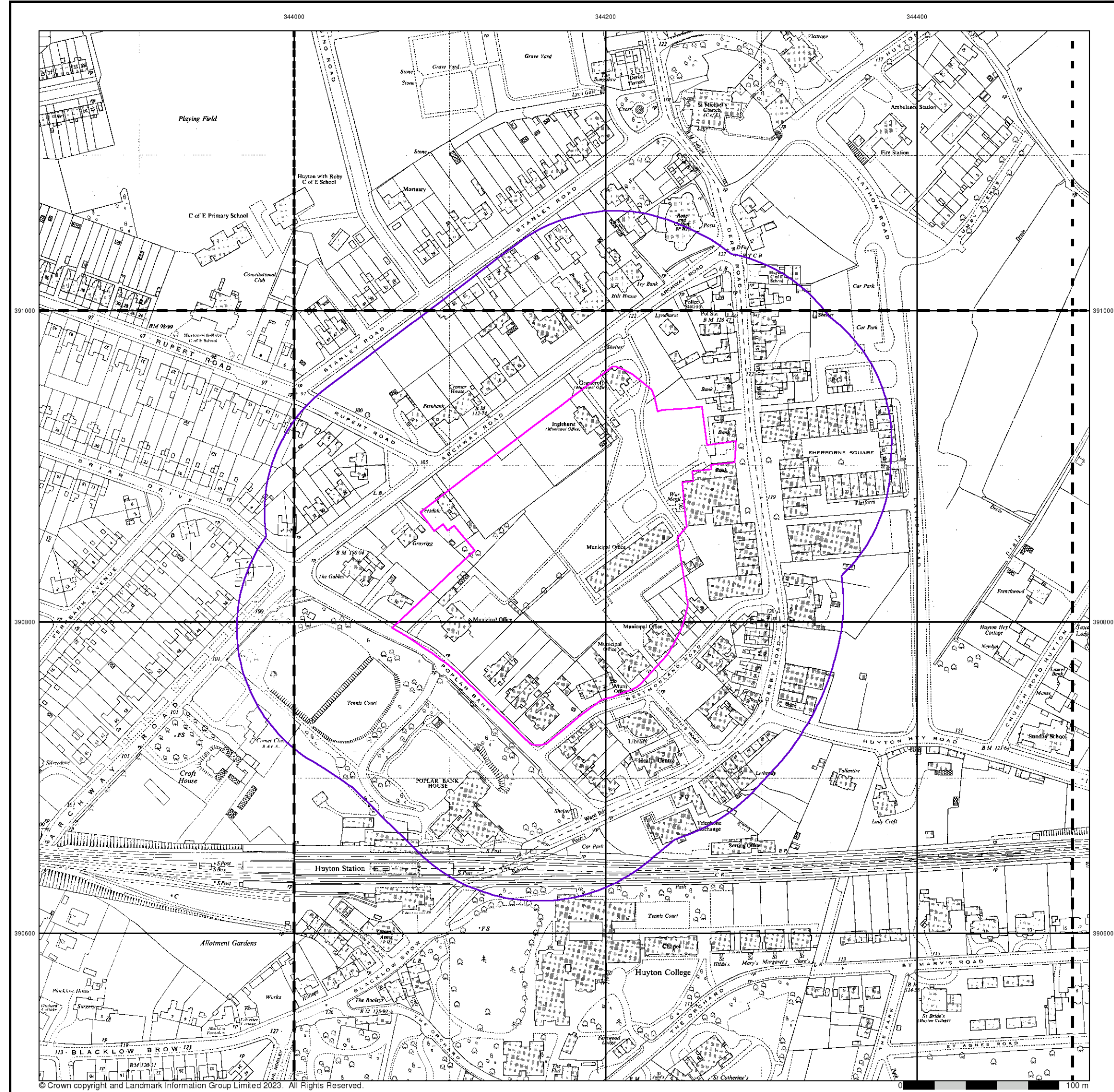


Order Details

Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 100

Site Details

Site at, Civic Way, Huyton, L36 9GD



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Ordnance Survey Plan

Published 1959 - 1967

Source map scale - 1:1,250

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Map Name(s) and Date(s)

SJ4391SE 1966 1:1,250	SJ4491SW 1966 1:1,250	SJ4491SE 1966 1:1,250
SJ4390NE 1959 1:1,250	SJ4490NW 1967 1:1,250	SJ4490NE 1959 1:1,250

Historical Map - Segment A13

Order Details

Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 100

Site Details

Site at, Civic Way, Huyton, L36 9GD

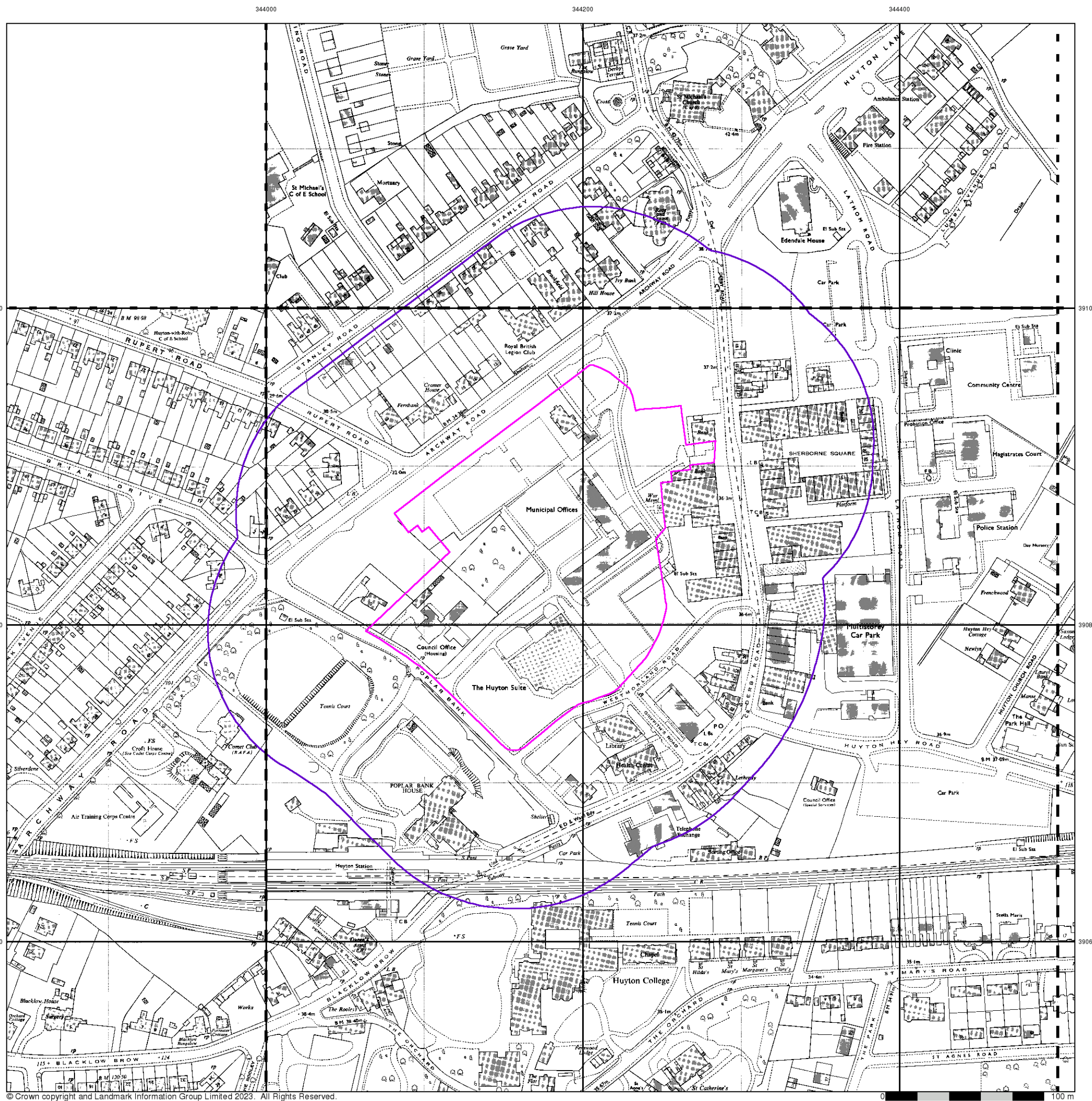
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Ordnance Survey Plan

Published 1964 - 1976

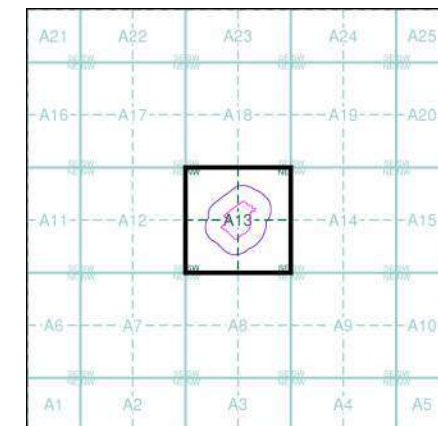
Source map scale - 1:1,250

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

	SJ4491SW	
	1976	
	1:1,250	
SJ4390NE	SJ4490NW	SJ4490NE
1964	1976	1968
1:1,250	1:1,250	1:1,250

Historical Map - Segment A13



Order Details

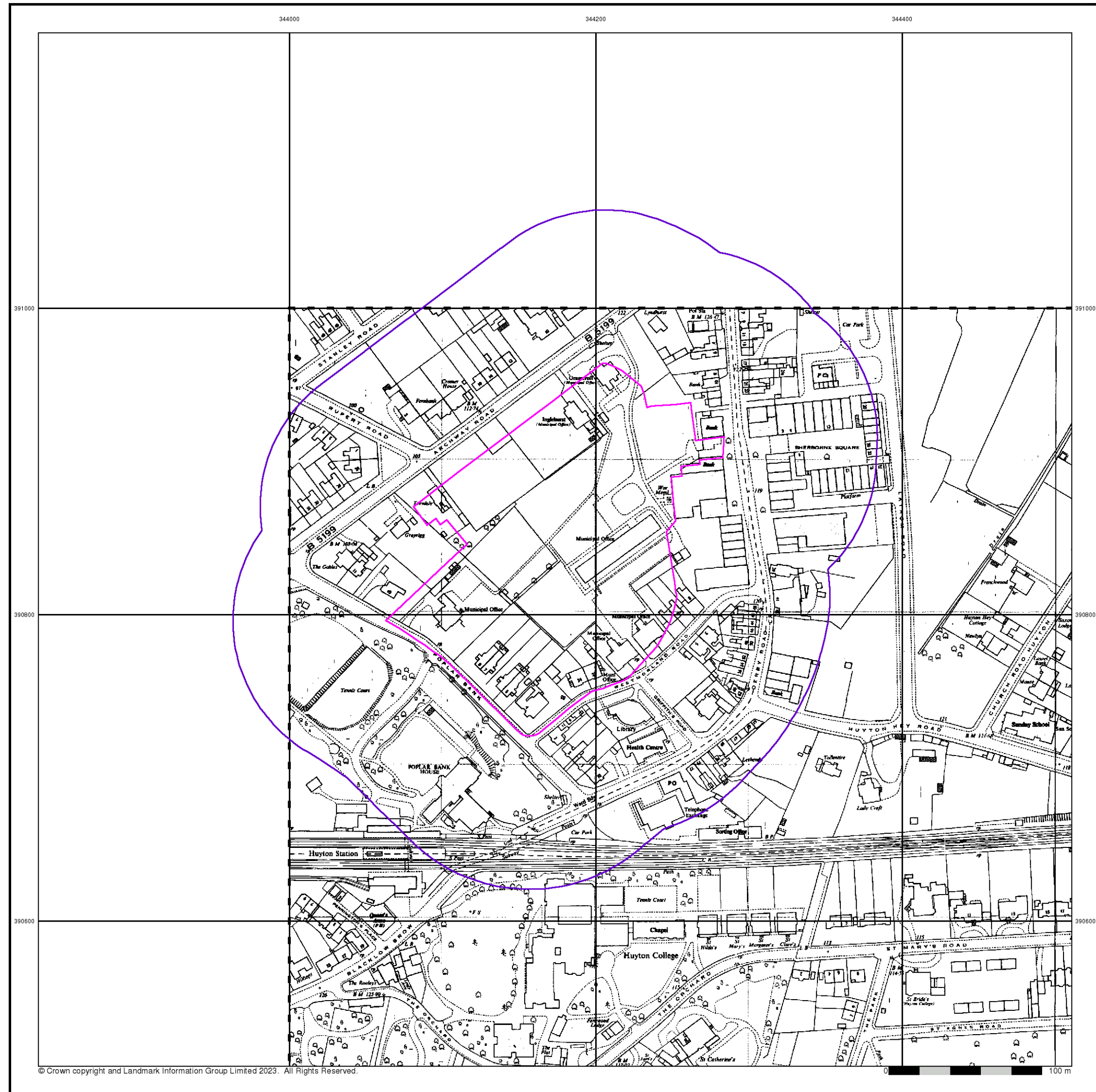
Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 100

Site Details

Site at, Civic Way, Huyton, L36 9GD

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Ordnance Survey Plan

Published 1970

Source map scale - 1:2,500

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ4490
1970
1:2,500

Historical Map - Segment A13

Order Details

Order Number:	313640178_1_1
Customer Ref:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	100

Site Details

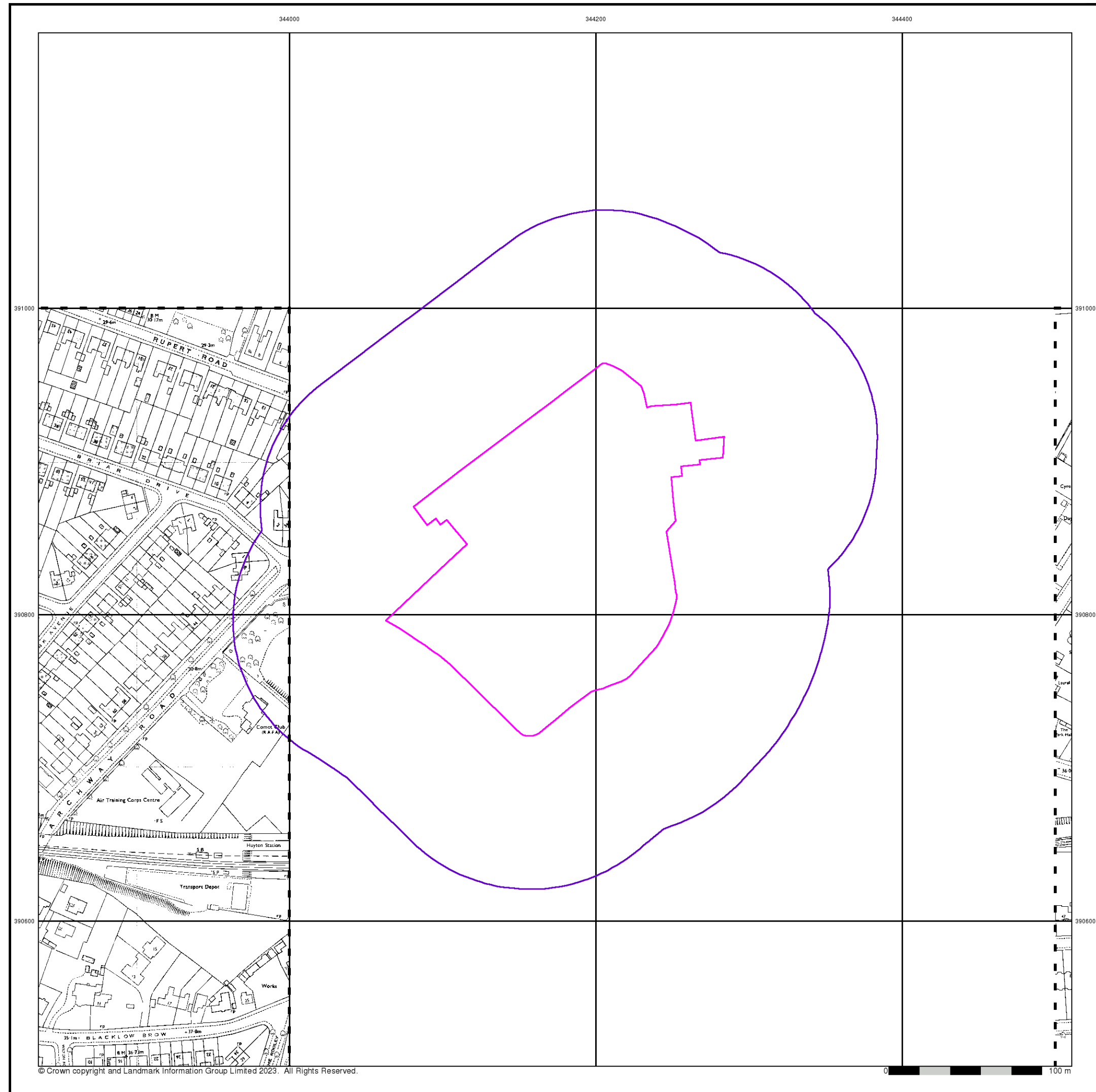
Site at, Civic Way, Huyton, L36 9GD

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Ordnance Survey Plan

Published 1972 - 1975

Source map scale - 1:1,250

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ4390NE
1972
1:1,250

SJ4490NE
1975
1:1,250

Historical Map - Segment A13

Order Details

Order Number:	313640178_1_1
Customer Ref:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	100

Site Details

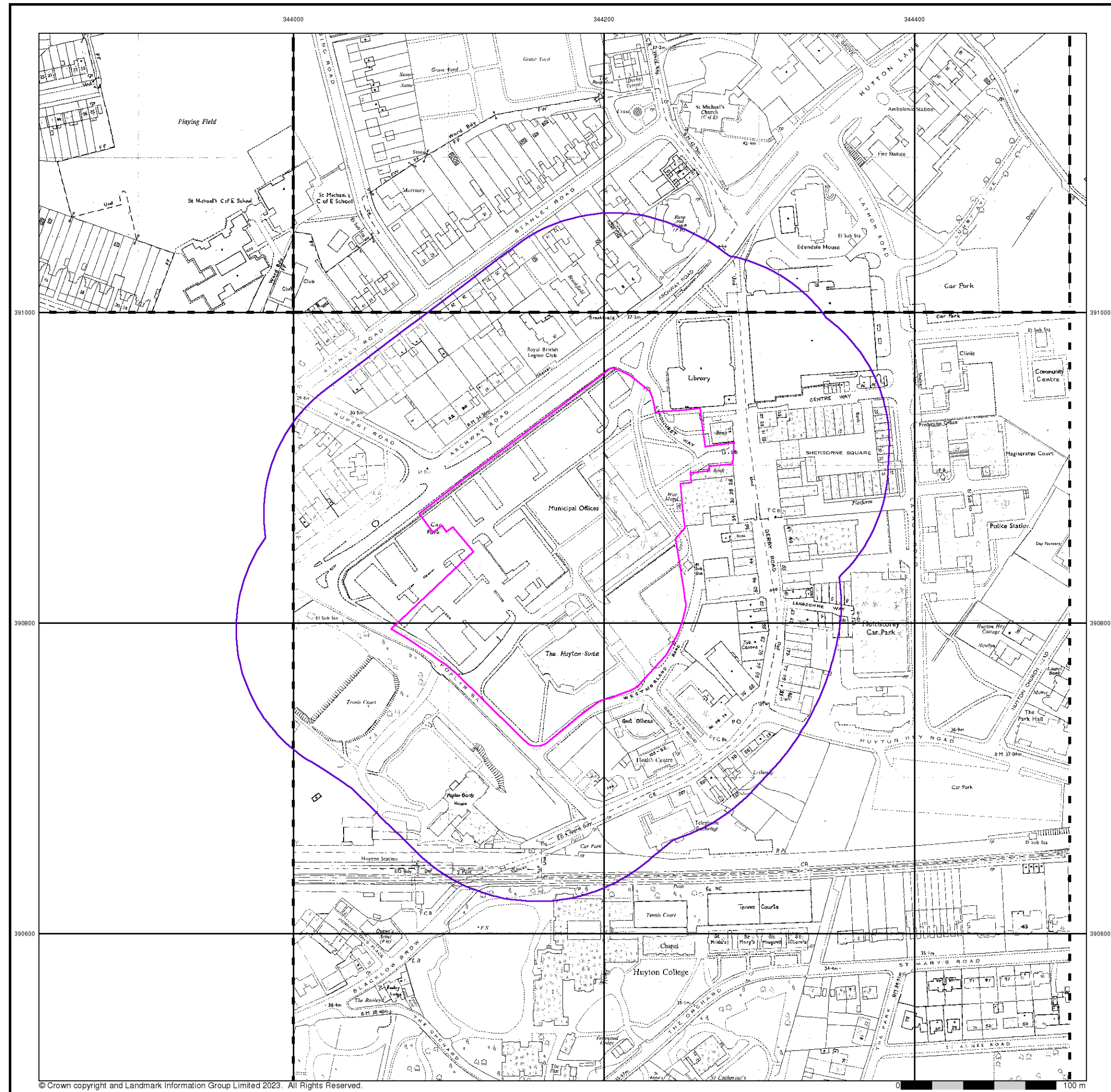
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Additional SIMs

Published 1984 - 1989

Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ4391SE 1984 1:1,250	SJ4491SW 1989 1:1,250	SJ4491SE 1987 1:1,250
SJ4490NW 1984 1:1,250		

Historical Map - Segment A13

Order Details

Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 100

Site Details

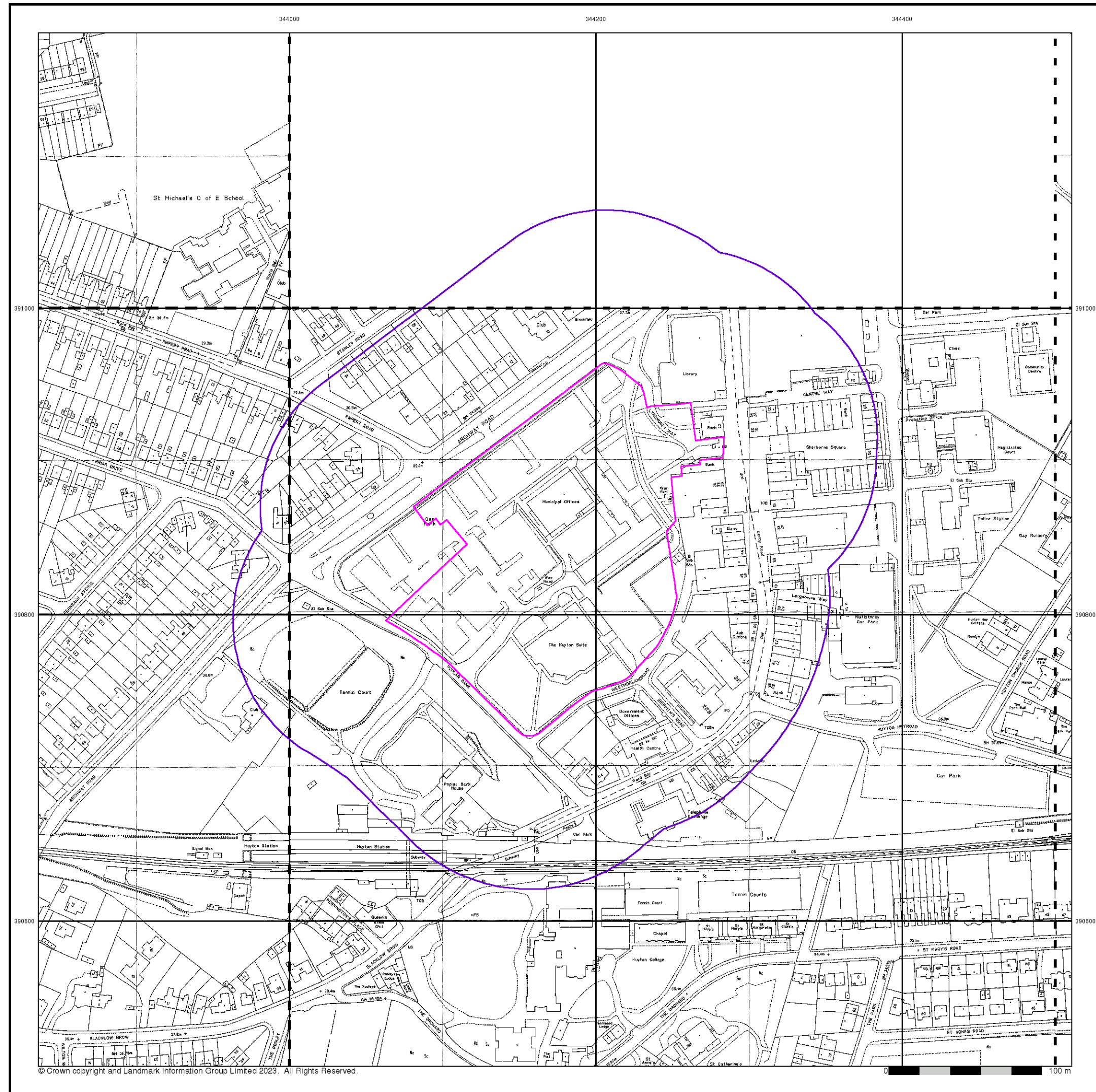
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Large-Scale National Grid Data

Published 1993

Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ4391SE	1993	1:1,250	SJ4491SE	1993	1:1,250
SJ4390NE	1993	1:1,250	SJ4490NW	1993	1:1,250
			SJ4490NE	1993	1:1,250

Historical Map - Segment A13

Order Details

Order Number:	313640178_1_1
Customer Ref:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	100

Site Details

Site at, Civic Way, Huyton, L36 9GD

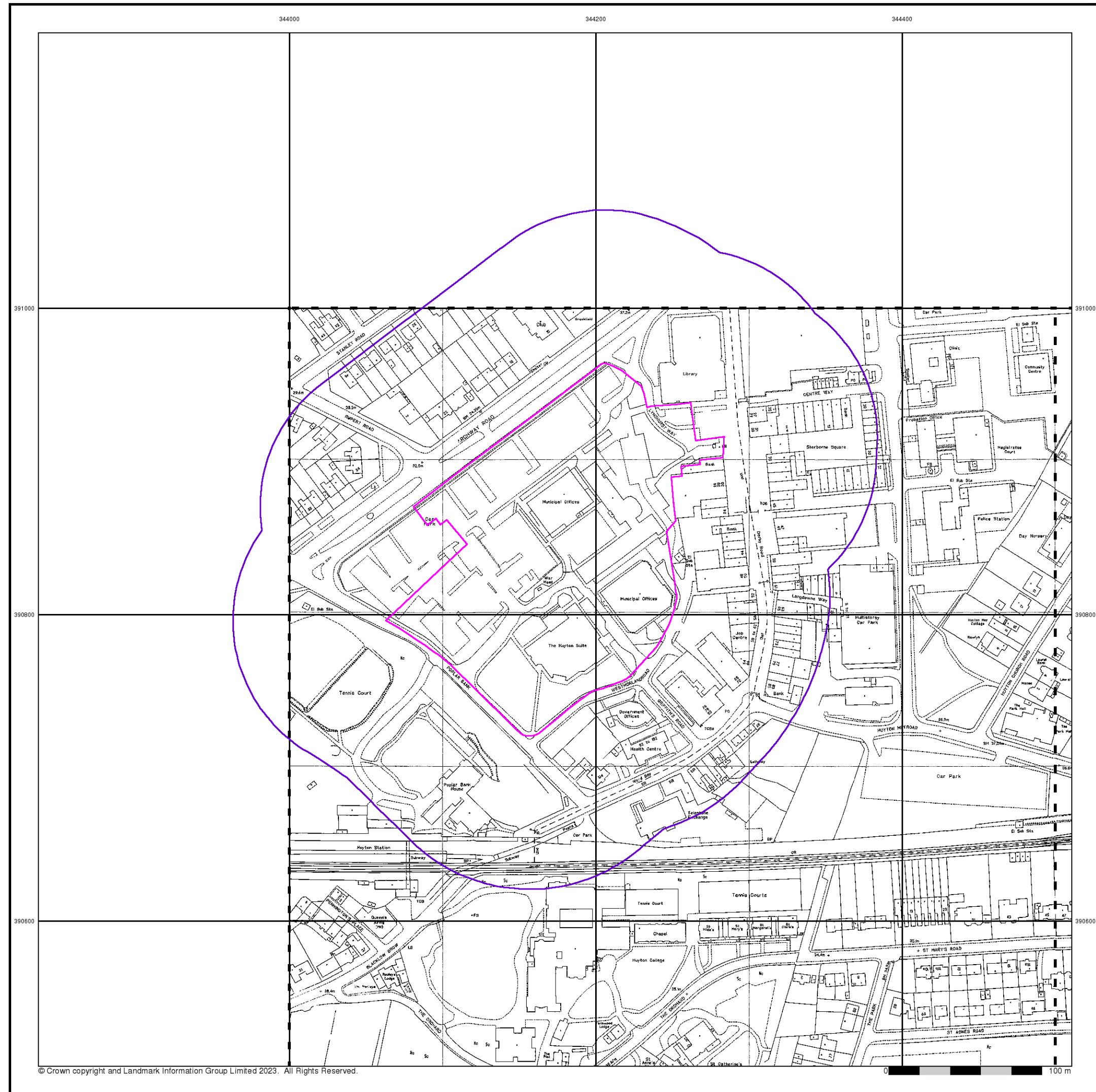
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Large-Scale National Grid Data

Published 1993

Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ4490NW 1993 1:1,250	SJ4490NE 1993 1:1,250
-----------------------------	-----------------------------

Historical Map - Segment A13

Order Details

Order Number:	313640178_1_1
Customer Ref:	0051610
National Grid Reference:	344180, 390840
Slice:	A
Site Area (Ha):	2.95
Search Buffer (m):	100

Site Details

Site at, Civic Way, Huyton, L36 9GD

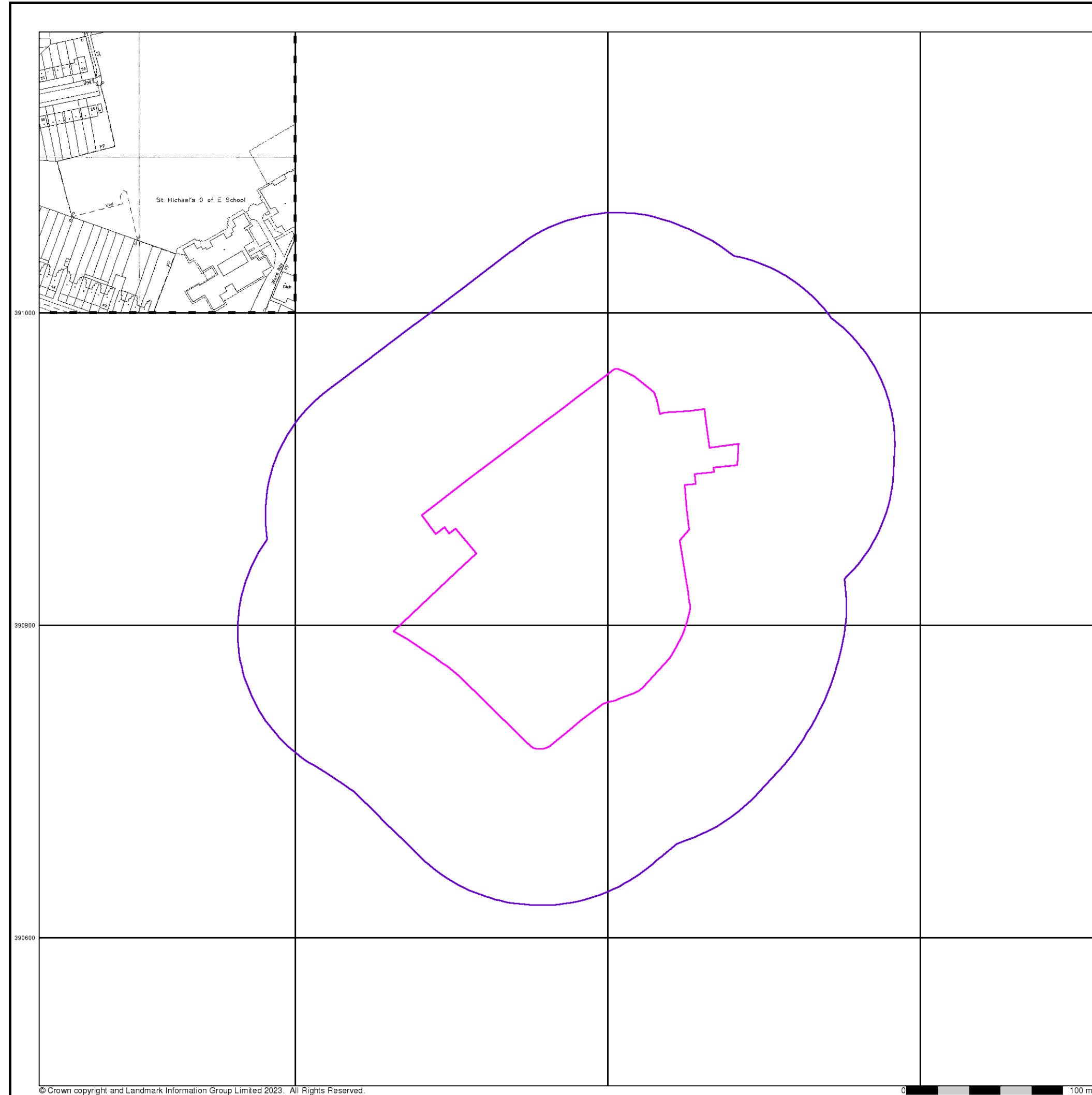
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0 100 m

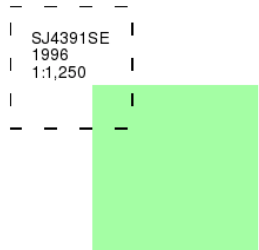
Large-Scale National Grid Data

Published 1996

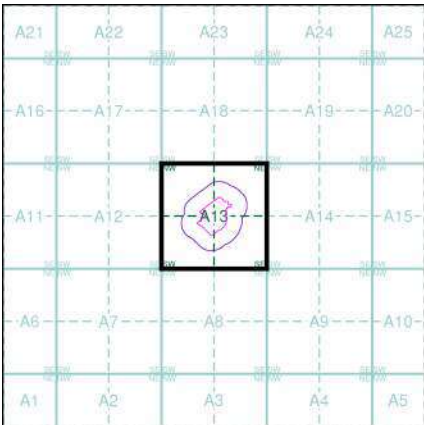
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'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 313640178_1_1
Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 100

Site Details

Site at, Civic Way, Huyton, L36 9GD

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

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

1:10,000 Raster Mapping

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

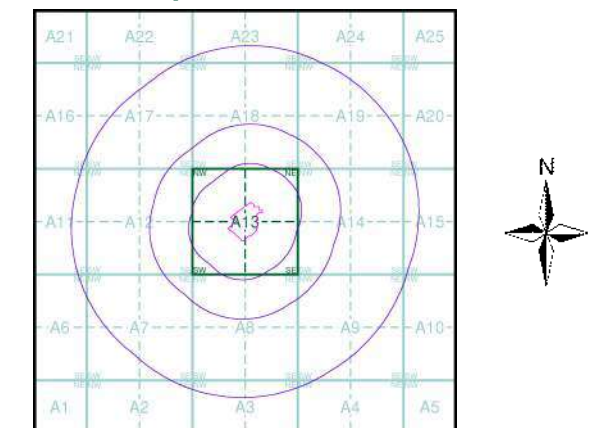
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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1850	2
Cheshire	1:10,560	1881	3
Lancashire And Furness	1:10,560	1894	4
Lancashire And Furness	1:10,560	1908	5
Lancashire And Furness	1:10,560	1928	6
Lancashire And Furness	1:10,560	1928	7
Lancashire And Furness	1:10,560	1938	8
Ordnance Survey Plan	1:10,000	1955 - 1956	9
Ordnance Survey Plan	1:10,000	1965 - 1967	10
Ordnance Survey Plan	1:10,000	1974 - 1978	11
Ordnance Survey Plan	1:10,000	1982	12
Ordnance Survey Plan	1:10,000	1990 - 1991	13
10K Raster Mapping	1:10,000	1999	14
Street View	Variable		15

Historical Map - Slice A



Order Details

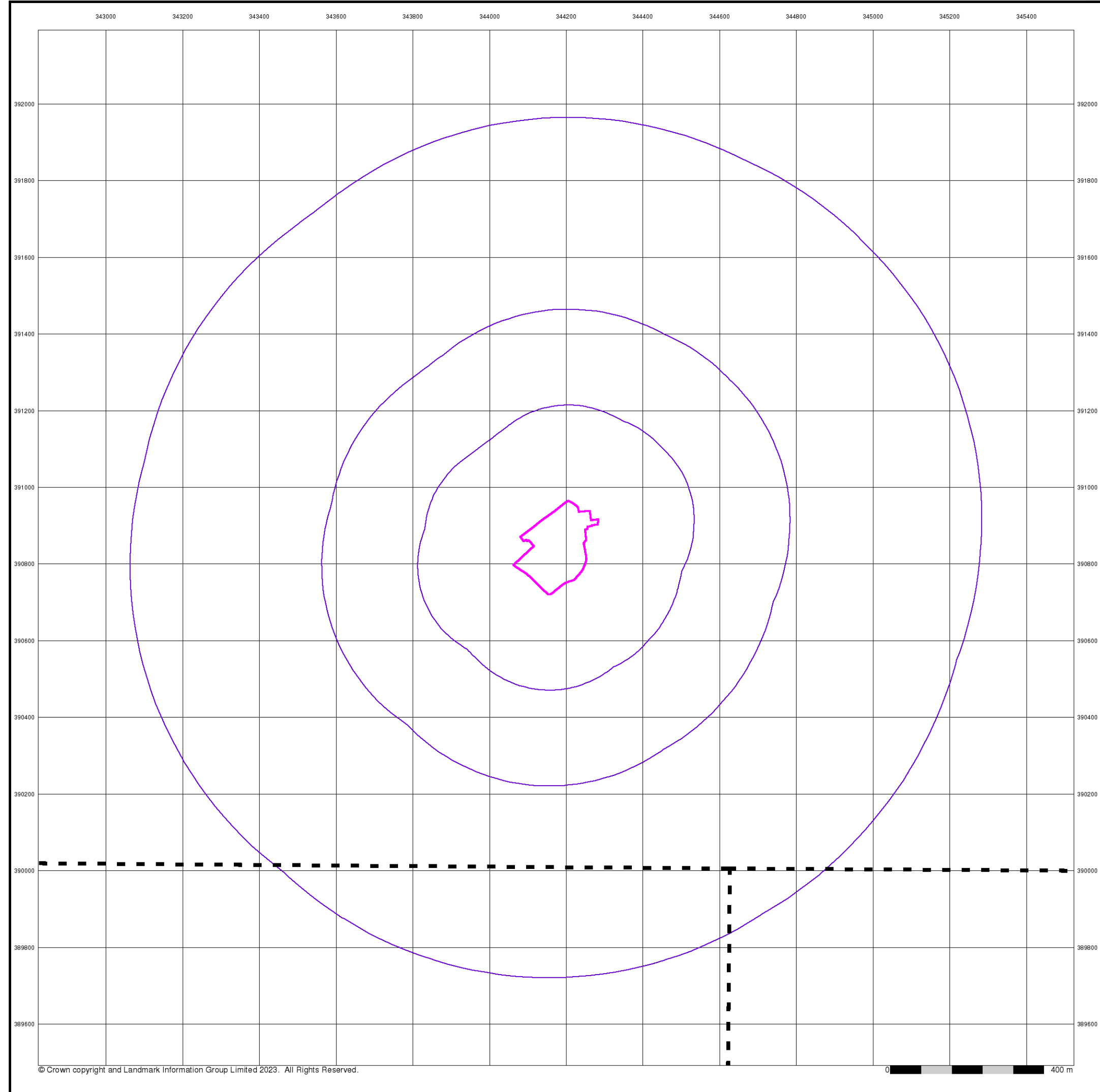
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Customer Ref: 0051610
National Grid Reference: 344180, 390840
Slice: A
Site Area (Ha): 2.95
Search Buffer (m): 1000

Site Details

Site at, Civic Way, Huyton, L36 9GD

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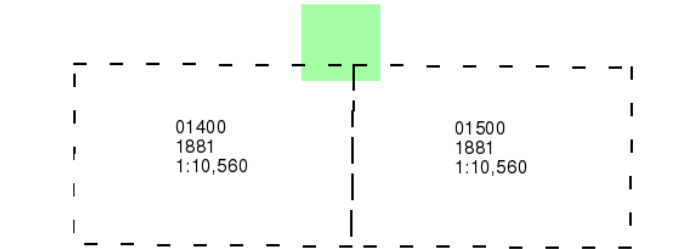
Cheshire

Published 1881

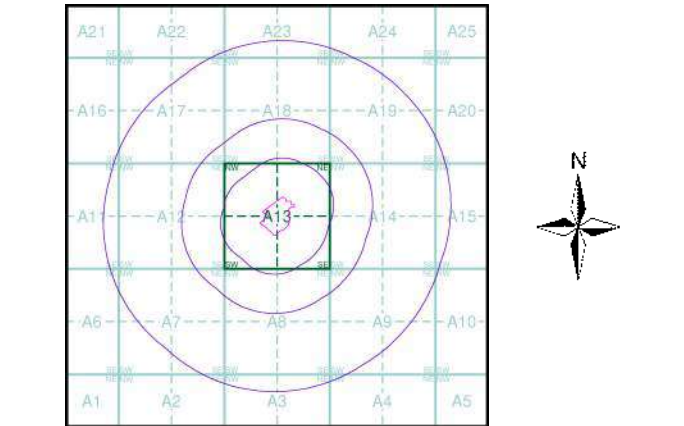
Source map scale - 1:10,560

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:313640178_1_1

Customer Ref:0051610

National Grid Reference:344180, 390840

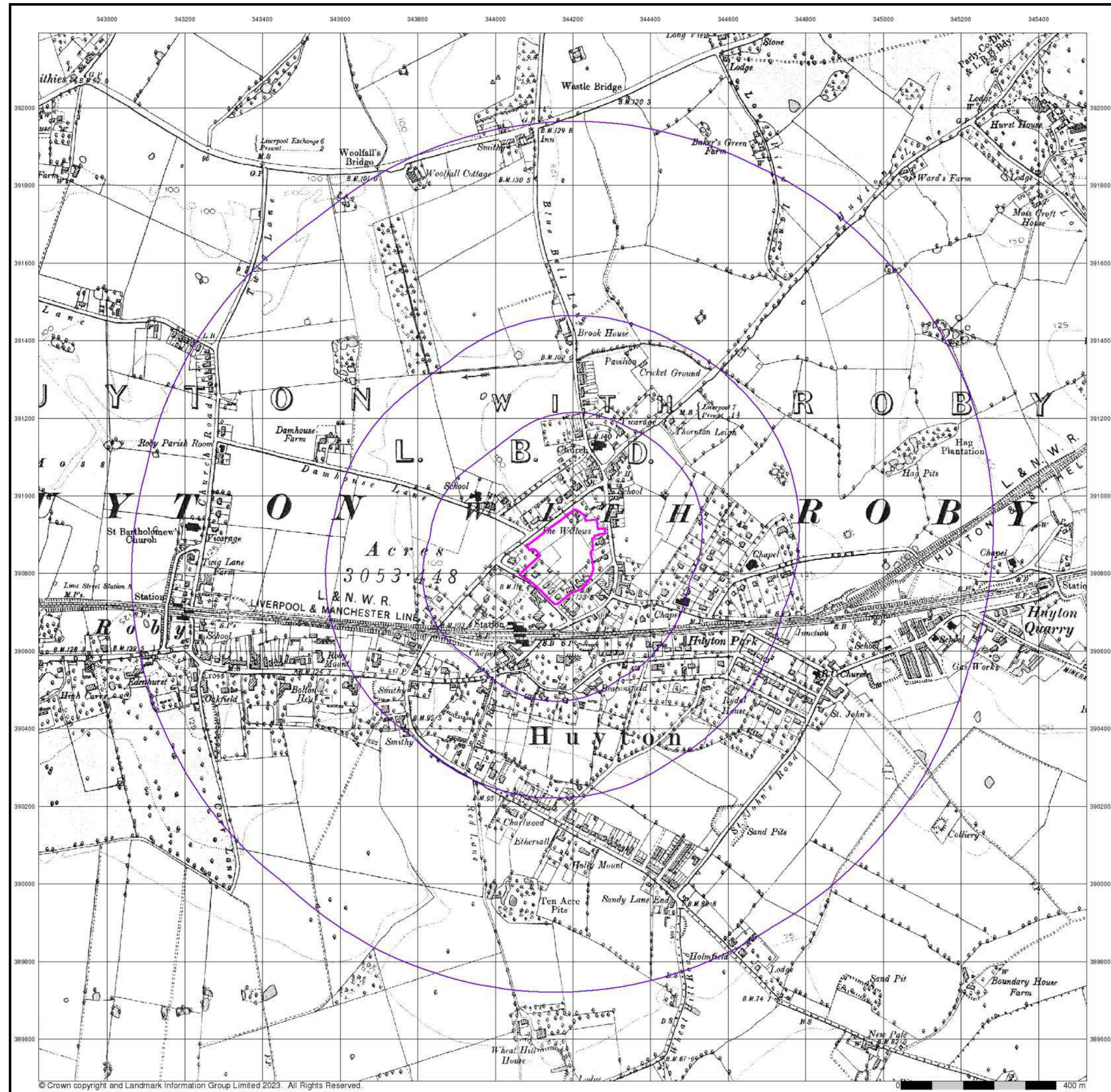
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Site Area (Ha):2.95

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Site Details

Site at, Civic Way, Huyton, L36 9GD



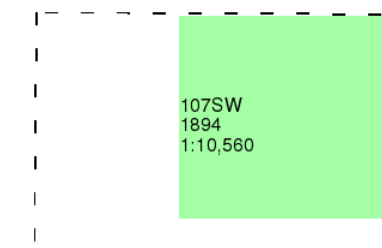
Lancashire And Furness

Published 1894

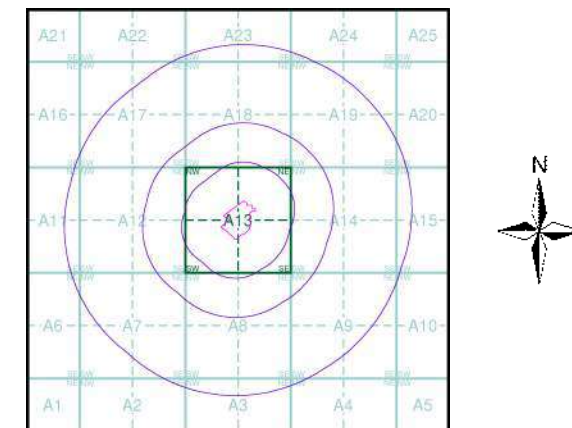
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 313640178_1_1
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