

Site Details:

470, MOSS LANE EAST,
MANCHESTER, M14 4PJ

Client Ref: P23-483-SA
Report Ref: GS-M6R-A9R-H3Q-S7H
Grid Ref: 384860, 395658

Map Name: National Grid

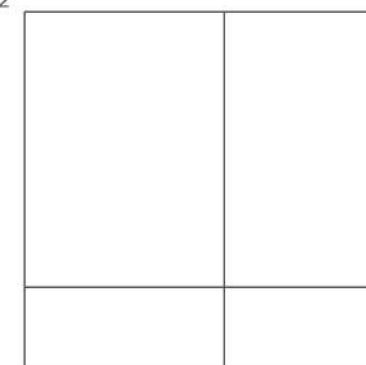
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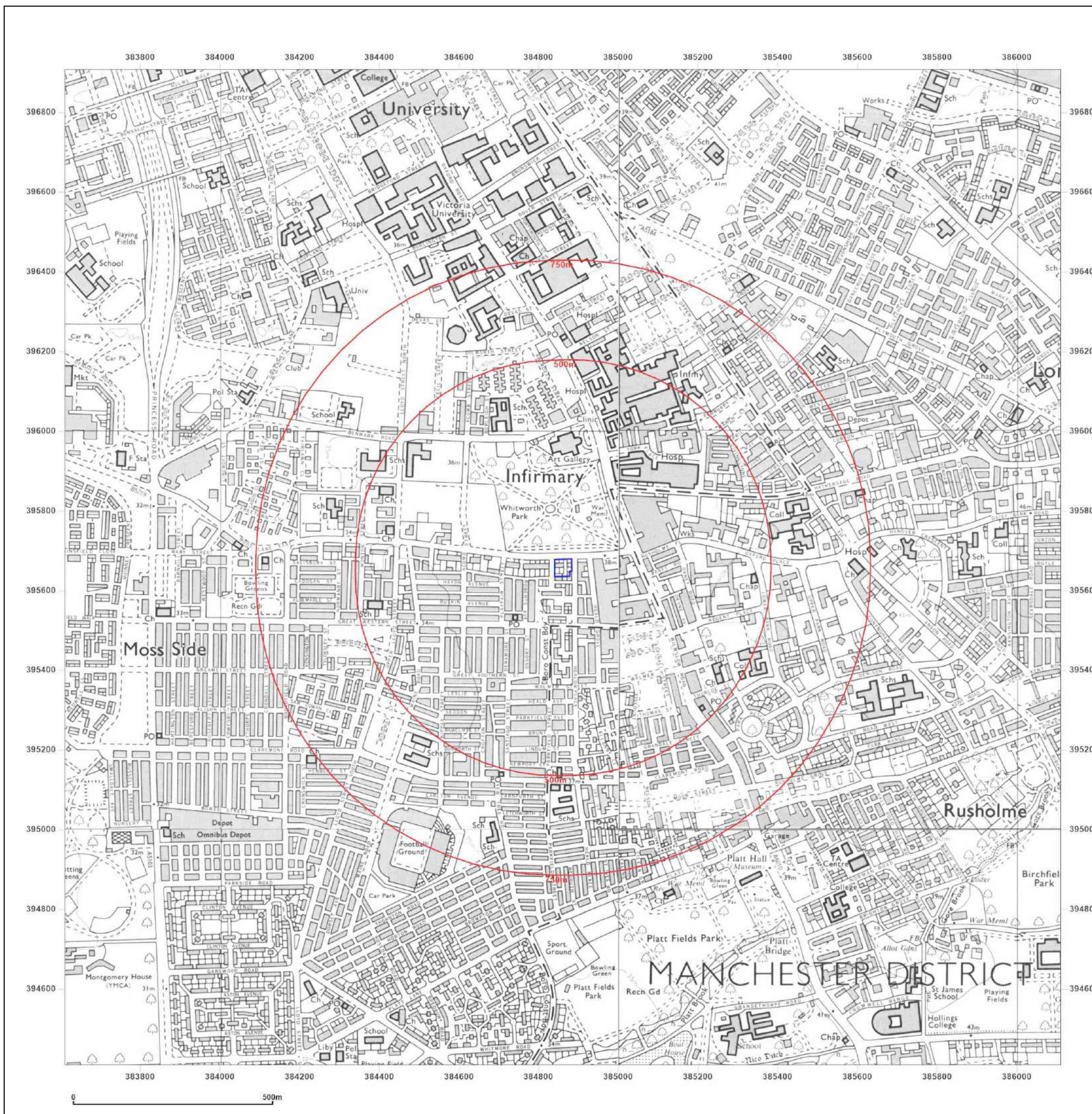


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Map date: 1985-1989

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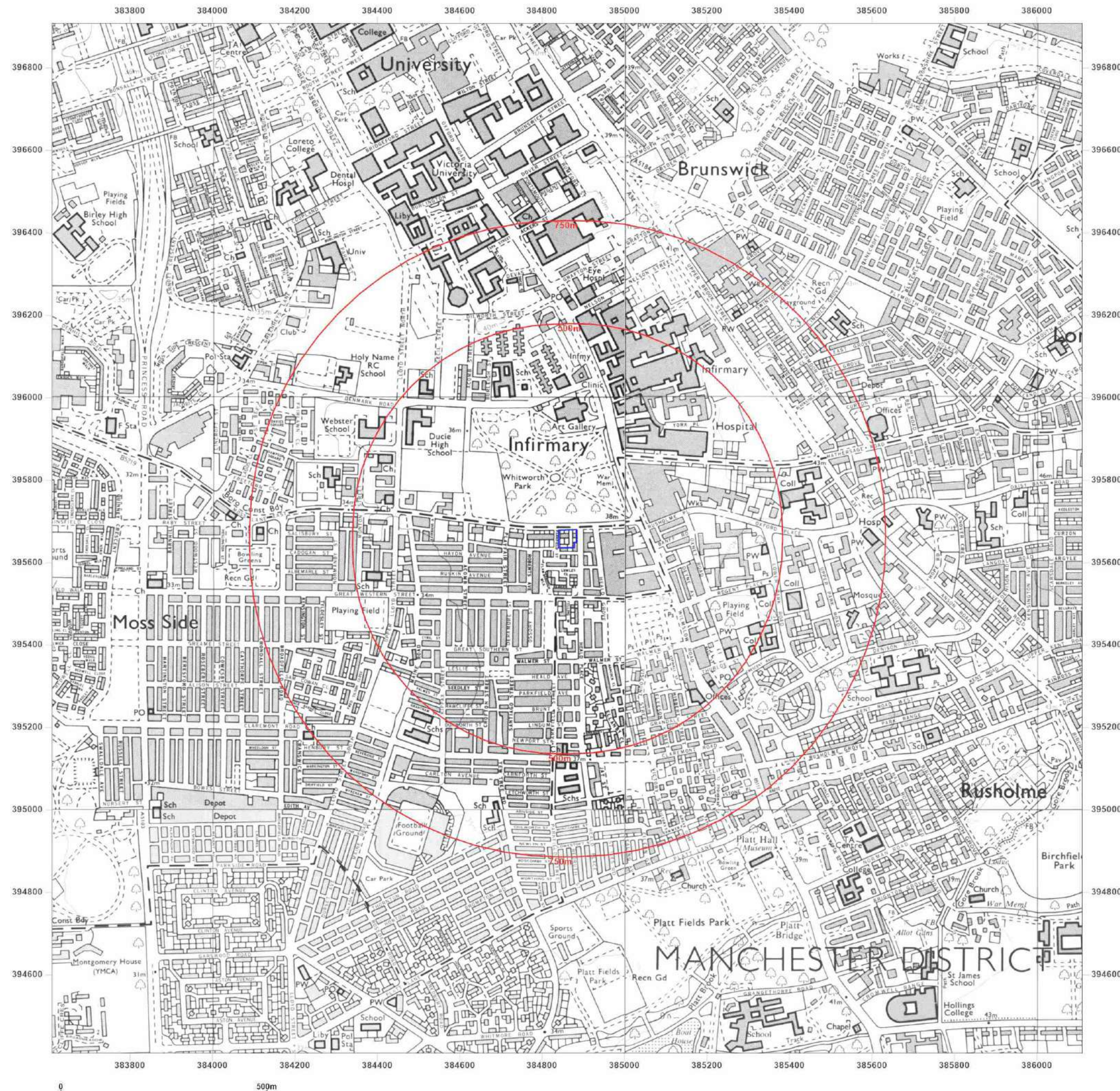


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Client Ref: P23-483-SA
Report Ref: GS-M6R-A9R-H3Q-S7H
Grid Ref: 384860, 395658

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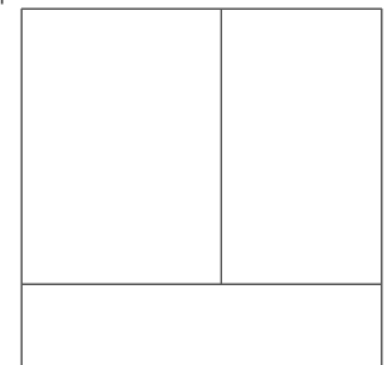
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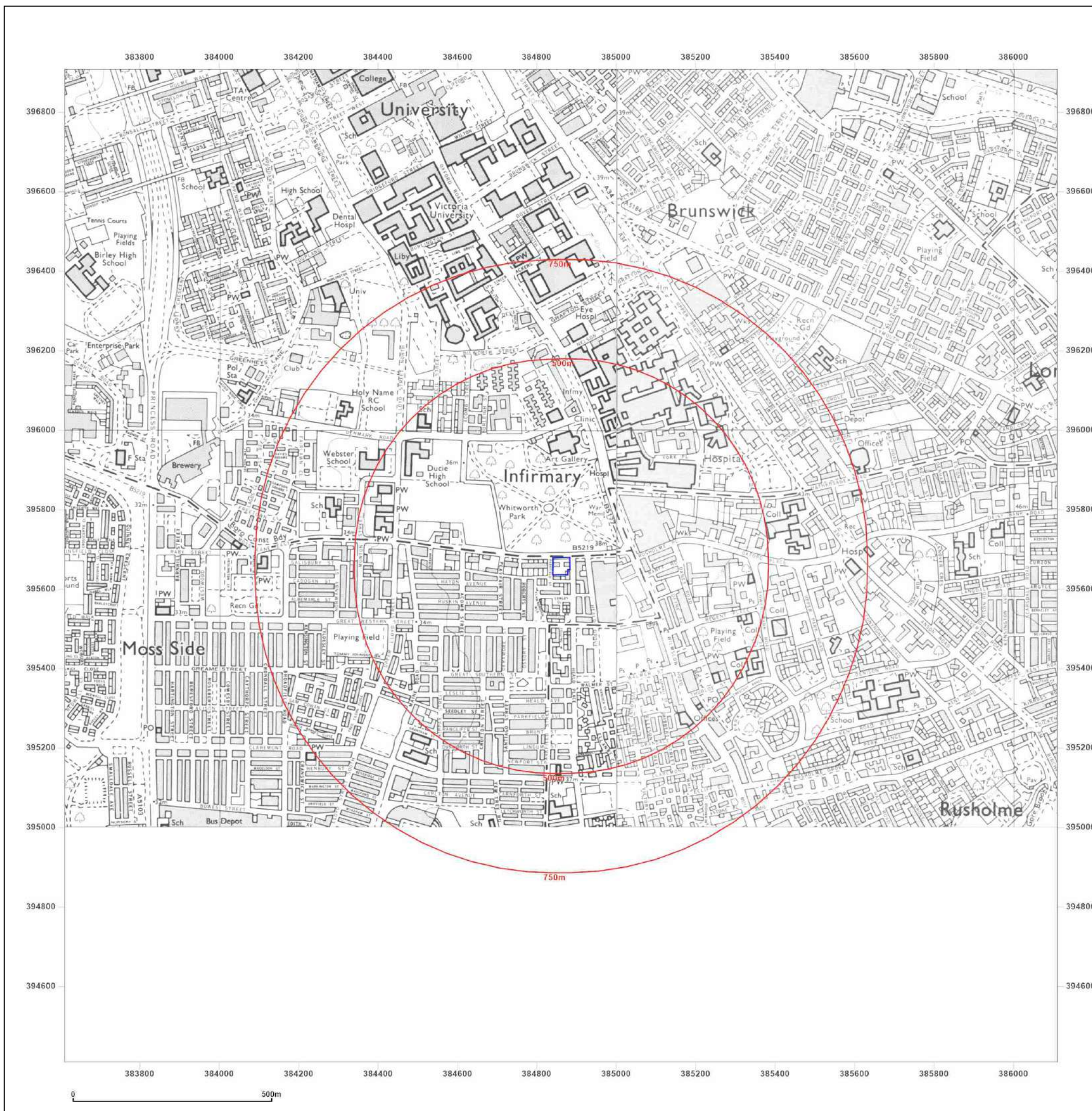


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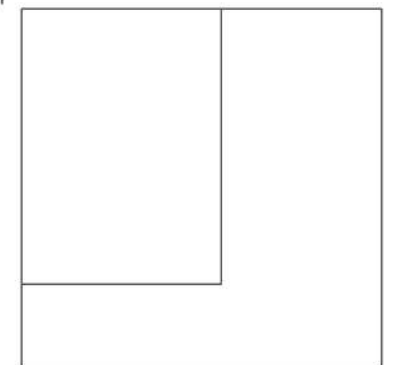
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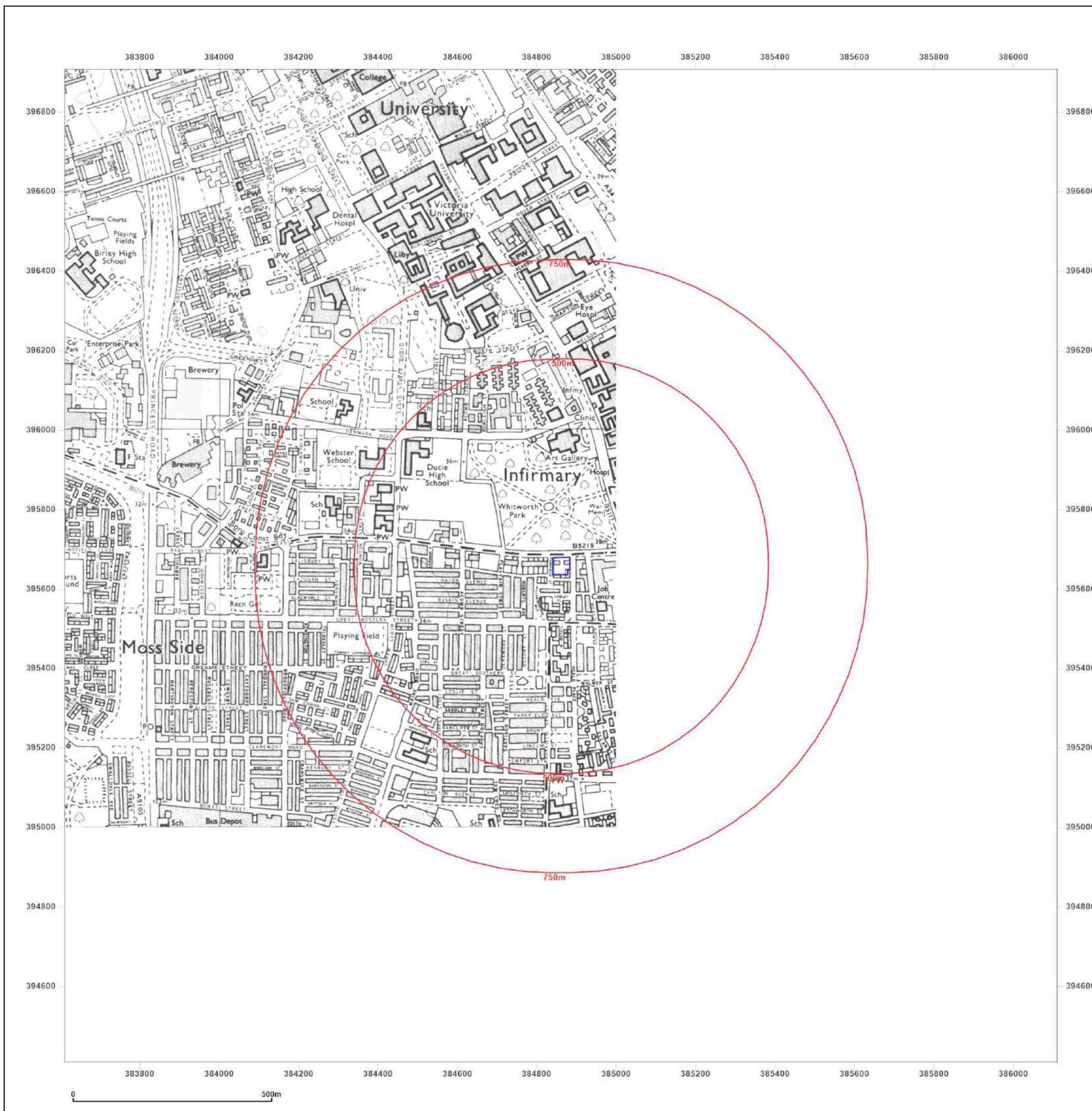


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Client Ref: P23-483-SA
Report Ref: GS-M6R-A9R-H3Q-S7H
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2001



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Report Ref: GS-M6R-A9R-H3Q-S7H
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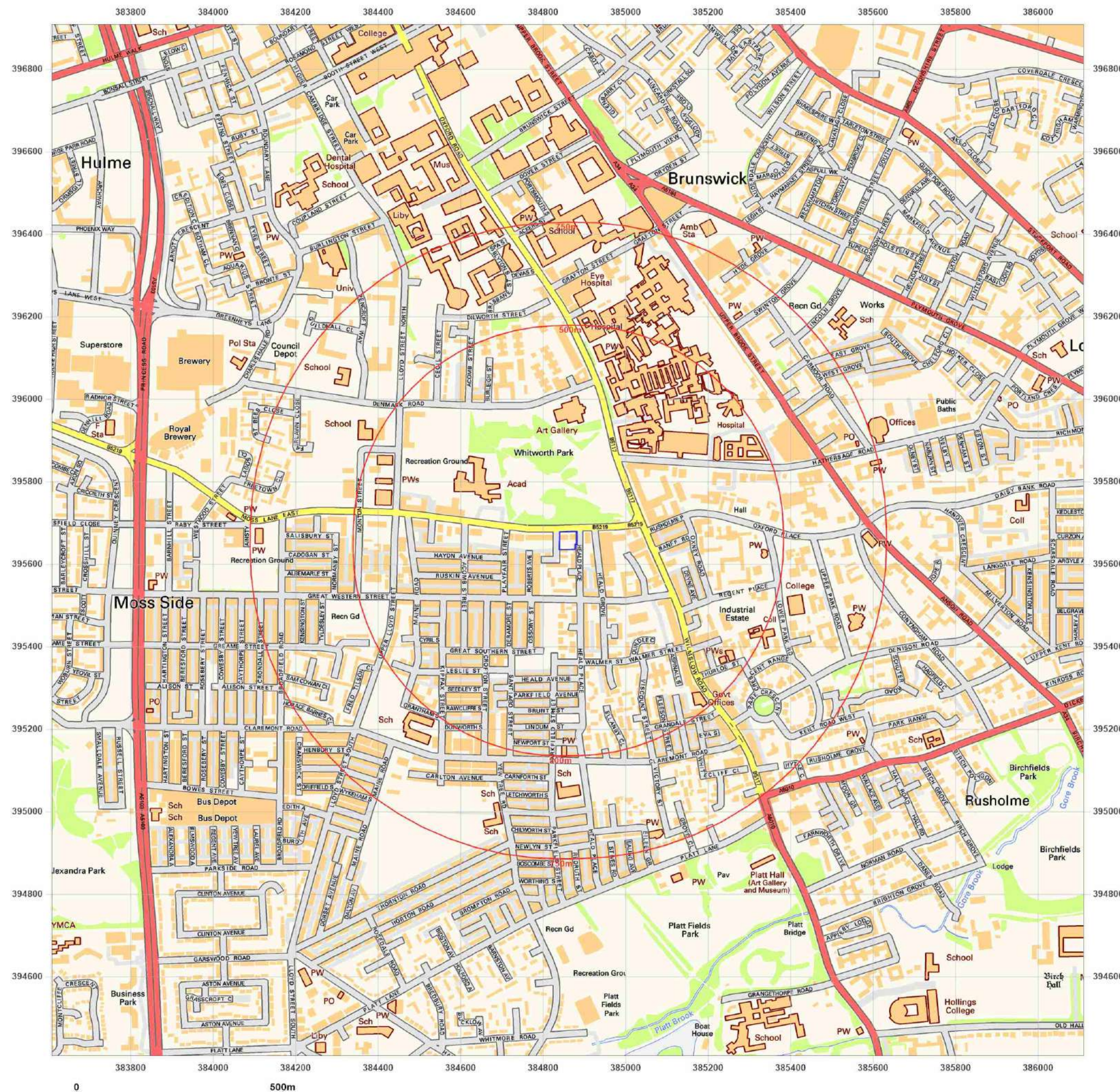


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Client Ref: P23-483-SA
Report Ref: GS-M6R-A9R-H3Q-S7H
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Scale: 1:10,000

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2024



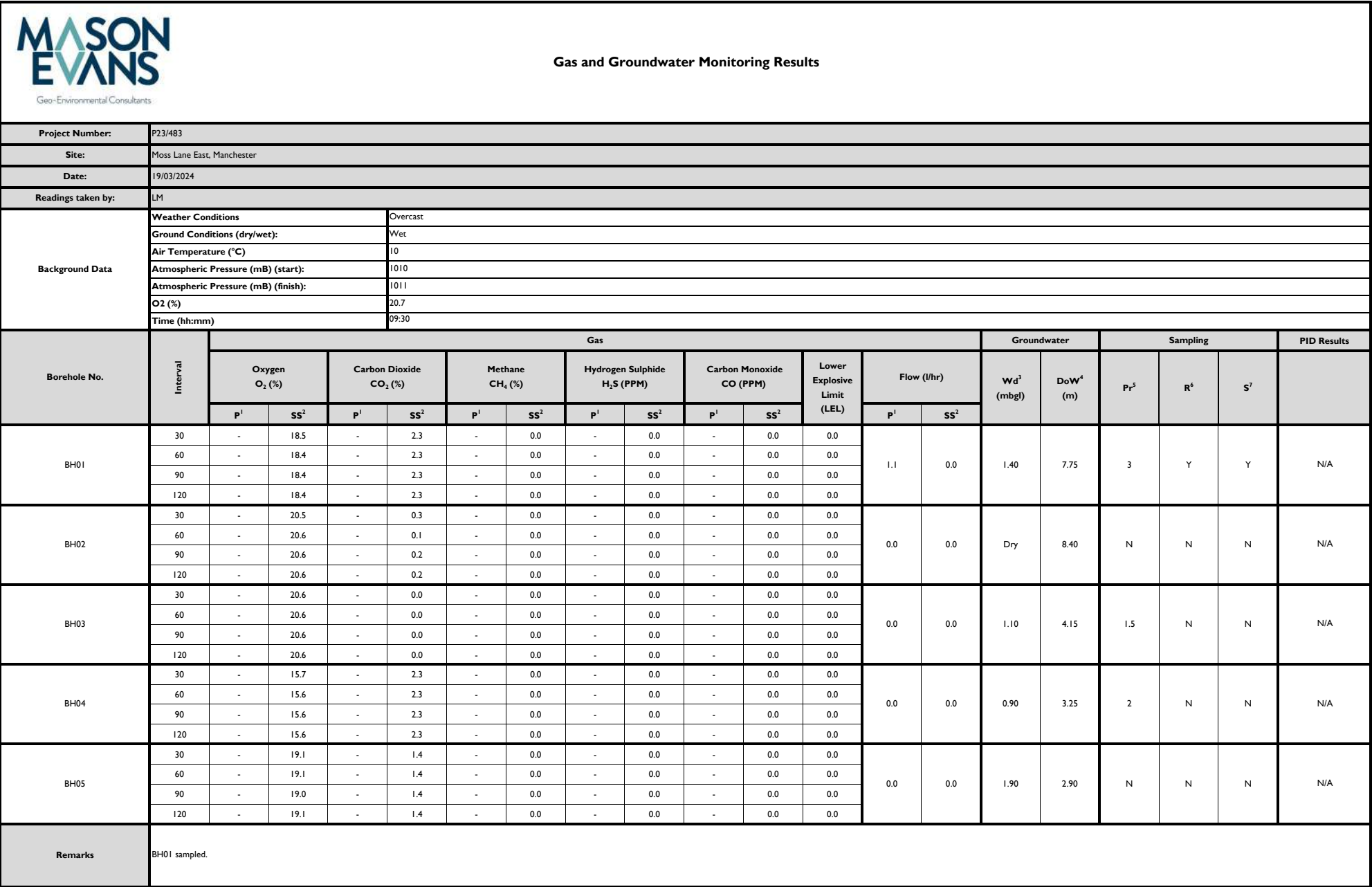
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Gas and Groundwater Monitoring Results

Project Number:	P23/483																			
Site:	Moss Lane East, Manchester																			
Date:	19/03/2024																			
Readings taken by:	LM																			
Background Data	Weather Conditions								Overcast											
	Ground Conditions (dry/wet):								Wet											
	Air Temperature (°C)								10											
	Atmospheric Pressure (mB) (start):								1010											
	Atmospheric Pressure (mB) (finish):								1011											
	O2 (%)								20.7											
Time (hh:mm)								09:30												
Borehole No.	Interval	Gas												Groundwater		Sampling			PID Results	
		Oxygen O₂ (%)		Carbon Dioxide CO₂ (%)		Methane CH₄ (%)		Hydrogen Sulphide H₂S (PPM)		Carbon Monoxide CO (PPM)		Lower Explosive Limit (LEL)	Flow (l/hr)		Wd³ (mbgl)	DoW⁴ (m)	P_r⁵	R⁶	S⁷	
		P ¹	SS ²	P ¹	SS ²	P ¹	SS ²	P ¹	SS ²	P ¹	SS ²		P ¹	SS ²						
Borehole Damage Record/ Installation Record													Key: 1 – Peak 2 – Steady state 3 – Groundwater depth 4 – Depth of well		5 – Purged well volumes 6 – Recharge (yes/no) 7 – Sampled (yes/no)					
Borehole Condition Statement																				
Gas Monitor Model:	Serial No:												Recalibration Due:							
GFM 430 / GFM436	I2984												28/02/2025							

Gas and Groundwater Monitoring Results

Project Number:	P23/483																			
Site:	Moss Lane East, Manchester																			
Date:	01/04/2024																			
Readings taken by:	MC																			
Background Data	Weather Conditions		Overcast, began to rain during monitoring																	
	Ground Conditions (dry/wet):		Wet																	
	Air Temperature (°C)		5																	
	Atmospheric Pressure (mB) (start):		998																	
	Atmospheric Pressure (mB) (finish):		998																	
	O2 (%)		20.2																	
Time (hh:mm)		16:30																		
Borehole No.	Interval	Gas											Groundwater		Sampling			PID Results		
		Oxygen O₂ (%)		Carbon Dioxide CO₂ (%)		Methane CH₄ (%)		Hydrogen Sulphide H₂S (PPM)		Carbon Monoxide CO (PPM)		Lower Explosive Limit (LEL)	Flow (l/hr)		Wd³ (mbgl)	DoW⁴ (m)	P_r⁵	R⁶	S⁷	
		P ¹	SS ²	P ¹	SS ²	P ¹	SS ²	P ¹	SS ²	P ¹	SS ²		P ¹	SS ²						
Borehole Damage Record/ Installation Record												Key: 1 – Peak 2 – Steady state 3 – Groundwater depth 4 – Depth of well		5 – Purged well volumes 6 – Recharge (yes/no) 7 – Sampled (yes/no)						
Borehole Condition Statement																				
Gas Monitor Model:	Serial No:											Recalibration Due:								
GFM 430 / GFM436	I2644											05/07/2024								

Appendix 03

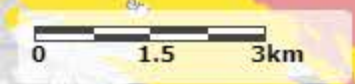
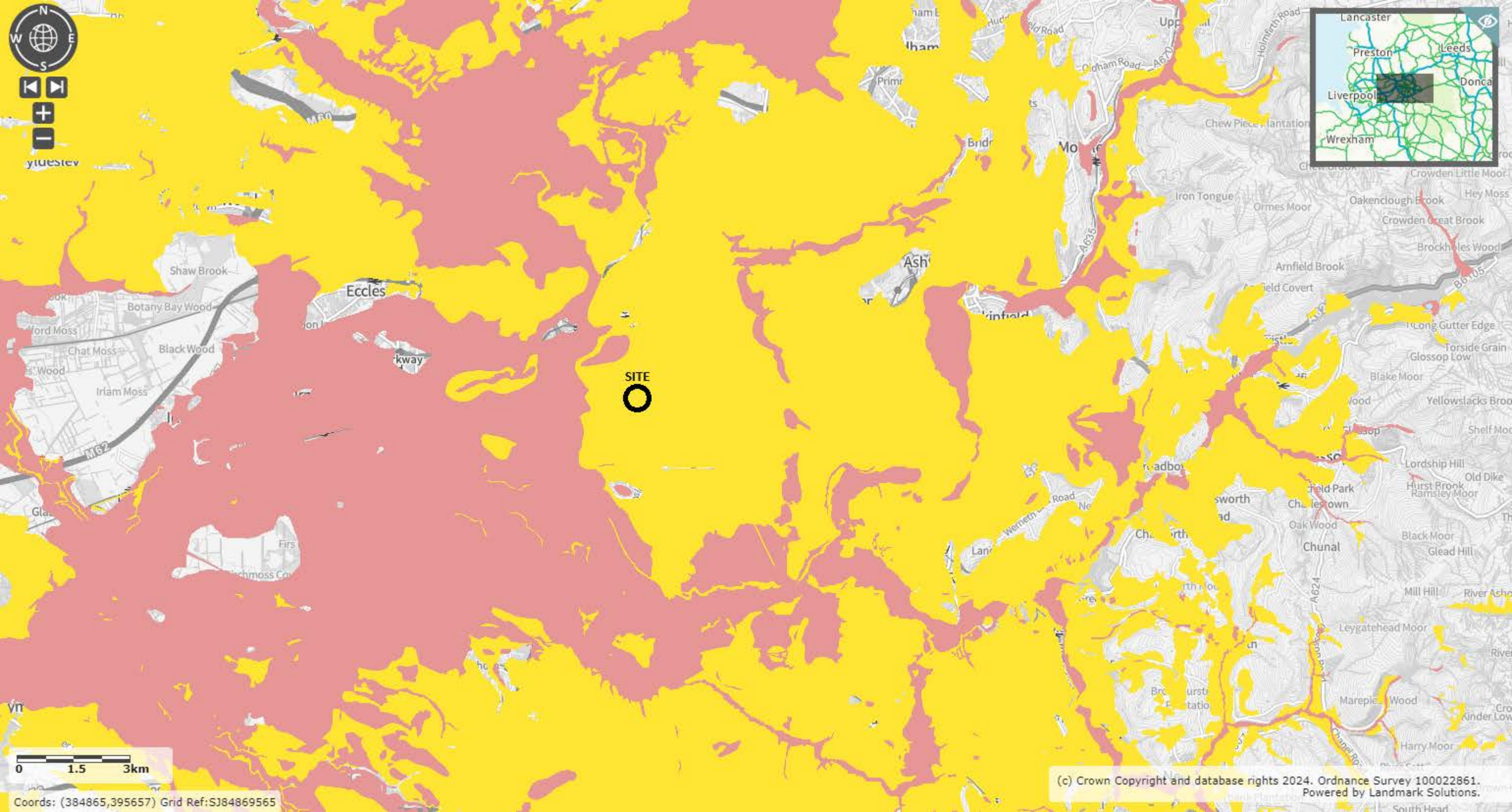
Review of Publicly Available Information



SITE



Coords: (384825,395606) Grid Ref: SJ84829560



Coords: (384865,395657) Grid Ref: SJ84869565



Moss Lane East

Landmark Order No: 331605696_1

Client Reference: P23-483

Detailed Unexploded Ordnance (UXO) Threat and Risk Assessment with Risk Mitigation Strategy

Meeting the requirements of the United Kingdom's
Construction Industry Research and Information Association's
Unexploded Ordnance Risk Management Framework:
"Unexploded Ordnance (UXO) – A Guide for the Construction Industry" (C681)
and in compliance with the Construction (Design and Management) Regulations 2015

6 Alpha Associates Ltd

Project No.: 11024

26th January 2024

V1.0

Using This Report

This Detailed UXO Threat and Risk Assessment with Risk Mitigation Strategy is designed to inform the reader whether military related Unexploded Ordnance (UXO) is likely to pose a hazard at the Study Site and if so, calculate the level of risk generated by proposed or likely ground intrusive operations at the Site. The assessment is intended to meet with the requirement of Stages 2 and 3 of the *Health and Safety Executive* endorsed *CIRIA C681 UXO Risk Management Framework* – for which *6 Alpha* were the lead technical author.

There are two prospective outcomes of this report; either the risk level requires a Risk Mitigation Strategy (Stage 3 of the *CIRIA C681* framework) aimed at reducing UXO risks As Low As Reasonably Practicable (ALARP) in accordance with the Project's minimum legal responsibility; or that no further action is required. In the former instance *6 Alpha* will provide a Risk Mitigation Strategy consisting of proactive and/or reactive risk mitigation measures aimed at reducing the identified risks to ALARP.

Document Control

Version	Author(s)	Reviewed By	Recipient
1.0	Beth Skoulding	Laurence Gregory	Client Reference: P23-483



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Executive Summary

Document Scope

6 Alpha Associates Limited (6 Alpha) has been commissioned in partnership with the *Landmark Information Group* to provide a UXO Threat and Risk Assessment with Risk Mitigation Strategy, for the Site described as “466-472, Moss Lane East, Manchester, M14 4PJ”. The Study Site is centred on *British National Grid Reference* 384860, 395659.

UXO Threat Assessment Summary

The output of 6 Alpha’s UXO Threat Assessment is summarised at Table I:

UXO Threat Assessment Summary			
	Threat Source	Result	Comments
	Was the Site or its vicinity considered a primary bombing target during WWII?	✗	Although <i>Luftwaffe</i> aerial photography identified a <i>Cultural Monument</i> (located 865m to the north-west) as a primary bombing target.
	Was the Site or its vicinity bombed during WWII?	✗	Although <i>ARP</i> records identified a bomb strike impacting 210m to the south-east.
	Was the Site or its vicinity damaged by bombing during WWII?	✗	Although official bomb damage mapping identified “ <i>Demolished Buildings</i> ” located as close as 300m to the north-east of the Study Site boundary.
	Has any <i>British</i> military activity been identified in the area?	✗	None recorded within 1,000m.
	Has ordnance been manufactured and/or stored at the Site or its vicinity?	✗	None recorded within 1,000m.
	Does UXO contamination pose a potential hazard at the Study Site?	✗	As there is no evidence of bombing, bomb damage or military activity within the Study Site’s immediate vicinity, it is unlikely that UXO will be encountered.

Table I: UXO Threat Assessment Summary

UXO Threat Items

Given the evidence presented at Table I, *6 Alpha* consider it highly unlikely (but not impossible) that a UXO encounter could occur at this Site. Nonetheless, a residual threat is posed by *German* HE bombs and IBs. *British* AAA projectiles may also pose a residual threat.

Potential UXO Burial Depth

Given the likely ground conditions at the Study Site, the average WWII bomb penetration depth has been calculated as 7m below WWII ground level at this Study Site. Although larger UXBs could be present below this depth (potentially up to 16m), they were deployed infrequently during WWII and are highly unlikely to be encountered.

UXO Risk Pathways

The Study Site has undergone limited post-war development, with only structures which were located within the southern sector of the Study Site cleared between 1972 and 1989. This part of the Study Site subsequently consisted of hardstanding ground, whilst two large structures have remained in the north of the Site to date which do not appear to have undergone any significant post-WWII redevelopment. Therefore, it is apparent that the previous intrusive works are unlikely to have disturbed the ground in all areas of the Study Site down to the likely average UXO burial depth of 7m bgl.

As such, a limited UXO risk pathway could be generated by intrusive works within any remaining area(s) of ground that has not been disturbed since the time it might have been contaminated with UXO.

UXO Risk Assessment

A Semi-Quantitative UXO Risk Assessment has been undertaken and the UXO risk rating is assessed to be:

LOW

Whilst the UXO risks associated is not considered to be “zero”, the **LOW** level of residual UXO risk posed by the proposed intrusive works are considered to be tolerable under the auspices of the As Low As Reasonably Practicable (ALARP) risk reduction principle.

Recommended Next Steps

No further action is recommended ahead of the proposed works at this Study Site.



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Appendix 1 – Site Location

Appendix 2 – Site Boundary

Appendix 3 – Modern Aerial Photography

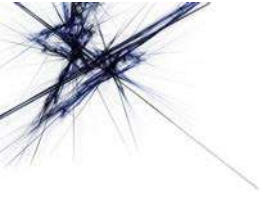
Appendix 4 – WWII High Explosive Bomb Density

Appendix 5 – WWII Luftwaffe Bombing Targets

Appendix 6 – WWII Bomb Strikes

Acronyms and Abbreviations

AAA	Anti-Aircraft Artillery	NEQ	Net Explosive Quantity
ALARP	As Low As Reasonably Practicable	NGR	National Grid Reference
ARP	Air Raid Precaution	OS	Ordnance Survey
AXO	Abandoned Explosive Ordnance	PoW	Prisoner of War
BDO	Bomb Disposal Officer	RAF	Royal Air Force
bgl	Below Ground Level	RMS	Risk Mitigation Strategy
BGS	British Geological Survey	RN	Royal Navy
BH	Borehole	SAA	Small Arms Ammunition
BPD	Bomb Penetration Depth	SQRA	Semi-Quantitative Risk Assessment
CIRIA	Construction Industry Research and Information Association	TA	Territorial Army
CS	County Series	TARA	Threat and Risk Assessment
EOD	Explosive Ordnance Disposal	TNT	Trinitrotoluene
HE	High Explosive	UK	United Kingdom
HSE	Health and Safety Executive	UN	United Nations
IB	Incendiary Bomb	USAAF	United States Army Air Force
kg	Kilogram	UXB	Unexploded Bomb
km	Kilometre	UXO	Unexploded Ordnance
LCC	London County Council	V	<i>Vergeltungswaffen</i> – Vengeance
LSA	Land Service Ammunition	Weapons	Weapons
m	Metre	WWI	World War One
		WWII	World War Two



Part I: Introduction



1 Document Overview

1.1 Scope of Work

6 Alpha Associates Limited (6 Alpha) has been commissioned in partnership with the *Landmark Information Group* to provide an Unexploded Ordnance (UXO) Threat and Risk Assessment with Risk Mitigation Strategy, for the Site described as “466-472, Moss Lane East, Manchester, M14 4PJ”.

The Study Site is centred on *British National Grid* reference 384860, 395659 and is depicted at Appendices 1 and 2.

1.2 Study Site Location

The Study Site is situated within the densely developed area of *Rusholme*, located to the south of the *City of Manchester*, and totals an area of less than one hectare. Two large structures are present within the north of the Study Site, bounded by a small area of greenspace. The southern sector of the Study Site contrastingly consists of hardstanding ground which appears to be utilised as car parking space.

Aerial photography of the Study Site is presented at Appendix 3.

1.3 Aims and Objectives

This document has the following aims and objectives:

1.3.1 Aims

The document aims to assess and evidence the nature and scope of the UXO risks to people, plant, equipment and/or the environment at this Study Site. In the event that an intolerable UXO risk is identified, a recommended UXO risk mitigation strategy will also be articulated.

1.3.2 Objectives

The document has the following objectives:

- To assess the nature and scope of potential UXO contamination at the Study Site;
- To assess whether any UXO contamination generated at the Site is likely to remain extant;
- To consider whether the proposed intrusive works will generate a viable UXO risk pathway;
- To identify those sensitive receptors likely to be impacted by an inadvertent UXO encounter during the proposed intrusive works;
- To assess the UXO risk to those sensitive risk receptors during intrusive works;
- To outline proportional risk mitigation measures that are consistent with a coherent overarching risk mitigation strategy, in order to effectively manage the UXO risk ALARP.

2 Introduction to UXO Risk Management

2.1 Definition of UXO

For the purposes of this risk assessment, 6 Alpha have adopted the definition of UXO outlined in the undermentioned CIRIA C681 guide, as follows:

“Explosive ordnance that has been primed, fuzed, armed, or otherwise prepared for use and used in an armed conflict. It may have been fired, dropped, launched or projected and should have exploded but failed to do so...UXO also refers to explosive ordnance that has not been used during an armed conflict, that has been left behind or dumped by a party to an armed conflict, and which is no longer under control of the party that left it behind or dumped it...”

2.2 Generic UXO Threats

There are multiple factors which may have contributed to the UXO contamination of a construction site in the UK but generally, UXO contamination is likely to result from the warfighting activity associated with WWI and WWII, the military occupation and use of land such as airfields, camps and training areas; and the manufacture of munitions to support the armed forces.

For example, WWII Bomb Census data from the Ministry of Home Security calculated that approximately 10% of bombs dropped on Britain during WWII failed to function as designed. If the bomb did not detonate when it was dropped, the force of impact enabled the Unexploded Bomb (UXB) to penetrate the ground. Whilst efforts were made to locate and render safe those UXBs that were observed entering the ground (or left behind clear evidence of having done so) during WWII, evidence of such UXBs was readily obscured by bomb damage debris, vegetation and a lack of footfall in some settings – thus, ensuring that an unquantifiable number of UXBs were left *in situ* below the surface of the ground.

Additionally, it has been estimated that at least 20% of the UK's land surface area has been used for military training activities or has otherwise been requisitioned for military use historically. Therefore, British Abandoned Explosive Ordnance (AXO), Land Service Ammunition (LSA), Small Arms Ammunition (SAA) and aerially delivered ordnance is also commonly encountered in areas that were formerly occupied by military forces (such as Royal Air Force (RAF) airfields, military camps and/or military training areas). Conventional and chemical munitions dumping was also prevalent in these periods with little consideration given to future safety implications. There was also widespread unrecorded dumping of LSA and SAA below the ground that was rarely recorded because the activity was often perceived to be inconsequential.



2.3 Generic UXO Risks

The explosive or chemical fill within UXO rarely becomes inert or loses its effectiveness with age, but the explosive fill may change or crystallise over time – increasing the high explosive’s sensitivity to a physical shock or an impact. Trigger mechanisms and fuses, which may have failed, may corrode and deteriorate over time, becoming more sensitive to detonation. It is therefore possible that a significant impact on the UXO case, and the resultant effect upon the fuse, may cause its inadvertent detonation.

2.4 UXO Industry Best Practice

In the absence of specific legislation concerning the management of UXO risks during construction projects, the *UK’s Construction Industry Research and Information Association* (CIRIA) has published a best practice guide for the assessment and management of UXO risk in the construction industry (CIRIA document reference C681). The *CIRIA C681* guide has been judged and recognised by the *Health and Safety Executive* (HSE) as a minimum standard of good practice, that satisfies the law when applied in an appropriate manner.

6 Alpha were *CIRIA*’s lead technical author for their *C681* publication and as such, are in a unique position to ensure that Client’s manage UXO risk in a safe, cost-effective and time-efficient manner.

2.5 UXO Risk Management Strategic Framework

At Section 5 of *CIRIA*’s *C681* guide, a framework for the management of UXO risk is articulated and consists of four key stages. These correspond with the framework employed by *6 Alpha*, as presented at Table 1.

6 Alpha Risk Management Framework	UXO Risk Management Phase	CIRIA C681 Risk Management Framework	Delivered within Report? (✓/✗)
UXO Threat Assessment	STAGE ONE	Preliminary Risk Assessment	✓
UXO Risk Assessment	STAGE TWO	Detailed Risk Assessment	✓
Risk Mitigation Strategy	STAGE THREE	Risk Mitigation	✓
Implementation	STAGE FOUR	Implementation	✗

Table 1: 6 Alpha and CIRIA UXO Risk Management Frameworks

3 UXO Threat and Risk Assessment Methodology

3.1 Source – Pathway – Receptor Risk Model

The source-pathway-receptor model is a conceptual risk model employed by 6 Alpha across all projects that informs how UXO risks are assessed. The model also helps to explain the link between the separate sections of this report and the UXO risk assessment at Section 7. The components of the model are as follows:

3.1.1 UXO Sources

The nature and scope of the UXO threat is summarised in the UXO threat assessment (at Section 4) and it forms the source element of the source-pathway-receptor model.

3.1.2 UXO Pathways

The UXO pathways are the routes by which the sources can reach the receptors. UXO pathways are likely to be either by contact and/or through soil energy transfer, through which the resulting shock wave (generated by a UXO source, or sources) may reach potential receptors. Nonetheless, surface events may also generate a through-air risk pathway in which blast and fragmentation from the UXO sources may also reach the receptors.

UXO risk pathways may be generated by a variety of operations that interact with the ground. Therefore, likely operations have been assessed and summarised (at Section 6), to demonstrate the potential risk pathway elements of the model.

3.1.3 UXO Receptors

Receptors are defined as anything which might be adversely affected by the consequences of an inadvertent detonation of any UXO source through an identified pathway. The proximity, robustness, and sensitivity of such receptors is essential in determining their capacity to withstand such high explosive effects and defining what degree of UXO risk might be tolerated (if any).

3.2 Semi-Quantitative Risk Assessment Methodology

The assessment of UXO risk is a semi-quantitative measure of the probability of UXO encounter and initiation and the consequence of an inadvertent UXO initiation; the former being a function of the identified hazard and proposed development methodology and the latter being a function of the type of hazard and the proximity of personnel (and/or other sensitive receptors) to the hazard.

UXO risk is calculated using the following formula:

$$\text{Risk (R)} = \text{Probability (P)} \times \text{Consequence (C)}$$



3.3 Information Sources

Significant archive research associated with the Study Site has been undertaken to corroborate and to highlight, any and all potential sources of UXO contamination as well as to assess their likelihood of encounter. For the production of this report, 6 Alpha have reviewed information from the following sources:

- ✚ Information gathered from the *National Archives* at Kew, including but not limited to:
 - o *Ministry of National Security WWII Bomb Census* statistics;
 - o *Air Raid Precaution (ARP)* written records and associated bomb strike mapping;
 - o Official WWII bomb damage mapping;
- ✚ *Ministry of Defence (MoD) Abandoned Bomb Register*;
- ✚ *Former 33 Engineer Regiment (Explosive Ordnance Disposal)* records at *Carver Barracks, Wimbish*;
- ✚ Post-WWII RAF aerial photography;
- ✚ *County Series (CS)* and *Ordnance Survey (OS)* mapping.

3.3.1 Azimuth® UXO Threat Database

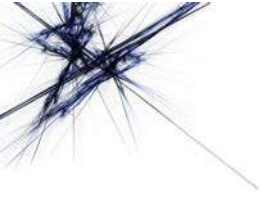
The above list is not exhaustive, and 6 Alpha's *Azimuth®* database has also been heavily drawn upon to deliver the UXO threat assessment element of this report. The *Azimuth®* database contains digitised historic charts, aerial photographs and other extensive analogue records from an exhaustive range of additional national, regional and global archives and/or data sets that have been digitised.

3.4 Constraints

This UXO threat and risk assessment is constrained and limited by that information which is reasonably available to 6 Alpha at the time of writing, as well as that UXO information that is reasonably accessible in a variety of archives, which 6 Alpha have digitised and georeferenced or have otherwise summarised in written form.

This document may also require updates and changes, especially wherever and whenever the circumstances and factors associated with assessing UXO risk change. For example, if UXO threats are subsequently discovered and they are different from those that have been anticipated, and/or if proposed intrusive operations are significantly changed.

In such circumstances, risks may require re-evaluation and any such changes are to be made by 6 Alpha, to ensure the continued technical veracity and risk management efficacy of this document.



Part II: UXO Threat & Risk Assessment

4 UXO Threat Assessment

4.1 WWII Aerial Bombing

Manchester's importance to the *British* war economy as an inland port, industrial centre, and aircraft manufacturer, meant the city and surrounding area represented a significant bombing target for the *Luftwaffe*. The first air raids occurred during August 1940 and continued until 1942. Many of these small-scale raids were across the city's suburbs causing damage to properties and minimal casualties. Of the notable buildings in the city, the *Palace Theatre* on *Oxford Street* was bombed during September 1940.

The *Luftwaffe* bombing campaign of *Manchester* peaked between the 22nd and the 24th December 1940 (the *Manchester*, or *Christmas, Blitz* as it was known) and involved over 400 enemy aircraft delivering more than 460 tons of HE bombs and 37,000 IBs. Following this raid, approximately 65 warehouses, 200 business premises and 150 offices were destroyed or damaged with the *Manchester Cathedral*, the *Royal Exchange*, and the *Free Trade Hall* among the significant buildings damaged. An estimated 684 people were killed, and a further 2,364 people were injured.

Manchester continued to be bombed throughout the war and on the 24th December 1944 V1 rockets were launched towards the city. The rockets failed to meet their intended targets with one stray bomb impacting *Oldham*, killing 27 civilians.

4.1.1 WWII HE Bomb Density

The Study Site was located within *Manchester County Borough*, as presented at Appendix 4. This region recorded six HE bomb strikes per 100 hectares, a "very low" level of bombing. However, further site-specific data has been considered regarding the potential bombing of the Site during WWII.

4.1.2 WWII Luftwaffe Bombing Targets

Luftwaffe aerial reconnaissance photography did not identify any primary bombing targets on-site nor within the Site's immediate vicinity. Nonetheless, a *Cultural Monument* (located 865m to the north-west of the Study Site boundary) was identified as a primary bombing target.

The locations of *Luftwaffe* bombing targets, in relation to the Study Site, are presented at Appendix 5.

4.1.3 WWII HE Bomb Strikes

During WWII, ARP wardens and other local officials compiled detailed logs of bomb strikes across their respective districts that were then often consolidated and mapped at the end of WWII. Whilst ARP records did not note any HE bomb strikes within the Study Site boundary itself, 14 bomb strikes were recorded within a 1,000m radius of the Site. The closest of these was located 210m south-east of the

Site between *Banff Road* and *Deyne Avenue*. In addition, two Unexploded Bombs (UXBs) were recorded within 1,000m, impacting 765m to the north-east and 845m to the north-west of the Study Site boundary.

Furthermore, whilst IBs may have fallen within the Study Site, they were dropped in large clusters and accurate record keeping was often either non-existent or perfunctory. ARP records identified 105 incendiary bomb strikes (IBs) within a 1,000m radius, the closest impacted 170m to the south-east of the Site in close proximity to *Deyne Avenue*. Four further IBs were recorded between 210m to the north-west and 305m to the north-east.

In addition to IBs and HE bomb strikes, during the latter stage of WWII, when more conventional aerial bombardment of the UK had significantly declined, the main threat came from V type weapons. V1 and V2 rockets were thin-skinned, unmanned and inaccurate weapons and generally exploded upon impact and thus, are less likely to pose a UXO threat. There is also no evidence to suggest that the Study Site (or its immediate vicinity) was subjected to rockets strikes during WWII.

The locations of WWII-era bomb strikes, in relation to the Study Site, are presented at Appendix 6.

4.1.4 WWII Bomb Damage

Official bomb damage mapping, supplemented with post-war mapping and aerial photography, did not identify any evidence of bomb damage to structures located on-site, nor in the immediate vicinity. This further reinforces the assessment that the Site itself was not subject to bombing during WWII.

Despite this, bomb damage was recorded within the vicinity of the Study Site, notably several “*Demolished Buildings*” which were identified between 300m to the north-east and 630m to the north-east of the Site boundary.

WWII bomb damage mapping covering the Study Site and its surrounding area is presented at Appendix 7.

4.1.5 UXB Entry Holes

The CS mapping prior to WWII (1933) and aerial photography (1946) shows that the Study Site was located within a densely developed area during WWII, with the Site itself consisting of several structures surrounded by undeveloped ground (gardens). Therefore, it is likely that the Study Site and its immediate vicinity would have been accessed frequently during WWII and as such, any obvious UXB entry points are likely to have been observed and reported at the time.

4.2 British Military Activity

Extensive research suggested that a balloon barrage site was located at *Whitworth Park* (located 20m to the north of the Site boundary at its closest point). It is likely that this defensive feature was utilised

and/or maintained by military personnel during WWII aerial bombing raids as they were tethered to the ground and designed to obstruct the movement of low-flying aircraft. Nonetheless, there is no further evidence to suggest that the Study Site or its immediate vicinity has previously been occupied by military personnel. Therefore, it is considered unlikely that munitions were previously stored, located, and/or fired from this Study Site.

4.3 Previous UXO Encounters

An analysis of historic records did not identify any UXO encounters within the vicinity of the Study Site, as follows:

4.3.1 Abandoned Bombs

The Abandoned Bomb register was compiled from wartime records and was published in the form of a written answer to the *House of Commons* in 1996. The list initially only covered abandoned bombs in *London* but has since been released for the rest of the UK.

An examination of the *MoD's* official abandoned bomb records has not identified any abandoned bombs on-site nor within 1,000m.

4.3.2 UXO Disposal Tasks

An examination of pertinent historical records associated with the Study Site has not identified any UXO disposal tasks on-site nor within 1,000m.

4.4 UXO Threat Summary

Given the evidence presented above, *6 Alpha* consider it highly unlikely (but not impossible) that a UXO encounter could occur at this Site. The most probable UXO threat items are *German* HE bombs and IBs. *British* AAA projectiles may also pose a residual threat as they were likely fired in defence of the local area during WWII bombing raids.

5 UXO Burial Depths

5.1 Overview

It is important to establish the likely burial depth for threat spectrum UXO at the Study Site. The potential penetration depth of an UXB was dependent on a number of factors including but not restricted to those prior to striking the ground (e.g. velocity and orientation of the UXB), which in turn will be influenced on factors such as the release altitude from the aircraft and encounters with infrastructure during its fall; those encountered at the point of impact (i.e. was the impact on concrete, grass, water etc.) and finally, the below ground level conditions (e.g. infrastructure/services, basements, foundations, and geology).

Accordingly, the ground conditions at the Study Site must be understood in order to determine the average and maximum *German* UXB penetration depths, as well as the potential for other types of munitions to be buried. The provenance of made ground must also be considered in order to accurately determine the ground levels at the time when UXO contamination may have occurred (so as to accurately determine the average/maximum bomb penetration depths) and subsequently to inform any further recommendations.

5.1.1 Ground Conditions

BGS borehole log “SJ89NE832 – WALMER STREET RUSHOLME 1” (located 225m to the south-east of the Study Site), recorded the following strata:

Depth bgl (m)	Strata	Description
0.00m to 2.60m	Fill	Medium dense brick rubble Fill.
2.60m to 6.50m	Clay	Very stiff brown grey mottled Clay with some fine to medium gravel, becoming sandy with depth.

Table 2: Ground Conditions Summary

In addition, an analysis of BGS mapping associated with the Study Site suggests that the Site is likely to be underlain by a bedrock of “*Chester Formation - Sandstone*”.

5.2 UXB Burial Depths

Based on the ground conditions described above, the average BPD for a 250kg *German* HE bomb is assessed to be approximately 7m bgl, with the maximum BPD considered to be approximately 16m bgl.

Although it is possible that the *Luftwaffe* deployed larger bombs in the area, an analysis of WWII bomb census data clearly evidences that their deployment was infrequent. Therefore, to use such larger bombs for BPD calculations **are not justifiable under the ALARP principle and thus, CIRIA C681 guidance.**

WWII *German* bombs have a greater penetration depth when compared to IBs and AAA projectiles, which are unlikely to be encountered at depths greater than 1m bgl.

5.2.1 The J-Curve Effect

As a UXB penetrated the ground, it's velocity naturally slowed where it either came to an abrupt stop (e.g., against foundations) or would continue along a route of least resistance – which often resulted in a curving of the trajectory back towards the surface. This is known as the “J Curve” effect and often resulted in a considerable horizontal off-set from the point of entry. This explains why UXBs have been discovered against or under the foundations of buildings which were present during WWII, or many meters from their entry holes. A diagrammatical representation of the “J Curve” effect is presented at Figure 1.

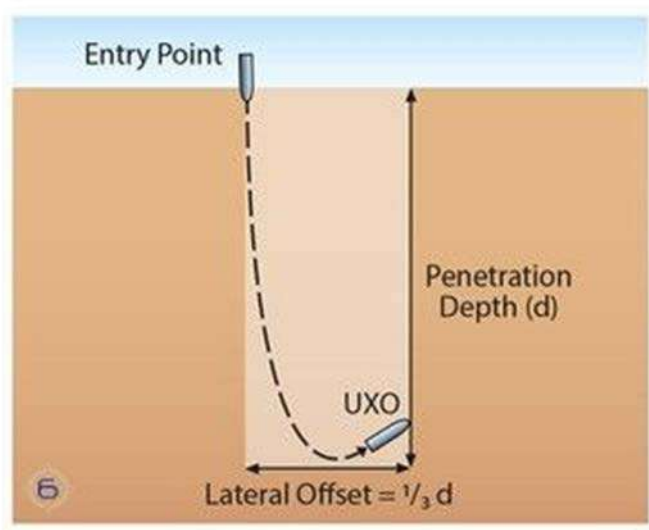


Figure 1: The “J Curve” Effect

6 UXO Risk Pathways

6.1 Overview

In order to assess whether a viable UXO risk pathway might exist at the Study Site, potential UXO contamination sources must be assessed (and have been at Section 4 of the report) and the likely depth of UXO contamination ought to be established (as per Section 5 of the report). Additionally, the Site's construction history ought to be considered to assess whether any previous intrusive works will have encountered and removed any UXO contamination present at the Site.

6.2 Study Site Construction History

From an analysis of CS and OS mapping, together with aerial photography, the following site history can be deduced:

Year	Development History
1933 CS Map	The Study Site was situated within the densely developed area of <i>Rusholme</i> , located to the south of <i>Manchester</i> . The Site itself consisted of numerous structures.
1946 Aerial Photography	Changes were not recorded at the Study Site.
1955 OS Map	Changes were not recorded at the Study Site.
1972 OS Map	Changes were not recorded at the Study Site.
1989 OS Map	Structures located within the southern sector of the Study Site were cleared and the area subsequently consisted of hardstanding ground.
2000 Aerial Photography	Changes were not recorded at the Study Site.
2016 OS Map	Changes were not recorded at the Study Site.
2023 OS Map	Changes were not recorded at the Study Site.

Table 3: Study Site Development History

As per Table 3, it is apparent that the Study Site has undergone limited post-war development, with only structures which were located within the southern sector of the Study Site cleared between 1972

and 1989. This part of the Study Site subsequently consisted of hardstanding ground, whilst two large structures have remained in the north of the Site to date. Therefore, it is apparent that the previous intrusive works are unlikely to have disturbed the ground in all areas of the Study Site down to the likely average UXO burial depth of 7m bgl.

6.3 Proposed Works

An outline of the proposed intrusive works is also presented in order to evidence the potential UXO risk pathways that may be generated, should such work encounter those threat spectrum UXO that have been identified in Section 4.

A general overview of the scope of works for the project has been communicated to 6 Alpha and consists of:

- ✚ *“Shallow Trial Pit up to 1m below ground level, Window Sampling up to 1m below ground level;*
- ✚ *Borehole Depth: 10 - 15 m;*
- ✚ *Piling Work: Specifics not known, but Lilley a driven pile design;*
- ✚ *Intrusive Work: Expect to sink 4 No bores holes to depths between 10 m and 15 m bgl, with 5 No hand pits up to 1.20 m bgl. Likely construction will include for piling owing to development;*
- ✚ *Excavation Depth: 15 m through boreholes, 2.00-3.00 m for construction and investigation.”*

Consequently, it is apparent that the proposed works could theoretically generate a limited UXO risk pathway in ground that has not been previously disturbed (including any ground below post-WWII intrusive work) to a depth of 5m bgl.

If the planned methods are changed, then the risk assessment is to be reviewed and updated if necessary.

7 UXO Risk Assessment

7.1 Threat Items

Whilst there is no evidence to suggest there is an elevated probability of encountering UXO at this Study Site, a residual threat might be posed by *German* aerially delivered ordnance. The consequences of initiating *German* HE bombs are generally more severe than initiating IBs or AAA projectiles, and thus they pose the greatest prospective risk to intrusive works.

7.2 Risk Pathways

Whilst there is a residual UXO risk within this Study Site, *6 Alpha* do not believe that the proposed intrusive works will generate a significant risk pathway given the low likelihood that UXO will be encountered at the Study Site.

7.3 Risk Receptors

The likely risk receptors include:

- Site personnel;
- Plant and equipment;
- Third-party infrastructure (utilities/services) and buildings;
- The natural environment.

Consequences of UXO initiation include:

- Injuries and/or fatalities to personnel;
- Damage to plant and equipment, nearby buildings and infrastructure;
- Rupture and damage underground utilities/services and the natural environment.

Consequences of an unexpected and unplanned UXO discovery include:

- Incurring delays and additional costs through the expenditure of additional risk mitigation resources and EOD clearance;
- Disruption to local community;
- Negative publicity.

7.4 Semi-Quantitative Risk Assessment

A semi-quantitative risk assessment has been undertaken and the results are presented at Table 4.

Activity	UXO Threat Item	Probability (SH+EM=P)	Consequence (D+PSR=C)	Risk (PxC=R)
Trial Pits	Aerial Bombs	0+2=2	3+3=6	2x6=12
	AAA Projectiles	1+2=3	3+1=4	3x4=12
Window Sampling	Aerial Bombs	0+3=3	3+2=5	3x5=15
	AAA Projectiles	1+3=4	3+1=4	4x4=16
Boreholes	Aerial Bombs	0+3=3	3+2=5	3x5=15
	AAA Projectiles	1+3=4	3+1=4	4x4=16
Excavations	Aerial Bombs	0+2=2	3+3=6	2x6=12
	AAA Projectiles	1+2=3	3+1=4	3x4=12
Piling	Aerial Bombs	0+3=3	3+2=5	3x5=15
	AAA Projectiles	1+3=4	3+1=4	4x4=16

Table 4: UXO SQRA Results

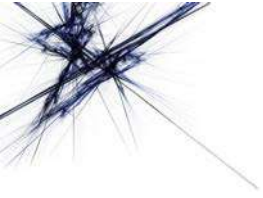
7.4.1 SQRA Conclusions

The SQRA has determined that the proposed intrusive works may generate, as a reasonable worst-case scenario, a **LOW** level of risk at the Study Site.

7.5 UXO Risk Mitigation Strategy

As per CIRIA C681 guidance, 6 Alpha recommended that the identified UXO risks are reduced ALARP. Crucially, the ALARP principle states that if the cost of reducing a risk significantly outweighs the benefit, then the risk may be considered tolerable. This does not mean that there is never a requirement for UXO risk mitigation, but that any mitigation must demonstrate that it is beneficial. Any additional mitigation that delivers diminishing benefits and that consumes disproportionate time, money and effort are considered *de minimis* and thus unnecessary. Because of this principle, UXO risks will rarely be reduced to zero (nor need they be).

Consequently, whilst the UXO risk to the proposed works is not considered to be “zero”, the level of residual UXO risk posed by the proposed intrusive works are considered to be tolerable under the

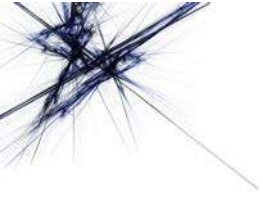


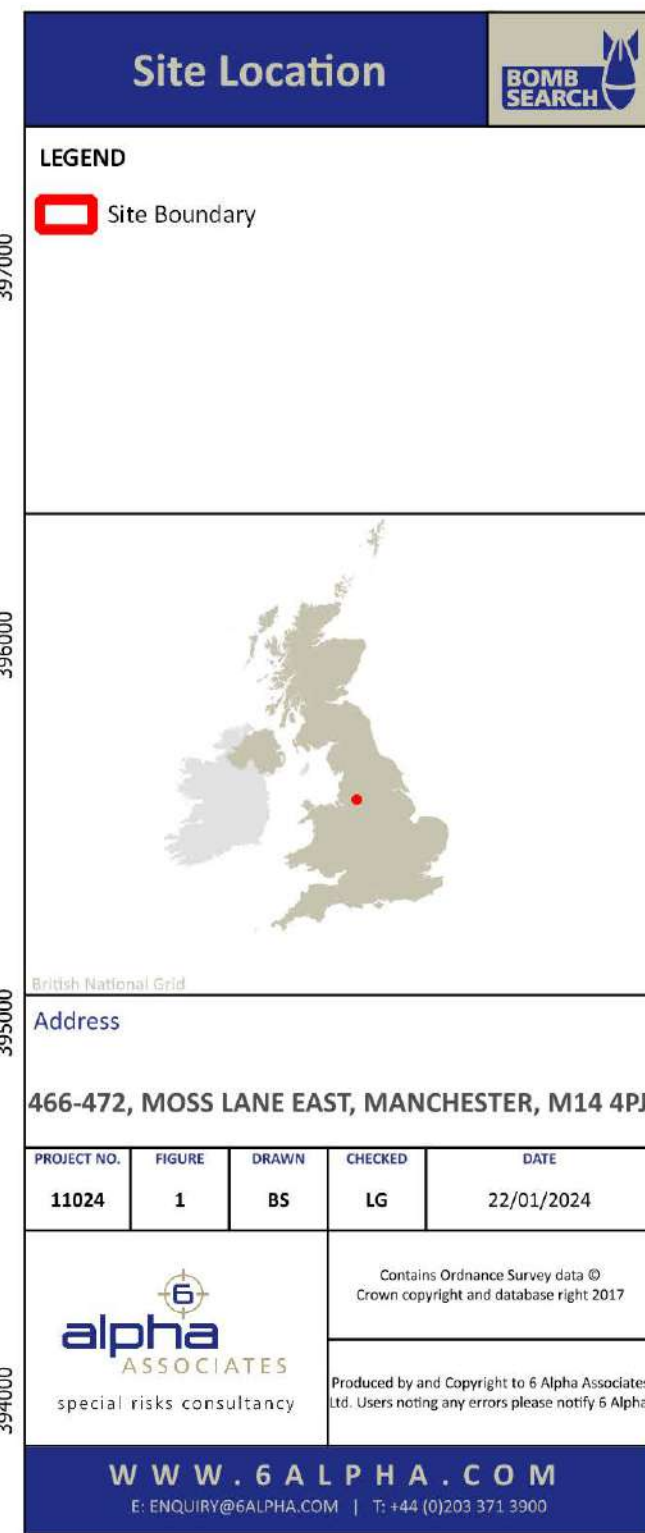
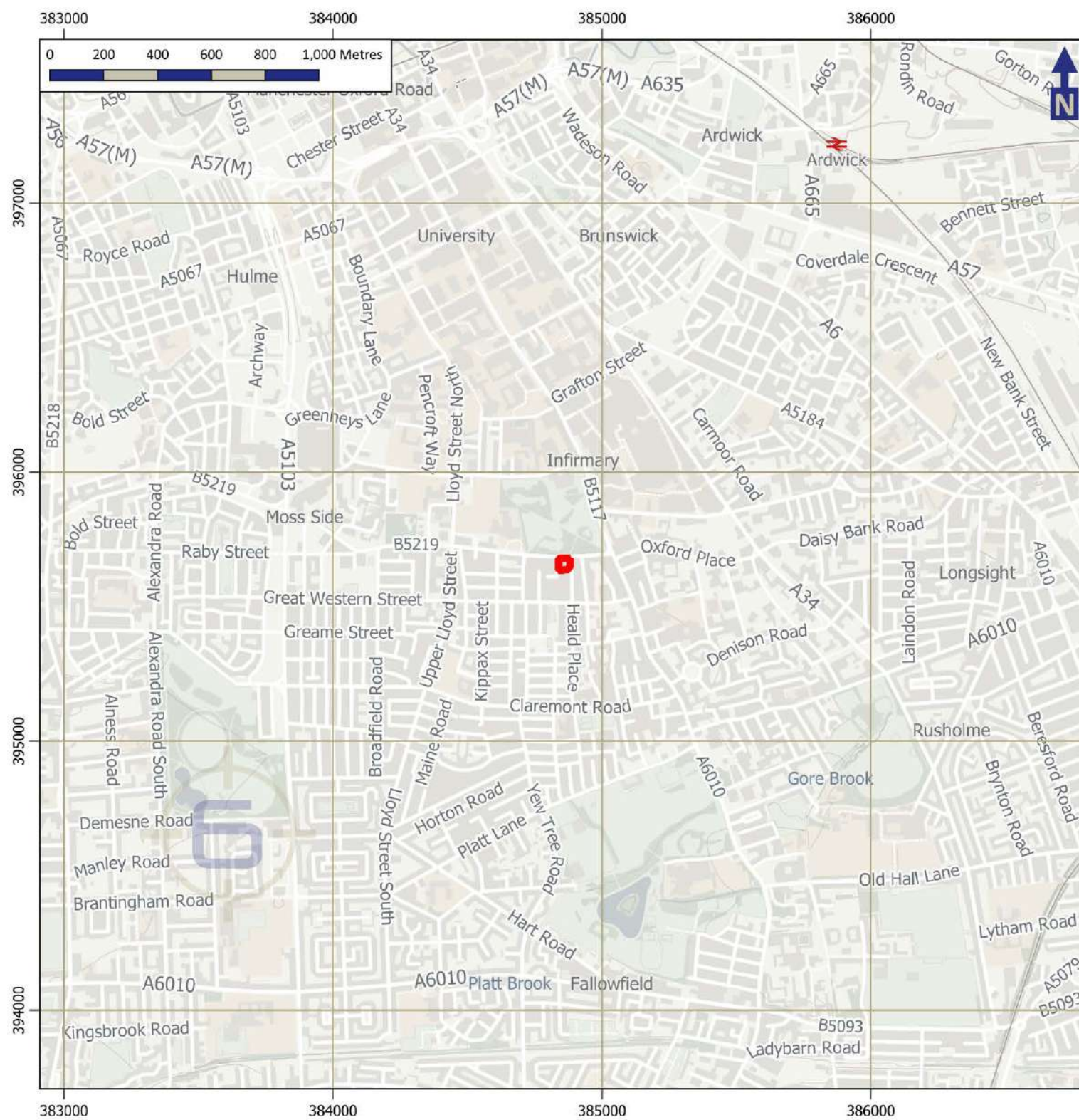
auspices of the As Low As Reasonably Practicable (ALARP) risk reduction principle without the need for a UXO risk mitigation strategy.

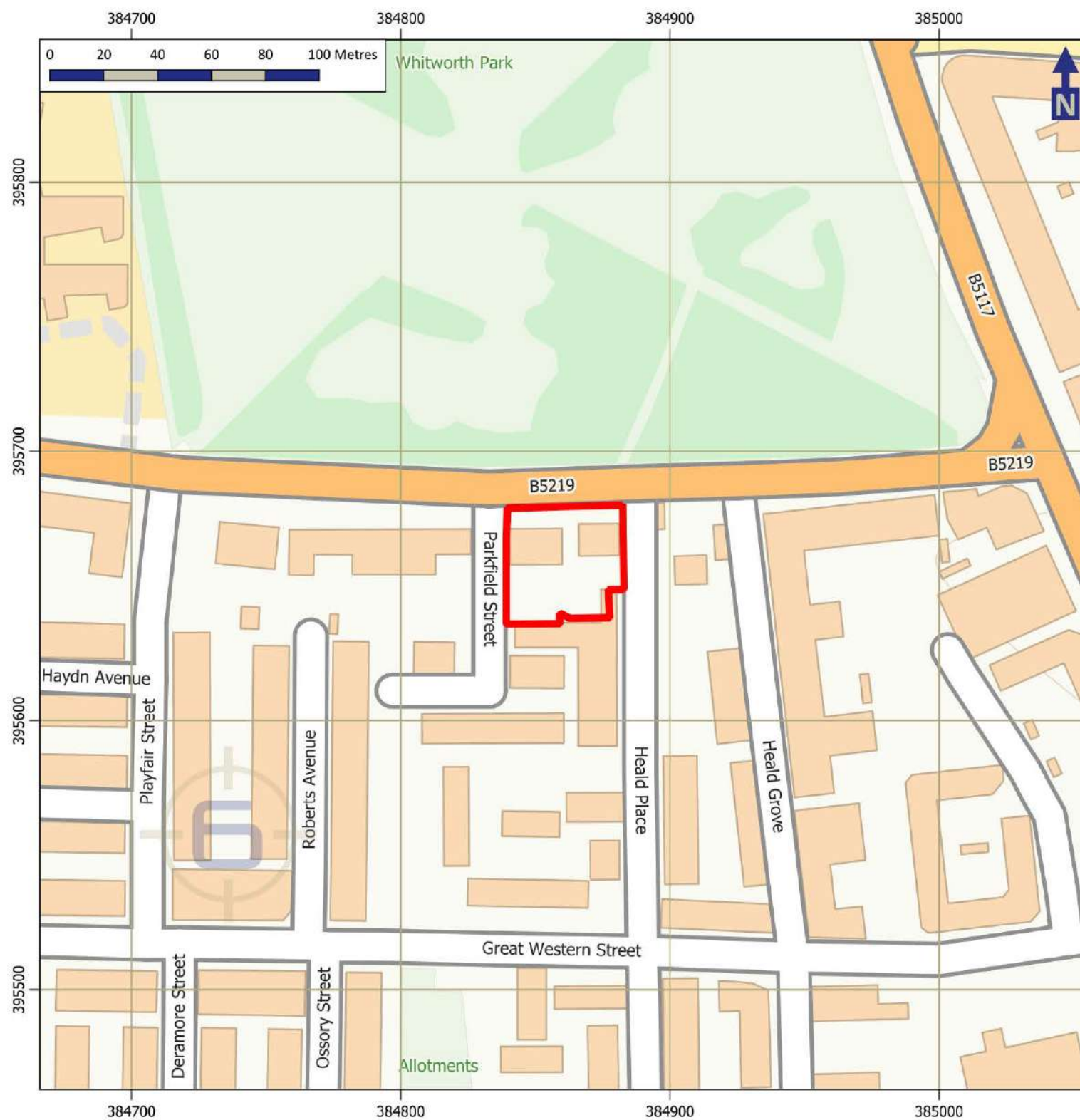
7.5.1 Recommended Next Steps

No further action is recommended ahead of the proposed works at this Study Site in order to reduce the UXO risks to ALARP.









Site Boundary



LEGEND

 Site Boundary



British National Grid

Address

466-472, MOSS LANE EAST, MANCHESTER, M14 4PJ

PROJECT NO.	FIGURE	DRAWN	CHECKED	DATE
11024	2	BS	LG	22/01/2024

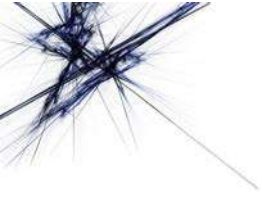


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Appendix 3 – Modern Aerial Photography



Modern Aerial Photography



LEGEND

 Site Boundary



British National Grid

Address

466-472, MOSS LANE EAST, MANCHESTER, M14 4PJ

PROJECT NO.	FIGURE	DRAWN	CHECKED	DATE
11024	3	BS	LG	22/01/2024



Map data: Google, The GeoInformation Group, Infoterra Ltd, Bluesky, Getmapping plc

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WWII High Explosive Bomb Density

LEGEND

Site Boundary

High Explosive Bomb Density

Less than 15 bombs per 100 hectares

16-25 bombs per 100 hectares

26-35 bombs per 100 hectares

36-45 bombs per 100 hectares

Over 46 bombs per 100 hectares

British National Grid

Address

466-472, MOSS LANE EAST, MANCHESTER, M14 4PJ

PROJECT NO.	FIGURE	DRAWN	CHECKED	DATE
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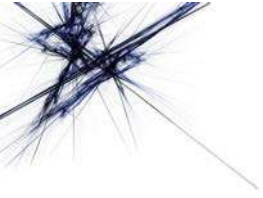
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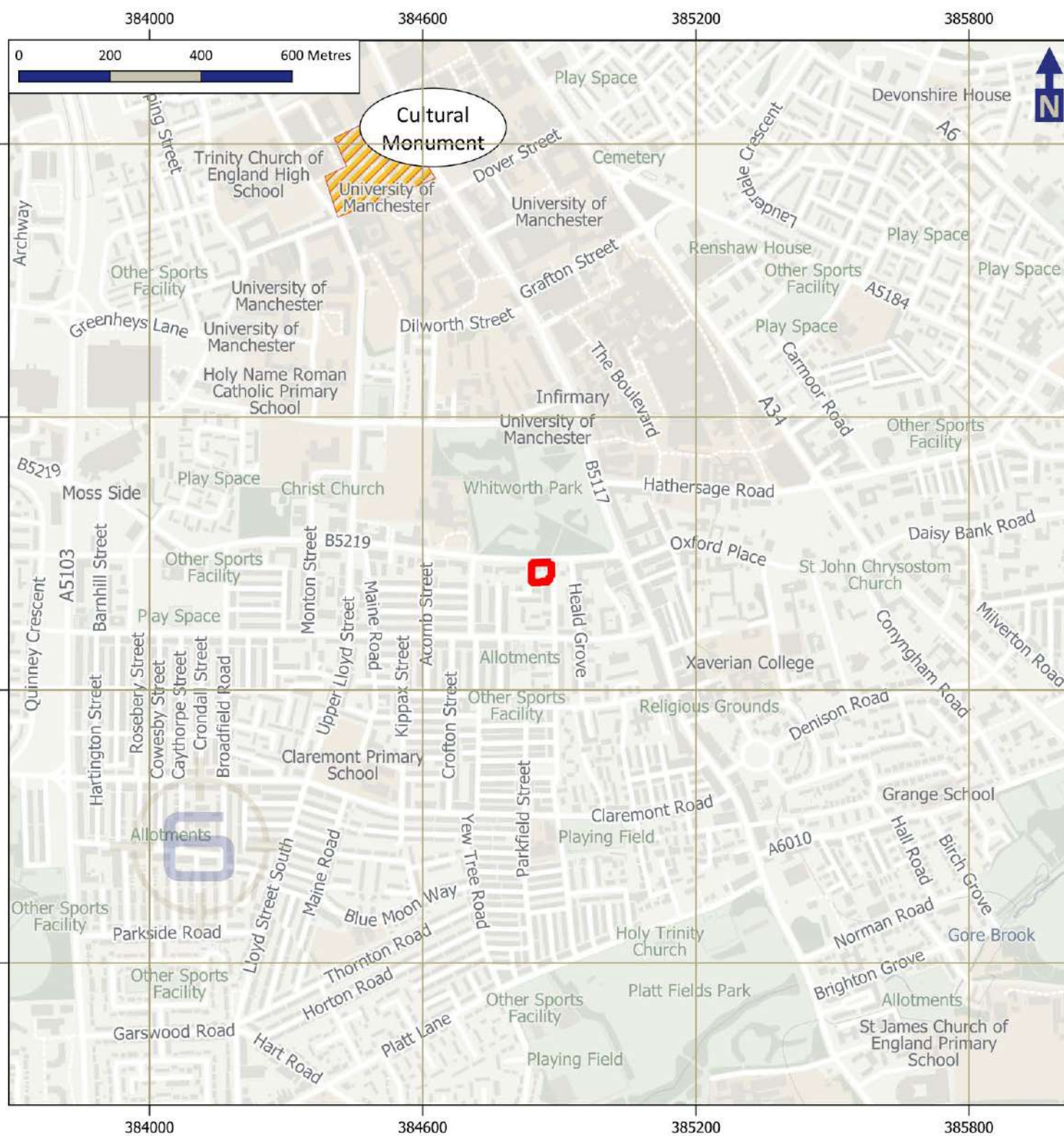
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Appendix 5 – WWII Luftwaffe Bombing Targets



WWII Luftwaffe Bombing Targets



LEGEND

-  Site Boundary
-  Luftwaffe Target



British National Grid

Address

466-472, Moss Lane East, Manchester, M14 4PJ

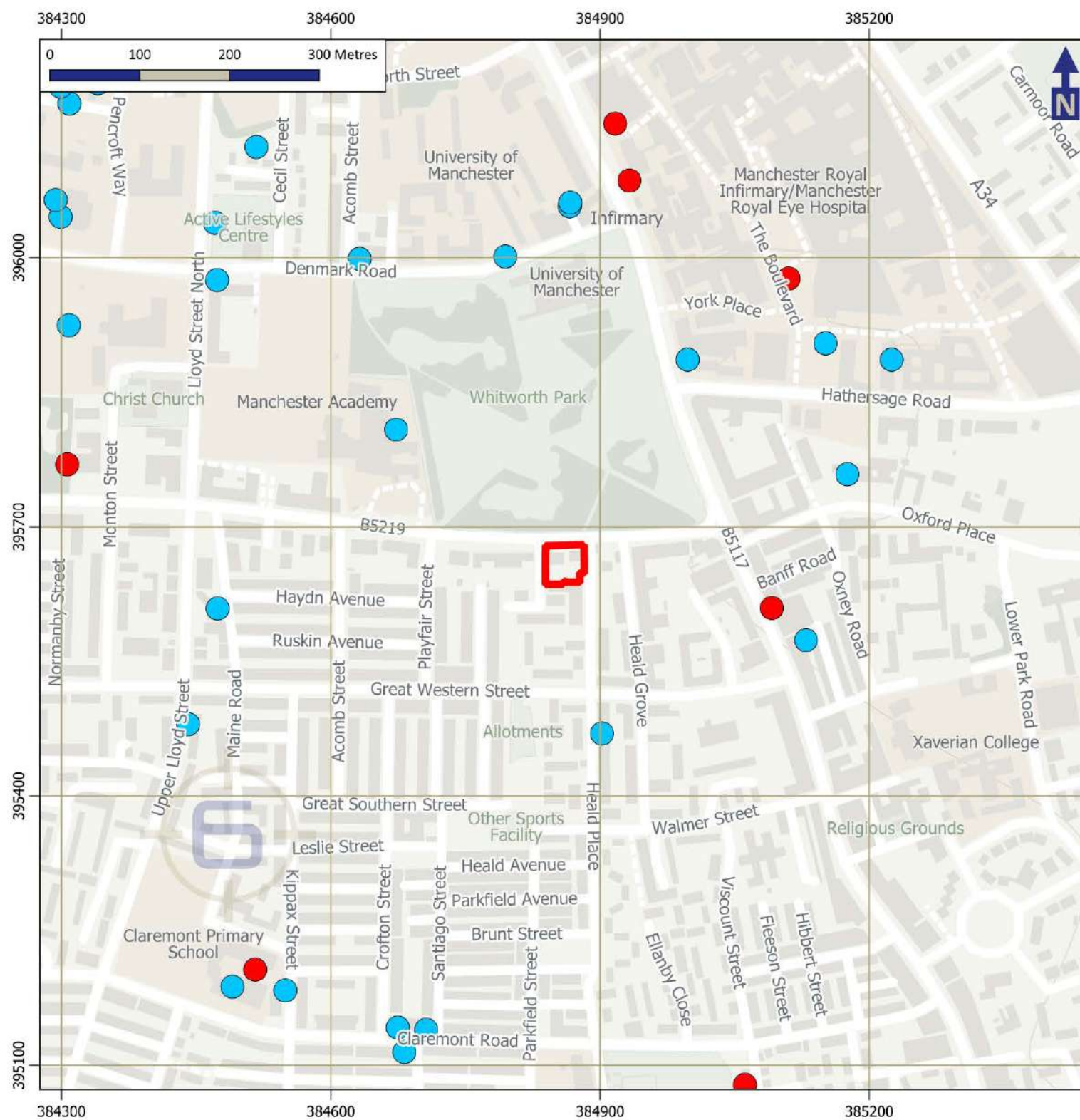
PROJECT NO.	FIGURE	DRAWN	CHECKED	DATE
11024	5	LG	BW	25/01/2024



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WWII Bomb Strikes



LEGEND

Site_Boundary

Consolidated Bomb Strikes

High Explosive Bomb

Incendiary Bomb



British National Grid

Address

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PROJECT NO.	FIGURE	DRAWN	CHECKED	DATE
11024	6	LG	BW	25/01/2024



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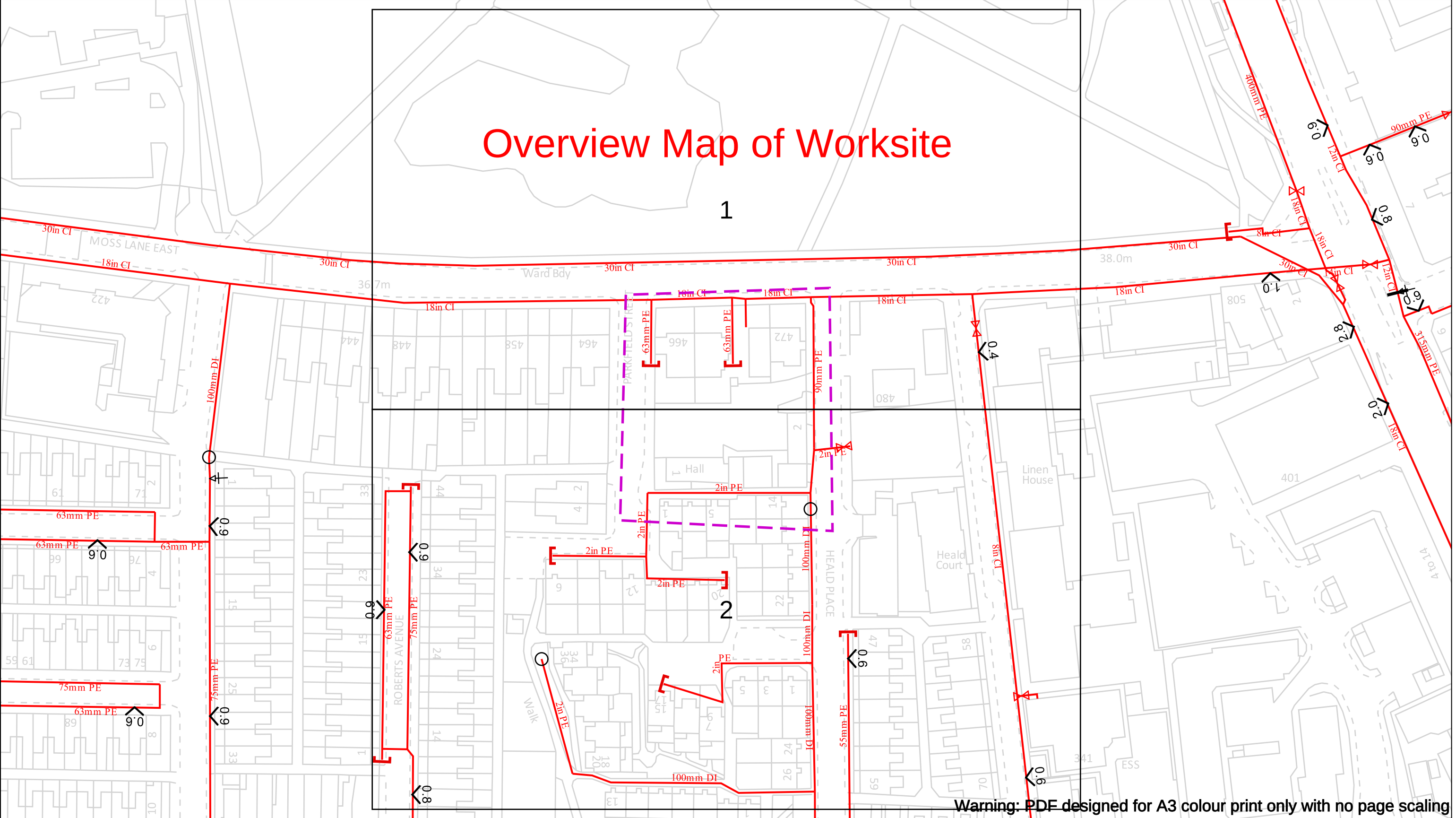
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Appendix 04

Service Information (dated February 2024)



Date Requested: 07/01/2022
Job Reference: 24322753
Site Location: 384860 395650
Requested by:
Mr joe newall
Your Scheme/Reference: 15625

Scale: 1:1025 (When plotted at A3)

View extent: 200m, 115m

IMPORTANT NOTICES

This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

In case of an emergency call 0800 111 999

Dig Sites

- LP Mains
- MP Mains
- IP Mains
- LHP Mains

Area: Line:

Valve

Depth of cover

Syphon

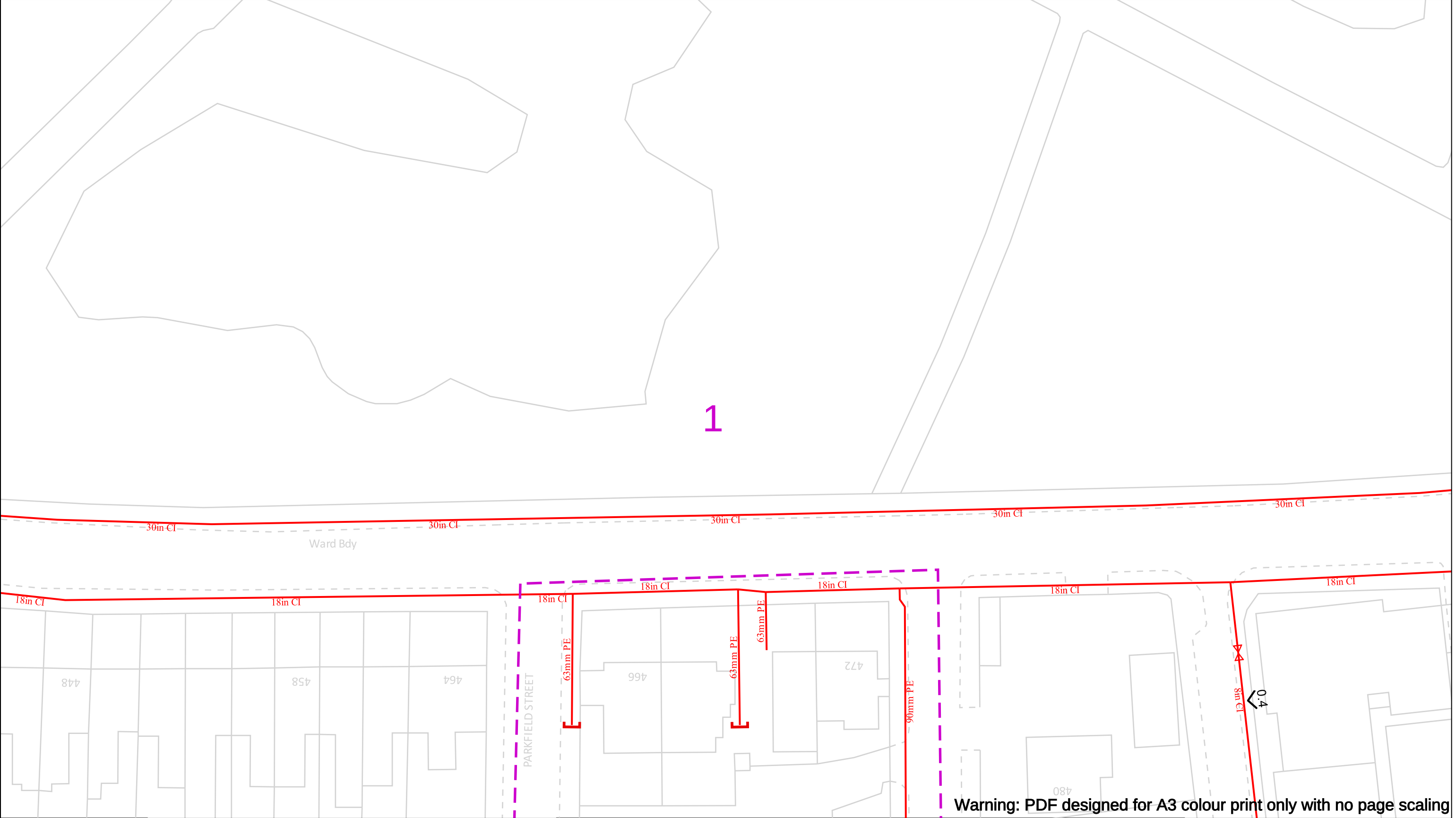
Diameter Change

Material Change

Out of Standard Service

Cadent

Your Gas Network



Warning: PDF designed for A3 colour print only with no page scaling

Date Requested: 07/01/2022
Job Reference: 24322753
Site Location: 384860 395650
Requested by:
Mr joe newall
Your Scheme/Reference: 15625

Scale: 1:500 (When plotted at A3)

View extent: 200m, 115m

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In case of an emergency call 0800 111 999

50m

Dig Sites

	LP Mains
	MP Mains
	IP Mains
	LHP Mains

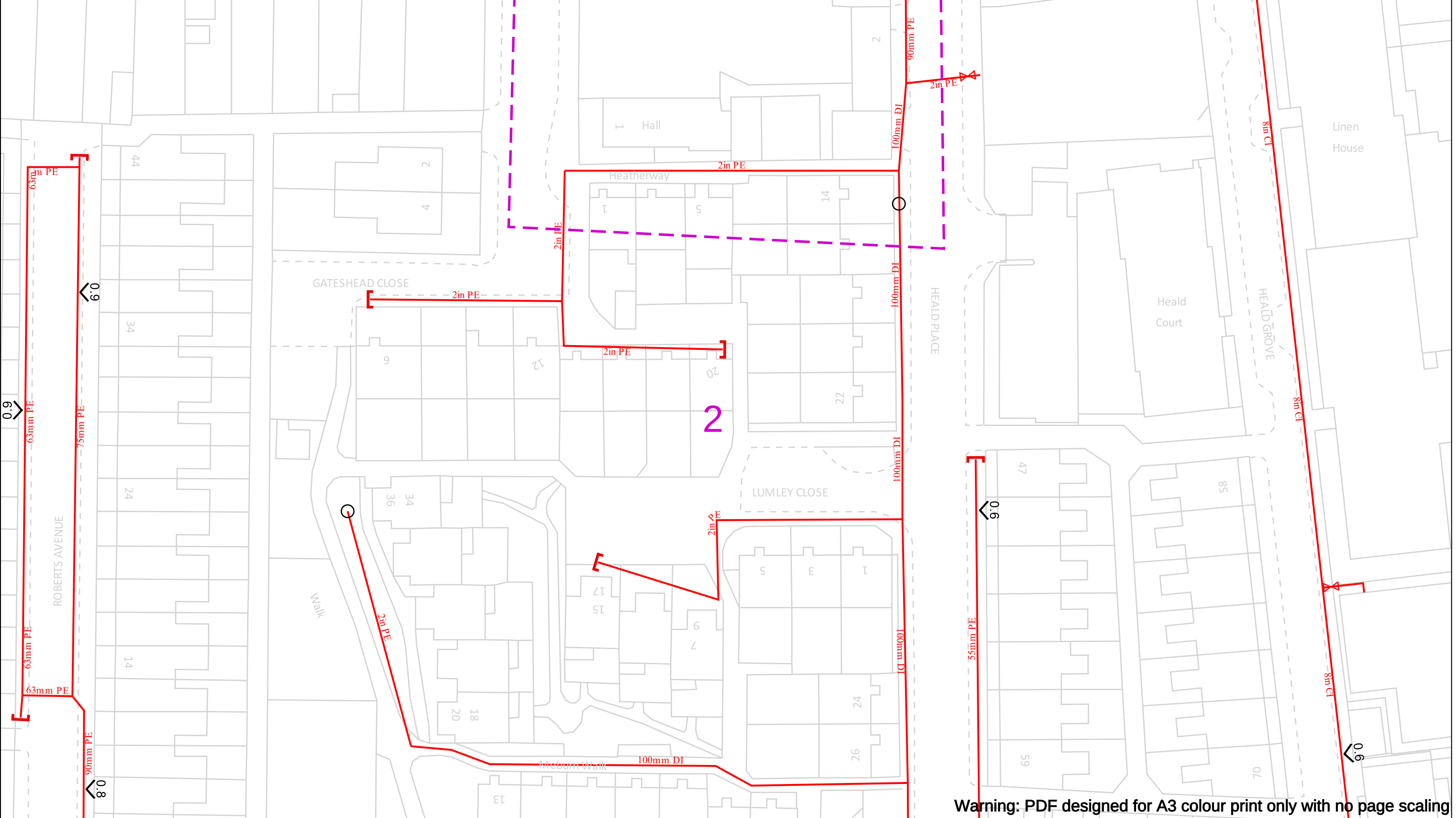
Area:

Line:

	Valve
	Depth of cover
	Syphon
	Diameter Change
	Material Change
	Out of Standard Service

Cadent

Your Gas Network



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Date Requested: 07/01/2022
Job Reference: 24322753
Site Location: 384860 395650
Requested by:
Mr joe newall
Your Scheme/Reference: 15625

Scale: 1:500 (When plotted at A3)

View extent: 200m, 115m

IMPORTANT NOTICES

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In case of an emergency call 0800 111 999

50m

Dig Sites

Area: Line:

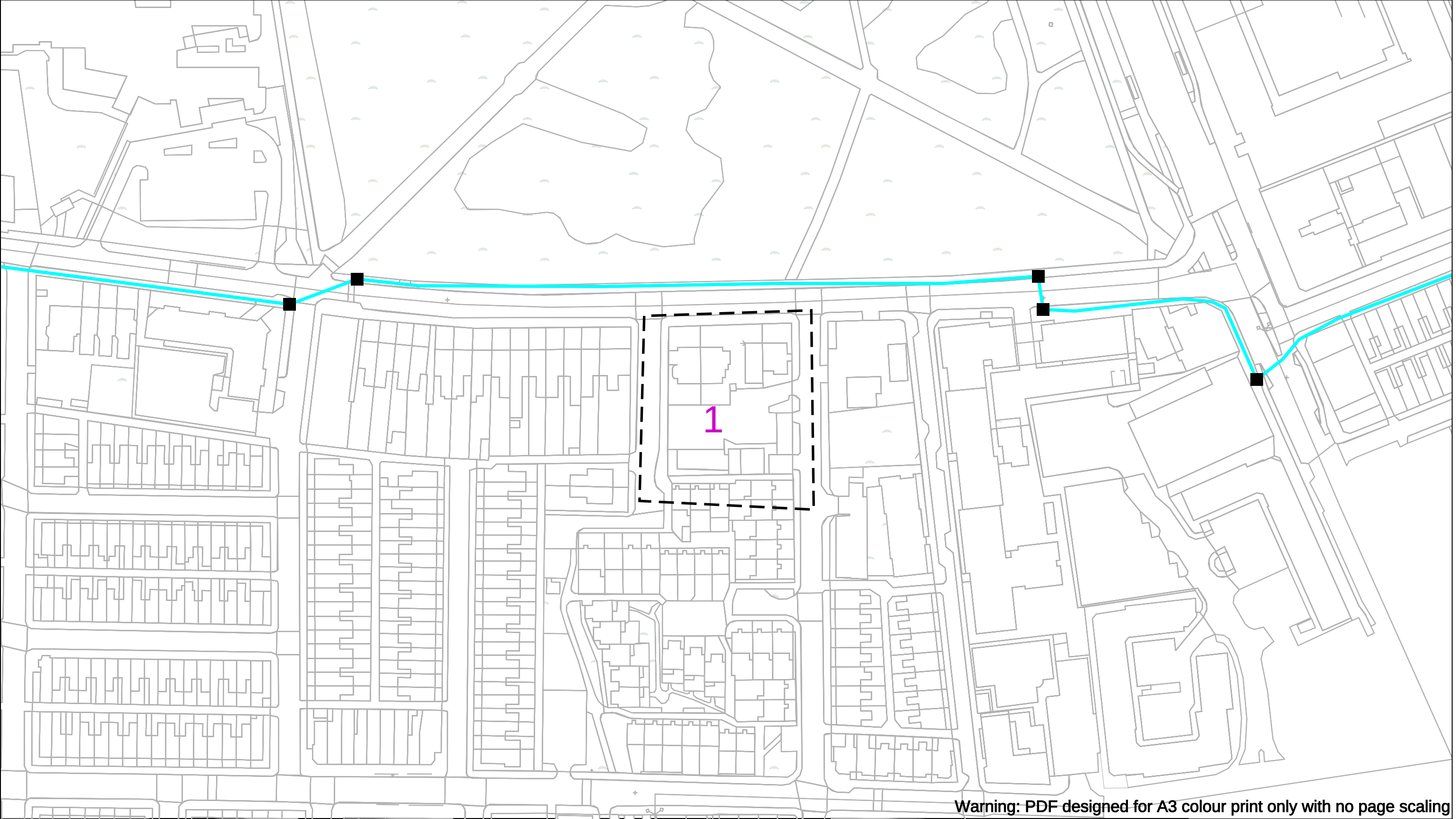
LP Mains
 MP Mains
 IP Mains
 LHP Mains

Valve
 Depth of cover
 Syphon

Diameter Change
 Material Change
 Out of Standard Service

Your Gas Network

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Contact us: planprotection@eunetworks.com	100m	Dig Sites Line: - - - - Area: □ □ □ □	 eunetworks
Date Requested: 07/01/2022 Job Reference: 24322753 Site Location: 384860 395650 Requested by: Mr joe newall Your Scheme/Reference: 15625	Key Duct — Long Haul (LHN) Duct — Chamber Location 		
Scale: 1:1250 (When plotted at A3)	IMPORTANT WARNING The information supplied is given in good faith as a guide to locating underground apparatus. Its accuracy cannot be guaranteed, nor does it include comprehensive information about the existence or location of service pipes or cables to individual premises. The responsibility for locating and avoiding damage to apparatus on site shall be that of the persons proposing to excavate in the street shall be liable to the apparatus owner and any third party who may be affected in any way for any loss or damage caused by their failure to do so. IF IN DOUBT PLEASE ASK! PHONE: 07896 087585		
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Requested by: joe newall
 Company: e3p
 Date Requested: 07/01/2022
 Job Reference: 24322753
 Your Scheme/Reference: 15625

Dig Sites:

Area ---- Line ----

Operating Voltage	Colour Code	Line Colour
132kV	Black	----
33kV	Green	----
22kV-25kV	Yellow	----
11kV	Red	----
6kV-6.6kV	Blue	----
1kV-6kV	Violet	----
LV	Orange	----
Unknown Voltage	Brown	----



Data Management
 Electricity North West
 Linley House
 Dickinson Street
 Manchester, M1 4LF
 Phone: 0800 195 4141
 Email: planrequest@enwl.co.uk

Scales on A4 paper:
 1:1250 Area dig site
 1:250 Line dig site

Unless otherwise indicated the depth of Electricity North West Limited cables are in accordance with NJUG (450mm for Low Voltage & 600mm for 11kV cables) 33kV and 132kV cables are laid at depths as marked. The depth and positions of Electricity North West Limited equipment was accurate as shown when the equipment was installed. However third parties may have altered the level & other reference data. Therefore Electricity North West Limited accept no responsibility for the position of Electricity North West Limited equipment being different from shown. No person, body or company, shall be relieved from liability for damage caused to Electricity North West Limited equipment by reason of being located differently to the indications on this drawing or from any regulatory loss of income or incentive, or expense, which may be suffered by Electricity North West Limited and which is caused or contributed to by any loss of supply as a result of any damage caused to Electricity North West Limited's equipment. Service cables are not necessarily shown but must be assumed to exist to all premises, streetlights and signs. There may be other Electricity North West Limited apparatus in the vicinity which is not indicated on the cable records. Other apparatus may also be present which is owned by a third party other than Electricity North West Limited.

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Reference should be made to HSE Guidance, HS(G)47 "Avoiding Danger from Underground Services" and GS6 "Avoidance of Danger from Overhead Power Lines".

Electricity North West Limited 304 Bridgewater Place, Birchwood Park, Warrington WA3 6XG. Registered in England and Wales. Registered No 02366949

PROJECT DETAIL

Name & Address: 466-468 Moss Lane East, Manchester M14 4, M14 4PJ

Scheme Ref Number: 5500238103A

Drawn By: Graham Britton

Date: 06/07/2022

Grid Reference: (X) 384868
(Y) 395667

Scale: N.T.S

POINT OF CONNECTION TECHNICAL DETAIL

Cable Size @ P.O.C : 300 SAC XLPE

Voltage : 6600 volts

Loop or Teed (HV only): Looped

Primary Substation: FALLOWFIELD - 100114

Feeder Name / No : F1915 PLATT CT

Point of Connection: Looped connection between
Ropemaker Court 178537 & Gt
western St 178210

Transformer Size : kVA

Fuse Size : Amps

Earth Loop Impedance : ohms

% Voltage Drop

1) Including site load %

2) excluding site Load %

Generation:

Voltage Rise relative to
primary BB : %

Positive sequence R+JX (%
on 100MVA base)

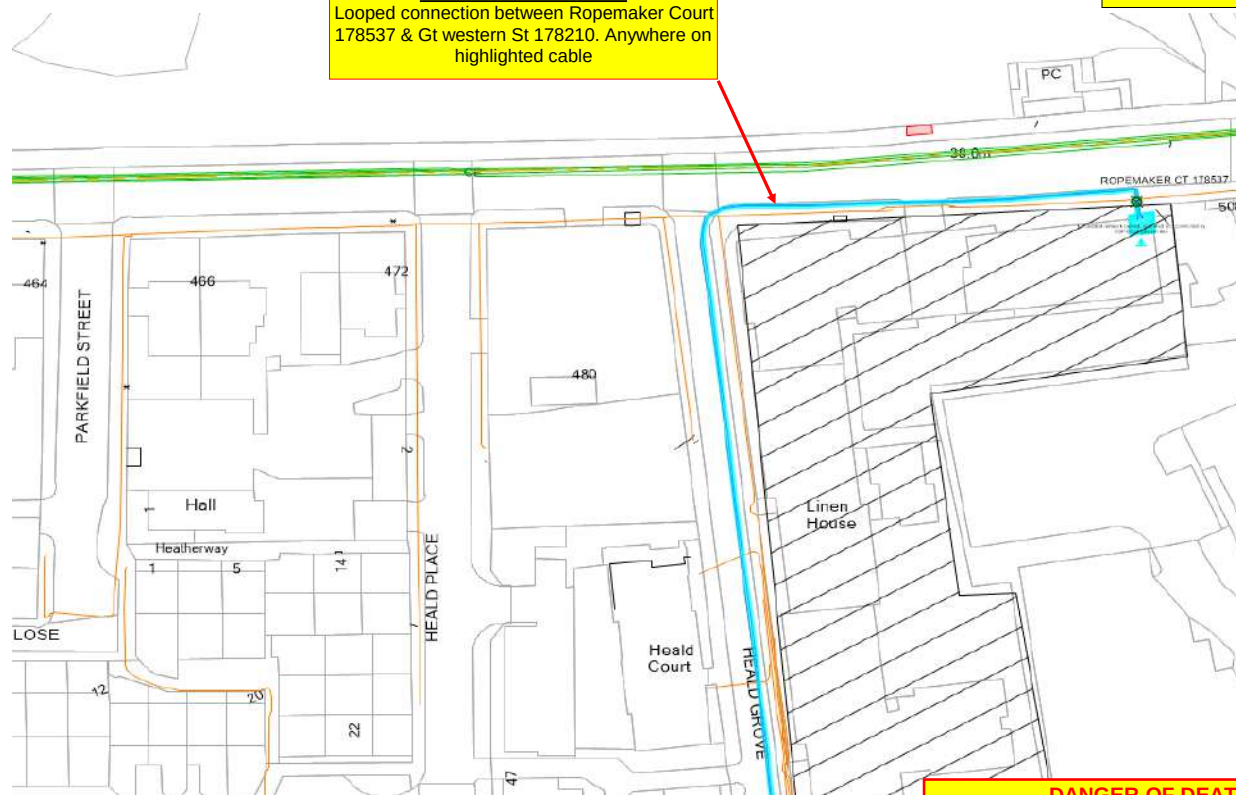
Notes :

For reference only

HV Point Of Connection

Looped connection between Ropemaker Court
178537 & Gt western St 178210. Anywhere on
highlighted cable

For Planning Purpose Only



DANGER OF DEATH

ALL EXCAVATION TO COMPLY WITH THE HEALTH &
SAFETY EXECUTIVE GUIDE (HSG47)
"AVOIDING DANGER FROM UNDERGROUND SERVICES"
AND (HSG6), "AVOIDING DANGER FROM OVERHEAD
POWER LINES". AT ALL TIMES TAKING INTO ACCOUNT
THAT OTHER PLANT MAY BE IN THE VICINITY WHICH IS
NOT SHOWN ON OUR PLANS.

"DANGER"
HIGH VOLTAGE CABLES PRESENT
EXPOSE ALL CABLES BEFORE
JOINTING

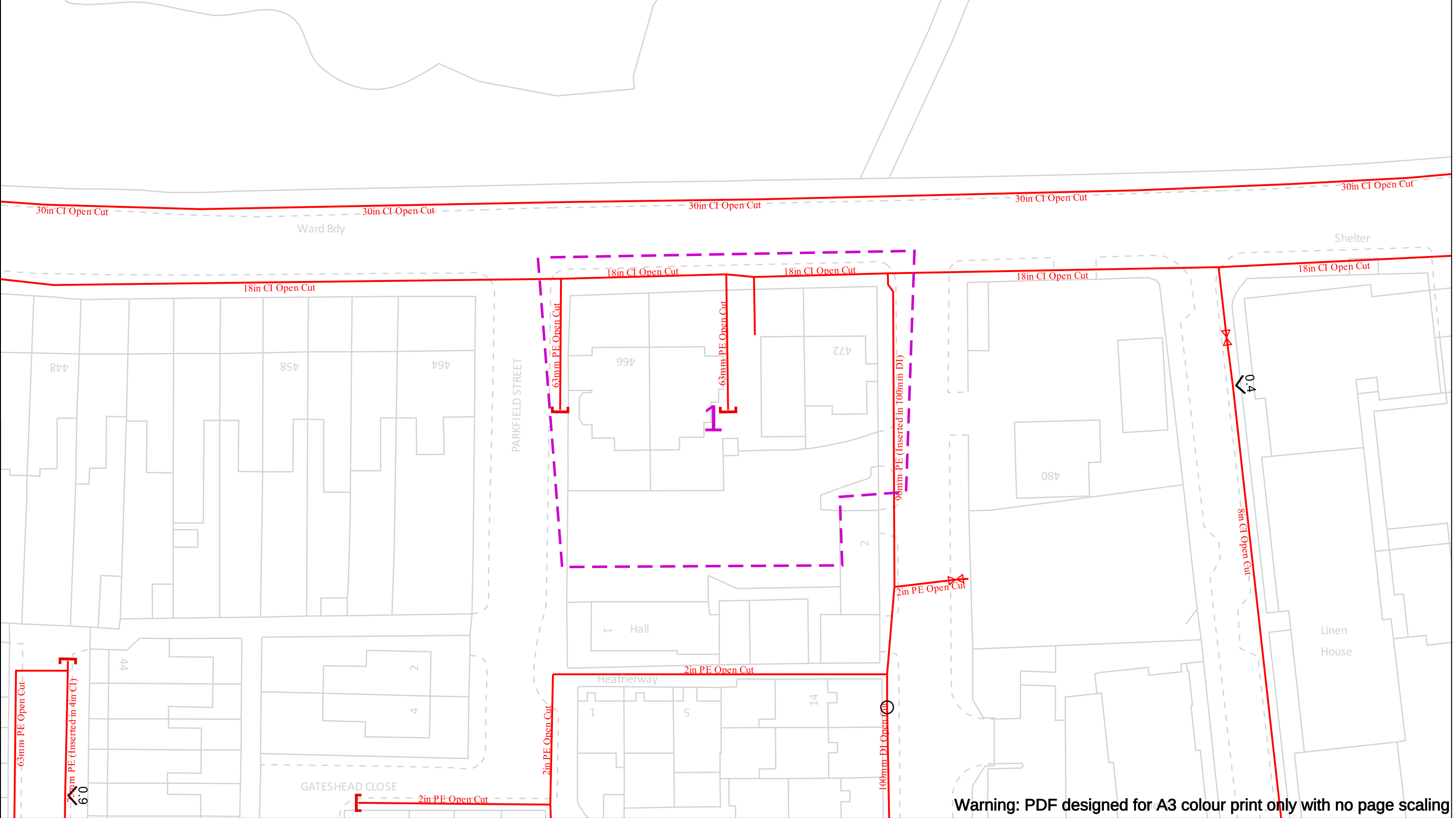
Network Configuration for Earthing Studies The proposed substation is on the 1st leg of the primary substation or within 500m of the primary substation.

	Primary Substation	Primary EPR (v) & Resistance (ohms)	Feeder Name/No	Normally Open Point (NOP) position
System Normal:	Fallowfield	430 & 0.1 (assumed values)	Boland Rd 179128	
System Abnormal 1:				
System Abnormal 2:				
System Abnormal 3:				
System Abnormal 4:				
System Abnormal 5:				

This plan is issued by Electricity North West Limited. Unless otherwise indicated Electricity North West Limited cables are laid at depths in accordance with NJUG 2 (typically 450mm for Low Voltage & 600mm for 11KV cables in footpath). 33KV/132KV cables are laid at depths as marked. The depths and positions of Electricity North West Limited equipment was accurate as shown when the equipment was installed. However, third parties may have altered the surface level & other reference data. Therefore Electricity North West Limited accept no responsibility for the position of Electricity North West Limited equipment being different from that shown. No person, body or company, shall be relieved from liability for damage caused to Electricity North West Limited equipment by reason of being located differently to the indications on this drawing. Service cables are not necessarily shown but must be assumed to exist to all premises, streetlights and signs. There may be other Electricity North West Limited apparatus in the vicinity which is not indicated in the cable records.

Other apparatus may also be present which is owned by a third party other than Electricity North West Limited. Reproduced from or based upon Ordnance Survey's map with permission of the controller of Her Majesty's Stationery Office. Crown Copyright Reserved. LICENCE No 100017892. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Reference should be made to HSE guidance HS(G)47 "Avoiding Danger from Underground Services" and GS6 "Avoidance of Danger from Overhead Power Lines". Electricity North West Limited, registered number 2366949, registered in England and Wales, registered office: 304 Bridgewater Place, Birchwood Park, Warrington, WA3 6XG

The network configuration for Earthing Studies detail is based on the status of the network at the time of the initial study. Please note that our distribution network is dynamic, therefore the detail on this drawing may have changed once you commence your earthing study. You must check the network configuration at the time of your earthing study to ensure the information you are providing is accurate and eligible.



Warning: PDF designed for A3 colour print only with no page scaling

Date Requested: 23/02/2024
Job Reference: 32566655
Site Location: 384877 395651
Requested by:
Miss Linda McDougall
Your Scheme/Reference: Moss Lane East

Scale: 1:500 (When plotted at A3)

View extent: 200m, 115m

IMPORTANT NOTICES

This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. Safe digging practices, in accordance with H5(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

In case of an emergency call 0800 111 999

Dig Sites

—

LP Mains

- - -

MP Mains

- - -

IP Mains

- - -

LHP Mains

⋈

Valve

∨

Depth of cover

○

Syphon

⚡

Area:

- - - -

⚡

Line:

- - - -

⚡

Diameter Change

⚡

Material Change

⚡

Out of Standard Service

Where an out-of-standard service is present please contact plant protection 0800 688 588 for further information. Out-of-standard service symbology may be used to indicate one or more of the following:

• Identification of shallow services

• Identification of dual services

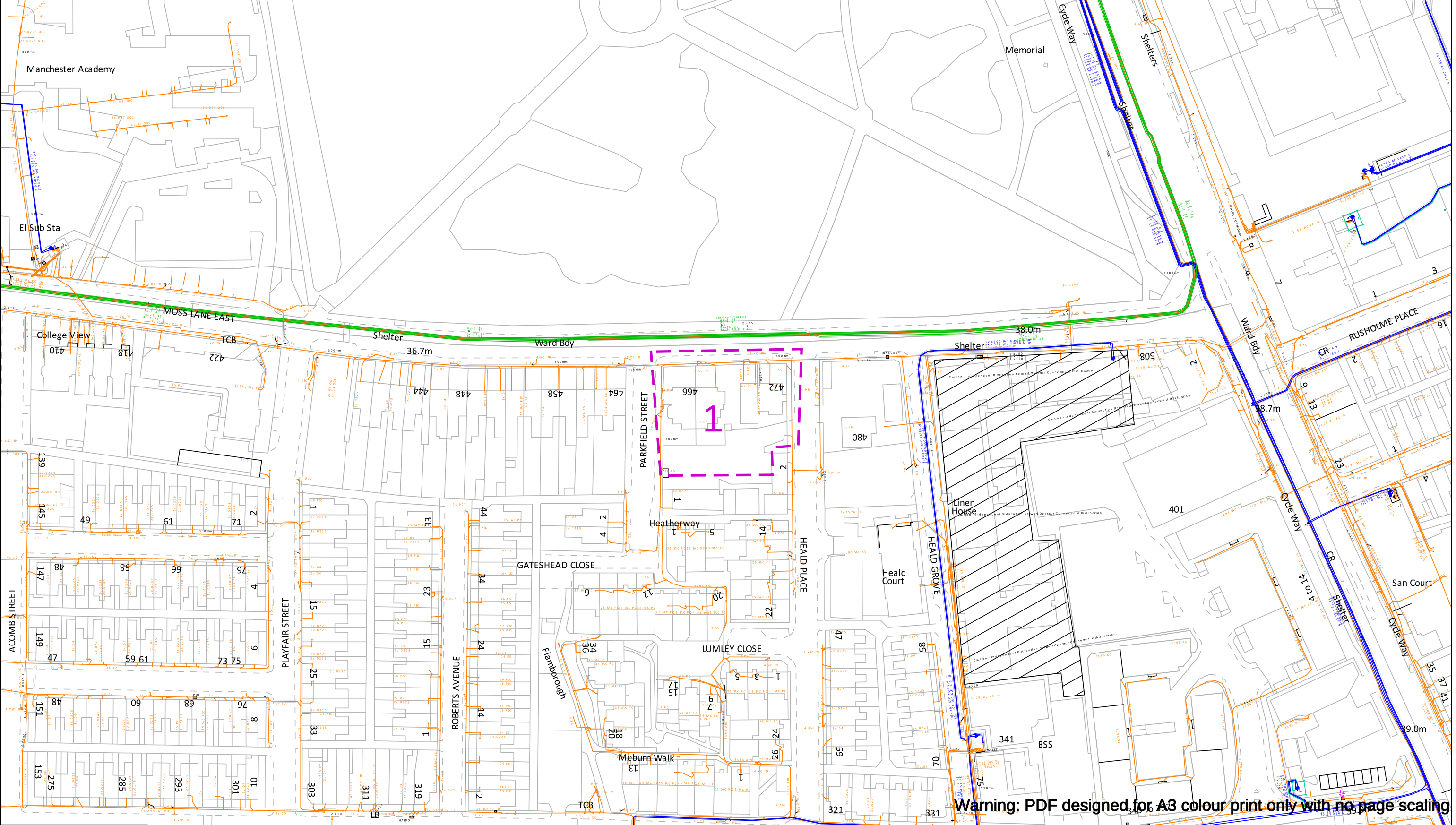
• Recording of non-perpendicular services

A perpendicular service/connection is laid in a straight line from the entry point at the property to the connection at the main – this includes a pipe that has a perpendicular connection and is not straight but does not deviate more than 1m off centre line.

Cadent

Your Gas Network

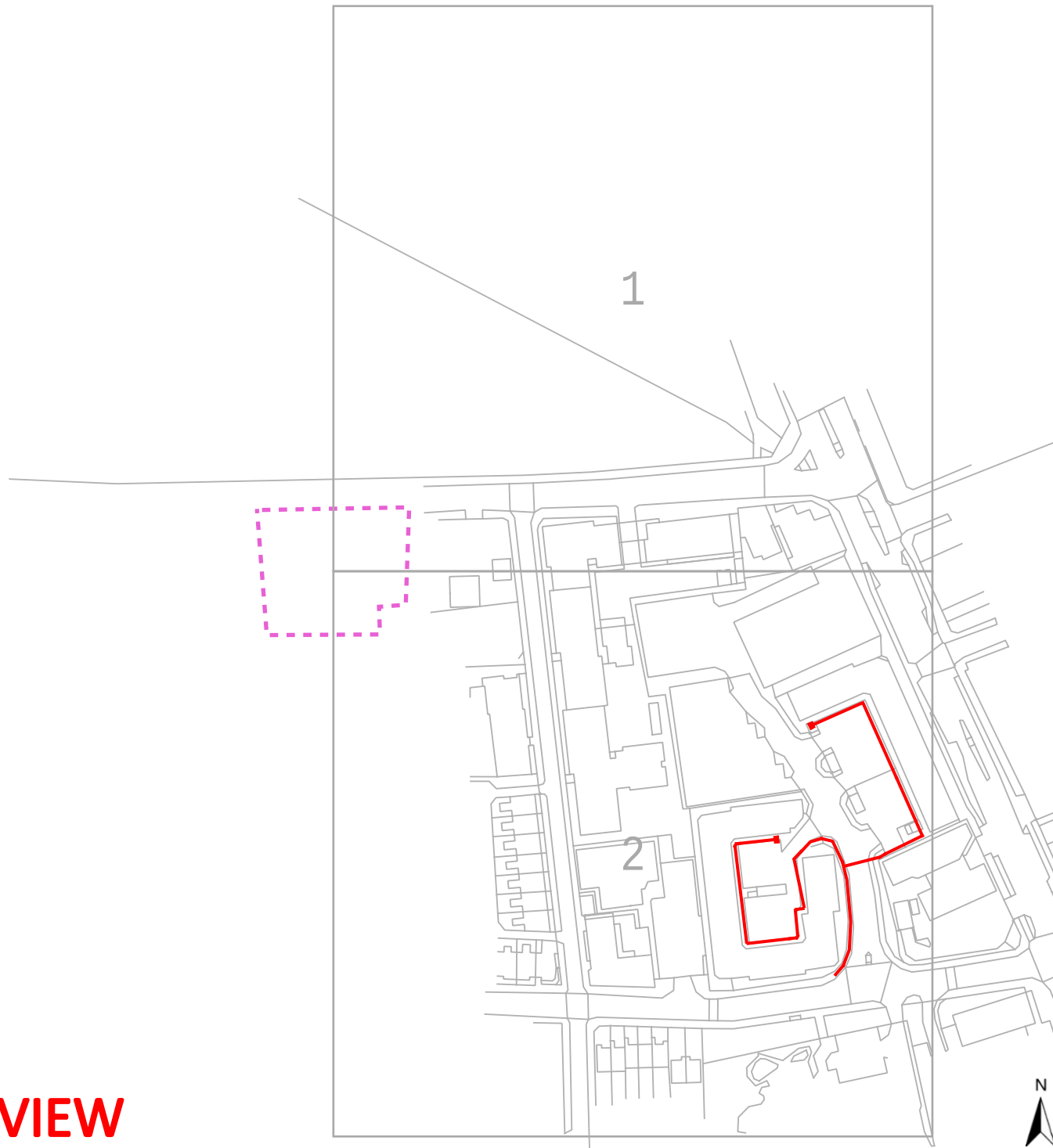
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In an emergency call 105, 24 hours a day	IMPORTANT INFO Unless otherwise indicated the depth of Electricity North West Limited cables are in accordance with NJUG (450mm for Low Voltage & 600mm for 11kV cables) 33kV and 132kV cables are laid at depths as marked. The depth and positions of Electricity North West Limited equipment was accurate as shown when the equipment was installed. However third parties may have altered the level & other reference data. Therefore Electricity North West Limited accept no responsibility for the position of Electricity North West Limited equipment being different from shown. No person, body or company, shall be relieved from liability for damage caused to Electricity North West Limited equipment by reason of being located differently to the indications on this drawing or from any regulatory loss of income or incentive, or expense, which may be suffered by Electricity North West Limited and which is caused or contributed to by any loss of supply as a result of any damage caused to Electricity North West Limited's equipment. Service cables are not necessarily shown but must be assumed to exist to all premises, streetlights and signs. There may be other Electricity North West Limited apparatus in the vicinity which is not indicated on the cable records. Other apparatus may also be present which is owned by a third party other than Electricity North West Limited. Reference should be made to HSE Guidance, HS(G)47 "Avoiding Danger from Underground Services" and GS6 "Avoiding Danger from Overhead Power Lines". Electricity North West Limited, Borron Street, Portwood, Stockport, Cheshire, SK1 2JD Registered in England and Wales. Registered No 02366949	<table><tr><th>Operating Voltage</th><th>Colour Code</th><th>Line Colour</th></tr><tr><td>132kV</td><td>Black</td><td> </td></tr><tr><td>33kV</td><td>Green</td><td> </td></tr><tr><td>22kV-25kV</td><td>Yellow</td><td> </td></tr><tr><td>11kV</td><td>Red</td><td> </td></tr><tr><td>6kV-6.6kV</td><td>Blue</td><td> </td></tr><tr><td>1kV-6kV</td><td>Violet</td><td> </td></tr><tr><td>LV</td><td>Orange</td><td> </td></tr><tr><td>Unknown Voltage</td><td>Brown</td><td> </td></tr></table>	Operating Voltage	Colour Code	Line Colour	132kV	Black		33kV	Green		22kV-25kV	Yellow		11kV	Red		6kV-6.6kV	Blue		1kV-6kV	Violet		LV	Orange		Unknown Voltage	Brown		<table><tr><th>Dig Sites</th></tr><tr><td>Area: </td></tr><tr><td>Line: </td></tr></table>	Dig Sites	Area:	Line:	 Electricity North West Borron Street Portwood, Stockport Cheshire, SK1 2 JD Phone: 0800 195 4141 Email: planrequest@enwl.co.uk
Operating Voltage	Colour Code	Line Colour																																
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Unknown Voltage	Brown																																	
Dig Sites																																		
Area:																																		
Line:																																		

OVERVIEW



ESP Utilities Group Ltd
Bluebird House
Mole Business Park
Leatherhead
Surrey
KT22 7BA
Phone: 01372 587500
Email:
PlantResponses@espug.com



Legend

-  Existing LP mains or services operating up to 75 millibar gauge
-  Existing MP mains or services operating between 75 millibar and 2 bar gauge
-  Existing IP mains or services operating between 2 bar and 7 bar gauge
-  Digsite

Date requested: 23 Feb 2024
Requested by: Miss Linda McDougall
Company: Woodburn Utilities Ltd
Job reference: 32566655
Your reference: Moss Lane East

Scale on A4 paper: 1:2050

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Protecting Lives, Cables & Pipes



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ESP Utilities Group Ltd
Bluebird House
Mole Business Park
Leatherhead
Surrey
KT22 7BA
Phone: 01372 587500
Email:
PlantResponses@espug.com



Legend

-  Existing LP mains or services operating up to 75 millibar gauge
-  Existing MP mains or services operating between 75 millibar and 2 bar gauge
-  Existing IP mains or services operating between 2 bar and 7 bar gauge
-  Digsite

Date requested: 23 Feb 2024
Requested by: Miss Linda McDougall
Company: Woodburn Utilities Ltd
Job reference: 32566655
Your reference: Moss Lane East

Scale on A4 paper: 1:1000

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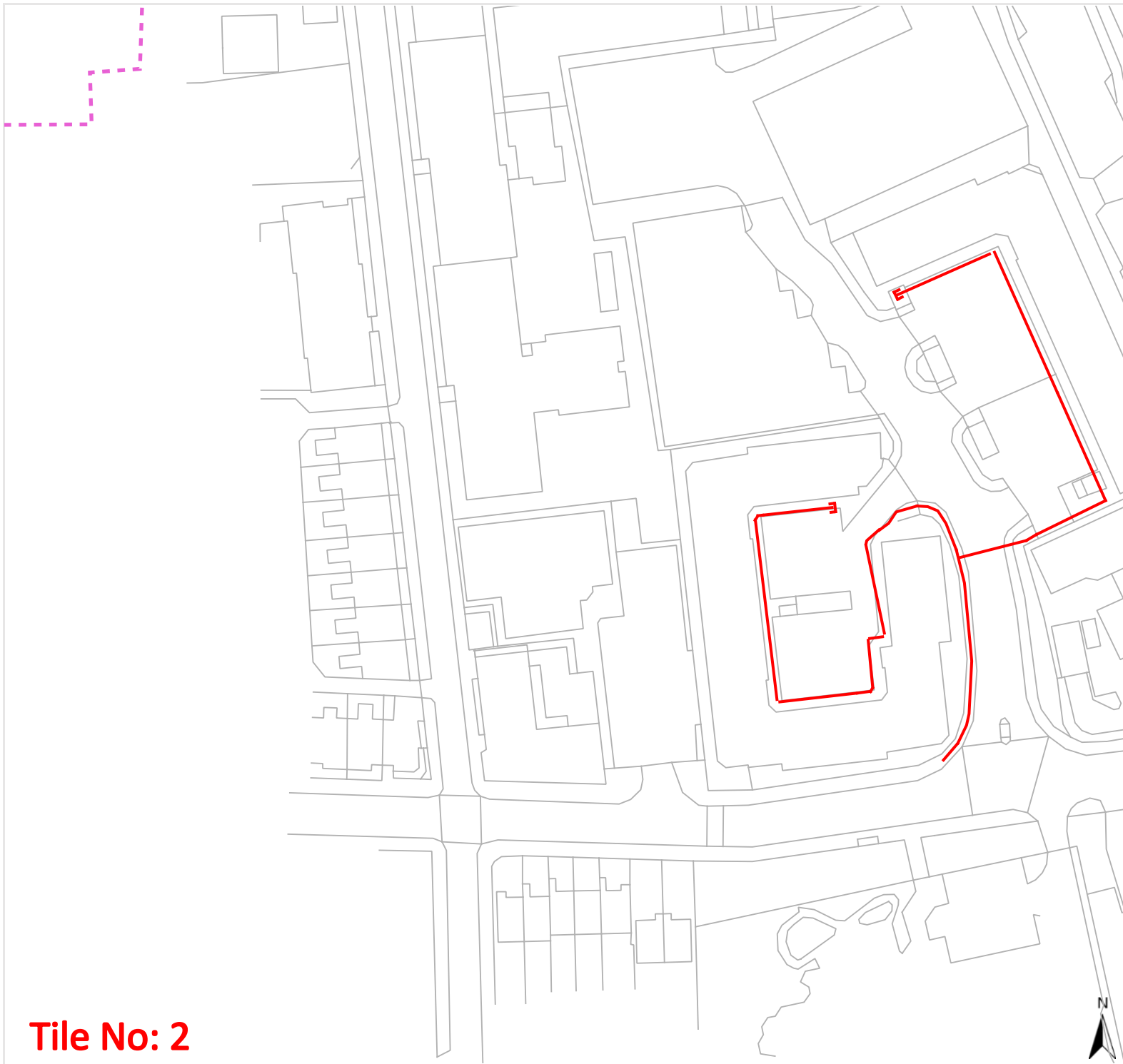
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Protecting Lives, Cables & Pipes

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Tile No: 1



ESP Utilities Group Ltd
Bluebird House
Mole Business Park
Leatherhead
Surrey
KT22 7BA
Phone: 01372 587500
Email:
PlantResponses@espug.com



Legend

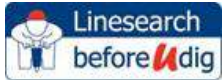
-  Existing LP mains or services operating up to 75 millibar gauge
-  Existing MP mains or services operating between 75 millibar and 2 bar gauge
-  Existing IP mains or services operating between 2 bar and 7 bar gauge
-  Digsite

Date requested: 23 Feb 2024
Requested by: Miss Linda McDougall
Company: Woodburn Utilities Ltd
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Your reference: Moss Lane East

Scale on A4 paper: 1:1000

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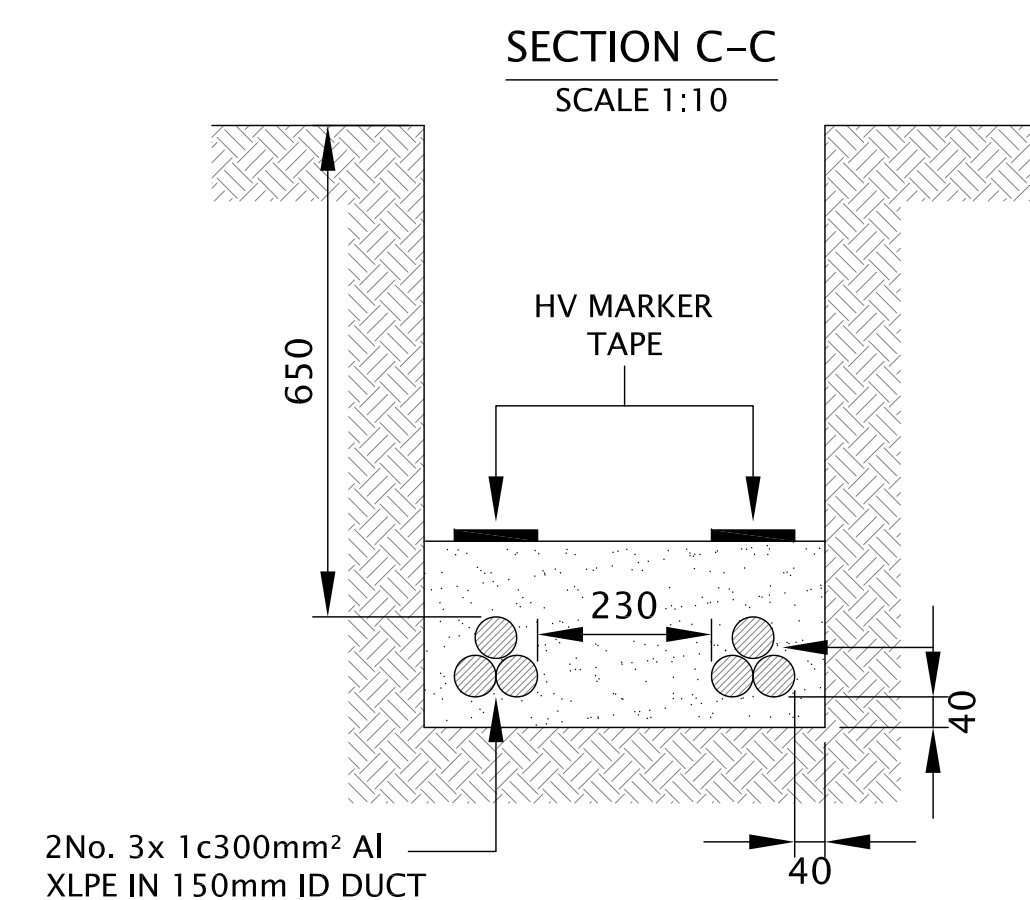
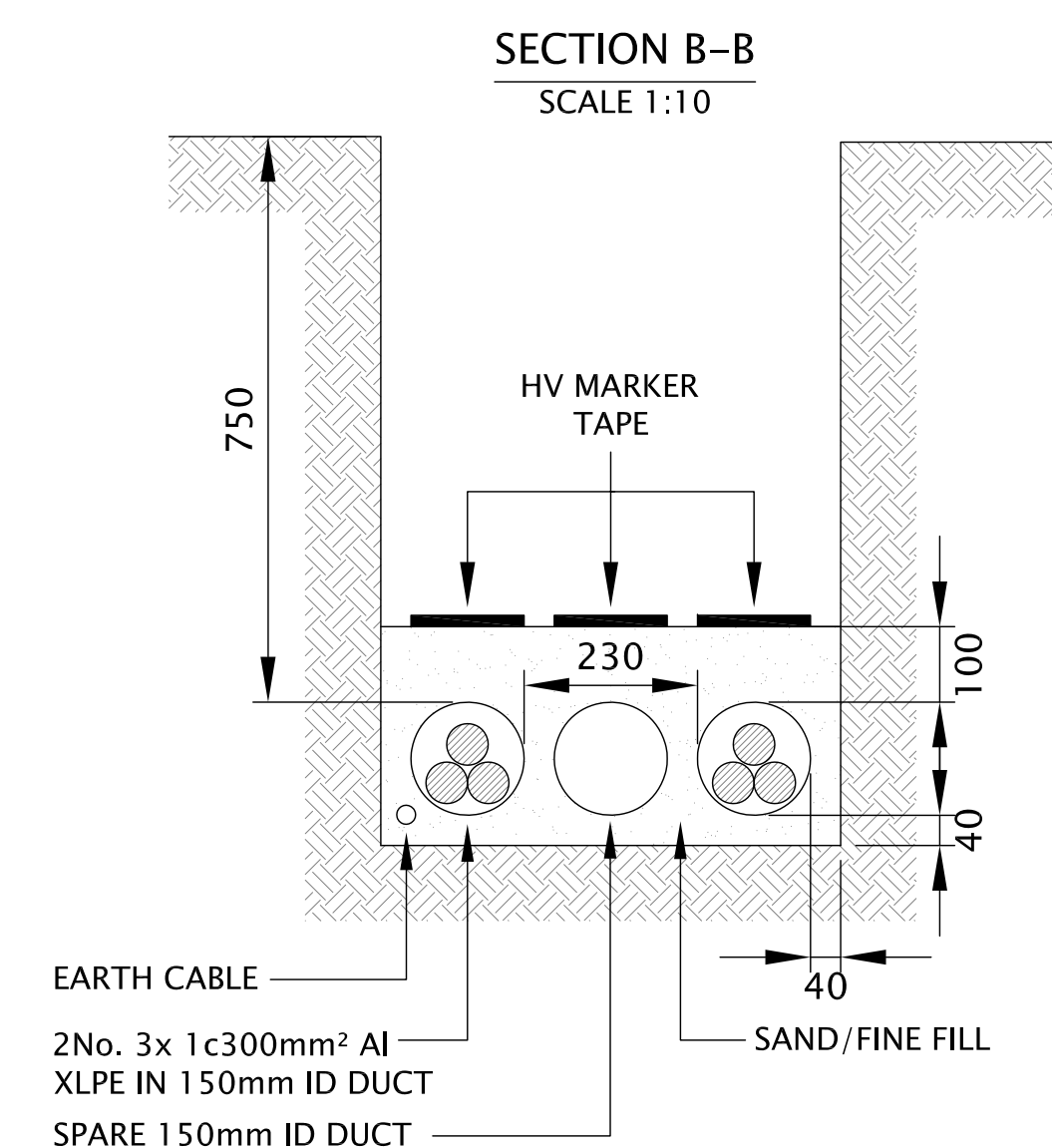
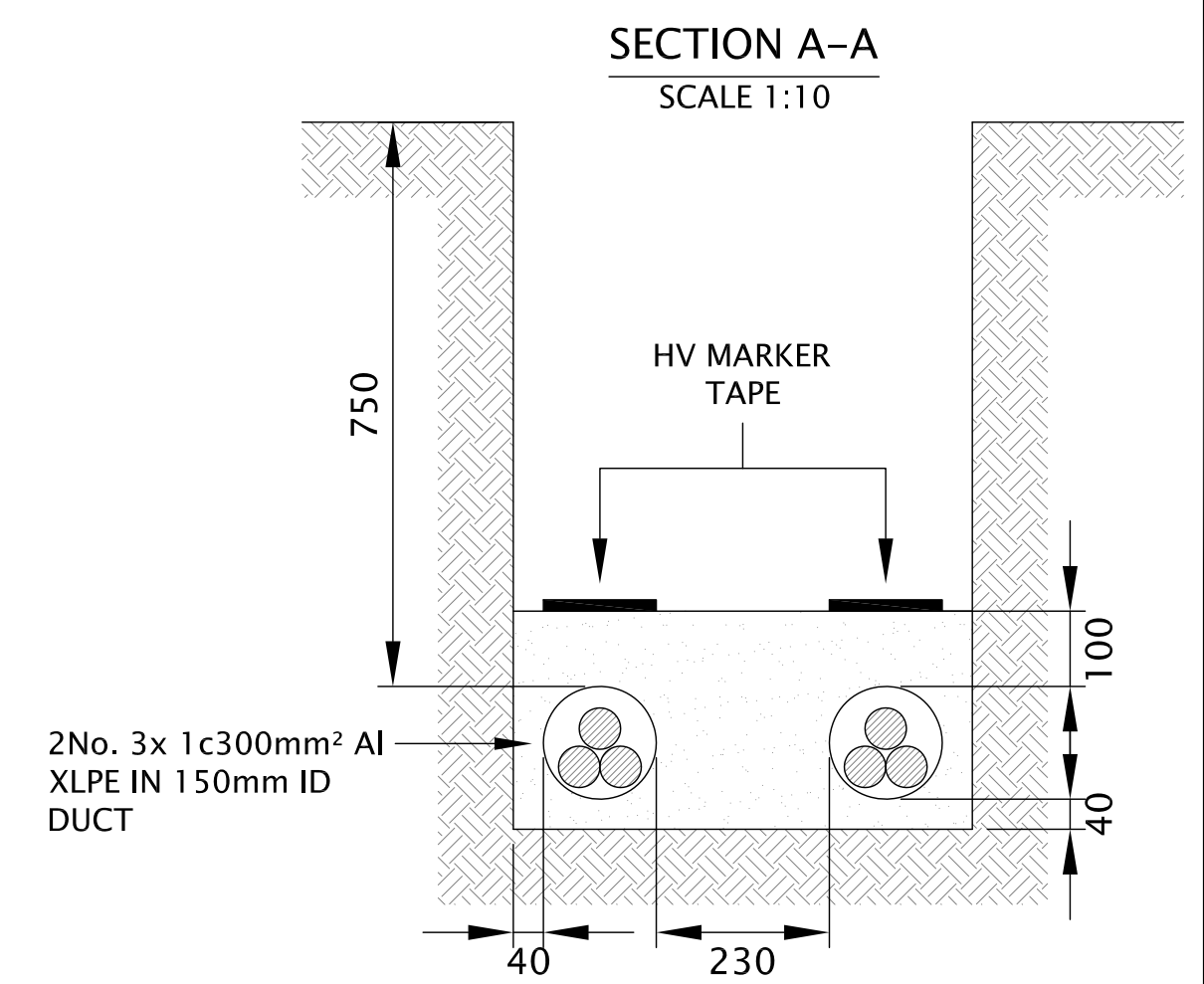
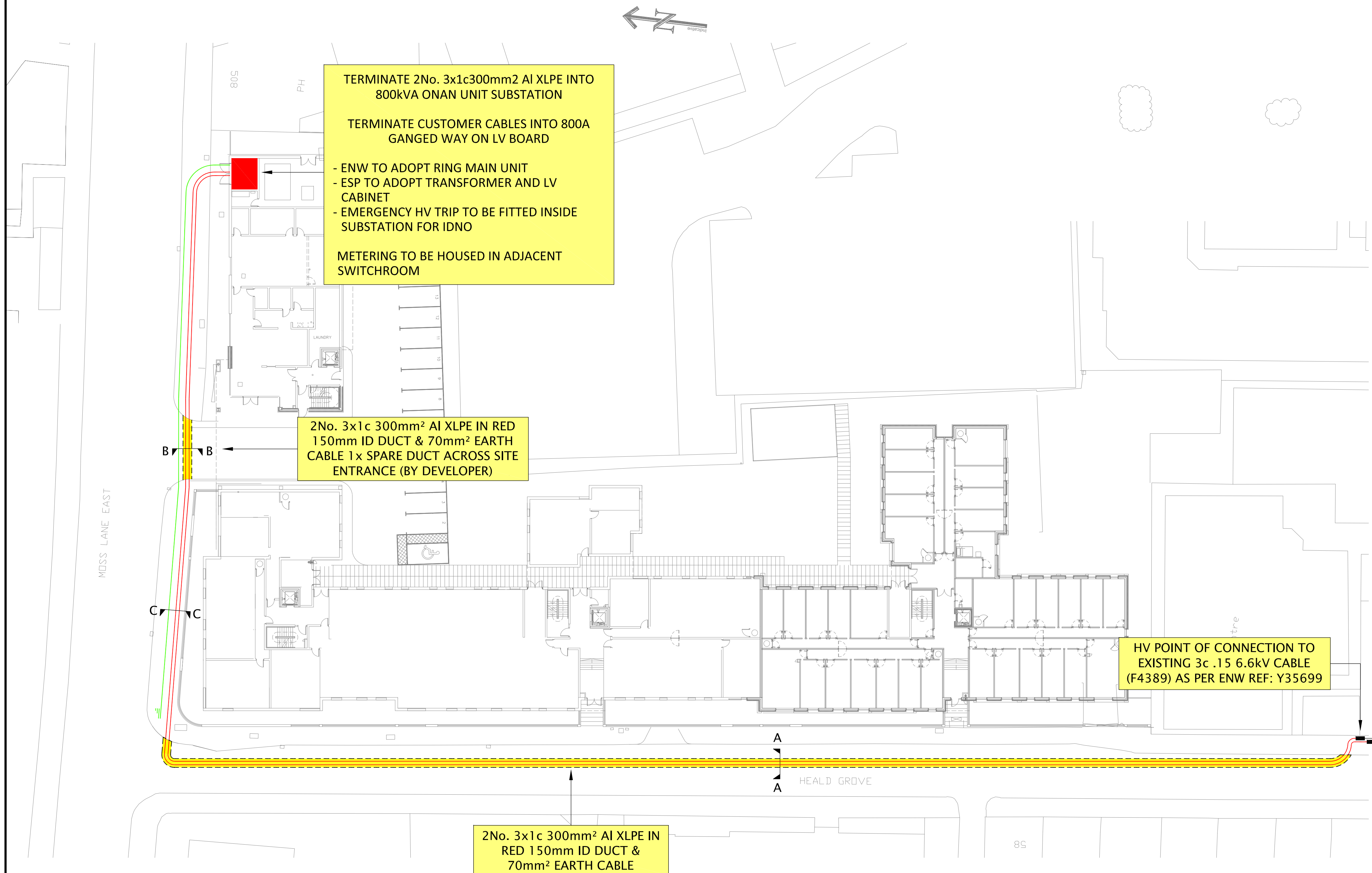


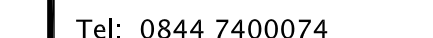
Protecting Lives, Cables & Pipes

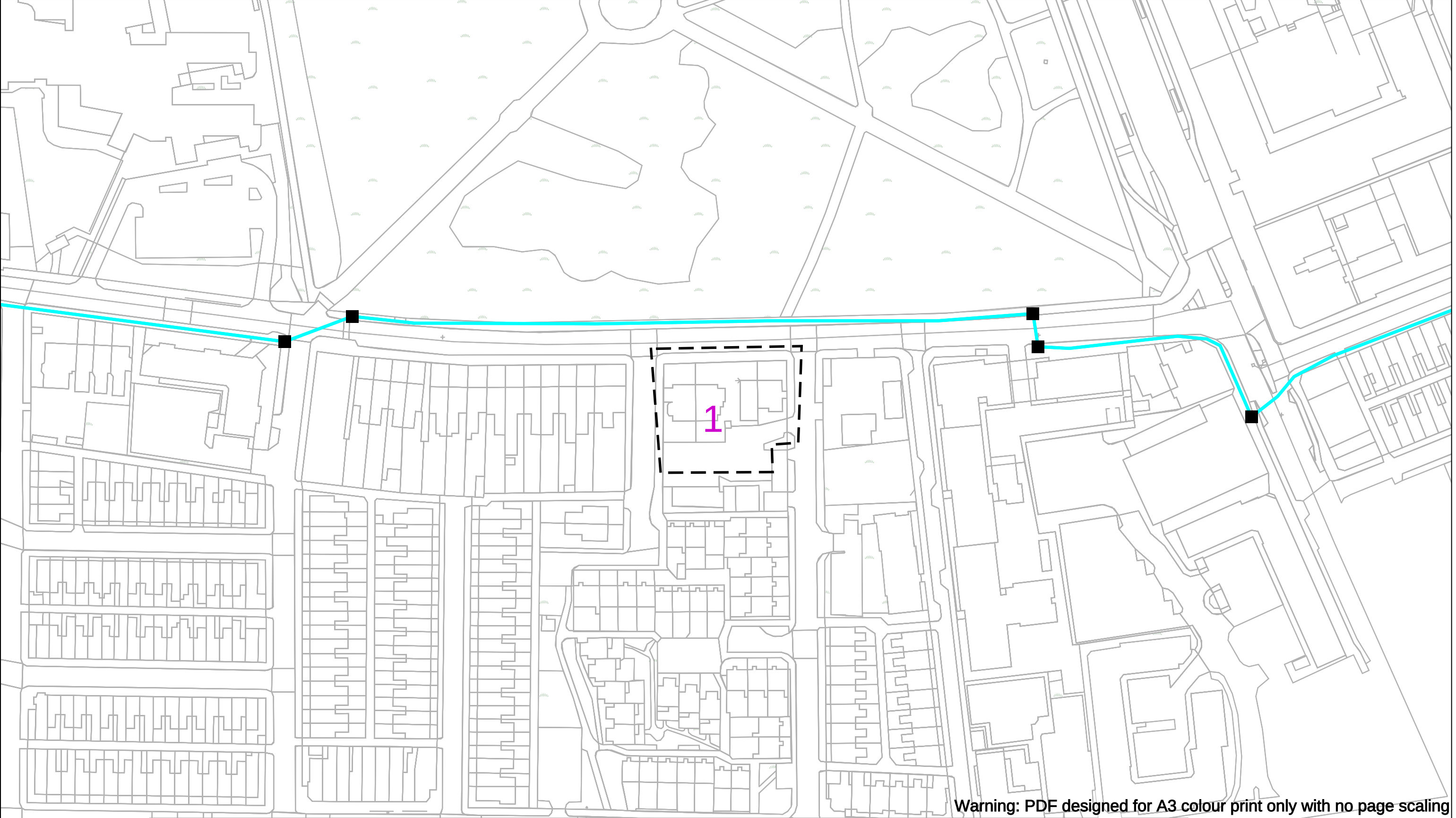
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Tile No: 2

NOTE: NETWORK IS 6.6kV



Rev	Date	Drn	Chkd	App	Rev	Date	Drn	Chkd	App	Rev	Date	Drn	Chkd	App	Rev	Date	Drn	Chkd	App	Rev	Date	Drn	Chkd	App						
																					Matrix Networks Limited Commonside Business Court, Daresbury Lane, Daresbury, Warrington, WA4 4FT Tel: 0844 7400074 Fax: 0844 7400075	Title					MOSS LANE, EAST MANCHESTER ELECTRICAL DESIGN PROPOSAL			
																						Drawing Number		MN208355-DD-002		Scale		1:250	⊙ A1	Rev
																										Scale		1:500	⊙ A3	-



Warning: PDF designed for A3 colour print only with no page scaling

Contact us: planprotection@eunetworks.com	100m	Dig Sites Line: - - - - Area: □ □ □ □	 eunetworks
Date Requested: 26/02/2024 Job Reference: 32566655 Site Location: 384877 395651 Requested by: Miss Linda McDougall Your Scheme/Reference: Moss Lane East	Key Duct — Long Haul (LHN) Duct — Chamber Location 		
Scale: 1:1250 (When plotted at A3)	IMPORTANT WARNING The information supplied is given in good faith as a guide to locating underground apparatus. Its accuracy cannot be guaranteed, nor does it include comprehensive information about the existence or location of service pipes or cables to individual premises. The responsibility for locating and avoiding damage to apparatus on site shall be that of the persons proposing to excavate in the street shall be liable to the apparatus owner and any third party who may be affected in any way for any loss or damage caused by their failure to do so. IF IN DOUBT PLEASE ASK! PHONE: 07896 087585		
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Enquirer

Name	Miss Linda McDougall	Phone	07367 275 220
Company	Woodburn Utilities Ltd	Mobile	Not Supplied
Address	PO Box 9222 Wishaw North Lanarkshire M12 2AX		
Email	lmcdougall@woodburnutilities.co.uk		

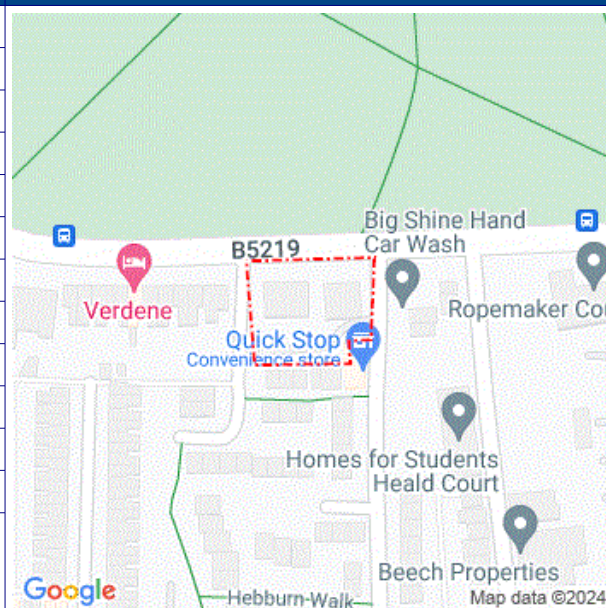
Enquiry Details

Enquiry type	Initial Enquiry
Work category	Development Projects
Work type	Commercial/industrial
Work type buffer*	75 metres
Start date	24/02/2024
End date	24/02/2024
Scheme/Reference	Moss Lane East
Search location	XY= 384860, 395665
Confirmed location	384877 395651
Site size	0 metres square
Site Contact Name	Not Supplied
Site Phone No.	Not Supplied

Description of Works

* The WORK TYPE BUFFER is a distance added to your search area based on the Work type you have chosen.

Site Map



Please note that the above map only displays the location of the proposed work site and will not display any of the Members' pipes and cables. It is imperative that this area accurately reflects the proposed work site.

Affected LSBUD members

(LSBUD Members who have assets registered on LSBUD within the vicinity of your search area.)

Asset Owner	Phone/Email	Emergency Only	Status
Cadent Gas	0800688588	0800111999	Await response
Electricity North West Limited	08001954141	08001954141	Await response
ESP Utilities Group	01372227560	01372227560	Await response
EUNetworks Fiber UK Limited	02031788003	02031788003	Await response

Status explanation

Await Response means that the asset owner will contact you. This is typically by sending the plan response but they may ask for further information before being able to do so, particularly if any payments or authorisations are required.

Email Additional Info means that the asset owner needs further information about your works to assess your enquiry before providing a response. Please provide any details you have available including plans, method statements etc. if available.

Important notices

It is very important that you correctly understand what the service does and the procedures in order for you to work safely. Please refer to the LSBUD Support Page (www.lsbud.co.uk/lineasearchbeforeudig-support) for further guidance.

This information includes how to provide additional information to the LSBUD Members who request it to provide a response to your enquiry.

Validity and search criteria. The results of this enquiry are based on the confirmed information you entered and are valid only as at the date and time of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LineasearchbeforeUdig (LSBUD) accepts no responsibility for any errors or omissions in the Enquiry Details or any consequences thereof. LSBUD Members update their asset information on a regular basis so you are advised to consider this when undertaking any works. It is your responsibility to choose the period of time after which you need to resubmit any enquiry but the maximum time (after which your enquiry will no longer be dealt with by the LSBUD Helpdesk and LSBUD Members) is 28 days. If any details of the enquiry change, particularly including, but not limited to, the location of the work, then a further enquiry must be made.

Terms and Conditions. Please note that this enquiry is subject always to our standard terms and conditions available at www.lsbud.co.uk ("Terms of Use") and the disclaimer at the end of this document. Please note that in the event of any conflict or ambiguity between the terms of this Enquiry Confirmation and the Terms of Use, the Terms of Use shall take precedence.

List of not affected LSBUD members (LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area.)

Angus Energy	AWE Pipeline	B & D Energy Limited
Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)	Box Broadband
BP Exploration Operating Company Limited	BPA	Cambridgeshire County Council Climate Change and Energy Services
CATS Pipeline c/o Wood Group PSN	Cemex	Centrica Storage Ltd
CNG Services Ltd	Concept Solutions People Ltd	ConocoPhillips (UK) Teesside Operator Ltd
D.S.Smith	Diamond Transmission Corporation	DIO (MOD Abandoned Pipelines)
DIO (MOD Live Pipelines)	Drax Power Limited	E.ON UK CHP Limited
EDF Energy Renewables Ltd	EirGrid	Eleclink Limited
Energy Assets Networks	ENI & Himor c/o Penspen Ltd	EnQuest NNS Limited
EP Langage Limited	ESB CCGT Power station (Carrington Gas Pipeline)	ESSAR
Esso Petroleum Company Limited	EXA Infrastructure	Exolum Pipeline System
Fulcrum Electricity Assets Limited	Fulcrum Pipelines Limited	Gamma
Gas Networks Ireland (UK)	Gateshead Energy Company	Gigaclear Ltd
Harbour Energy	Heathrow Airport LTD	Humbly Grove Energy
IGas Energy	INEOS FPS Pipelines	INEOS Manufacturing (Scotland and TSEP)
INOVYN ChlorVinyls Limited	INOVYN Enterprises Limited	Intergen (Coryton Energy or Spalding Energy)
Jurassic Fibre Ltd	Kensa Utilities	Last Mile
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	MUA Group Limited
National Gas Transmission	National Grid Electricity Distribution	National Grid Electricity Transmission
National Grid Ventures	Neos Networks	Northern Gas Networks Limited
Northumbrian Water Group	NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd
NYnet Ltd	Ogi	Oikos Storage Limited
Ørsted	Palm Paper Ltd	Perenco UK Limited (Purbeck Southampton Pipeline)
Petroineos	Phillips 66	Portsmouth Water
Premier Transmission Ltd (SNIP)	Redundant Pipelines - LPDA	RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)
RWEnpower (Little Barford and South Haven)	SABIC UK Petrochemicals	SAS Utility Services Ltd
Scottish and Southern Electricity Networks	Scottish Power Generation	Seabank Power Ltd
SES Water	SGN	Shell
Shell NOP	SP Energy Networks	Spring Fibre Limited
Squire Energy Networks	SSE Generation Ltd	SSE Transmission

SSE Utility Solutions Limited	Storengy	Tata Communications (c/o JSM Construction Ltd)
TfL – London Underground HV Cables (Road Side Cables)	Total Colnbrook Pipelines	Total Finaline Pipelines
Transmission Capital	Trojan Energy Limited	UK Power Networks
Uniper UK Ltd	University of Cambridge Granta Backbone Network	Vattenfall
Veolia ES SELCHP Limited	Veolia ES Sheffield Ltd	Voneus Limited
VPI Power Limited	Wales and West Utilities	West of Duddon Sands Transmission Ltd
West Sussex OpenNetwork (Cooperative National Infrastructure)	Westminster City Council	Zayo Group UK Ltd c/o JSM Group Ltd

Non-LSBUD members (Asset owners not registered on LSBUD)

(The following Non-LSBUD Members may have assets in your search area. It is YOUR RESPONSIBILITY to contact them before proceeding.

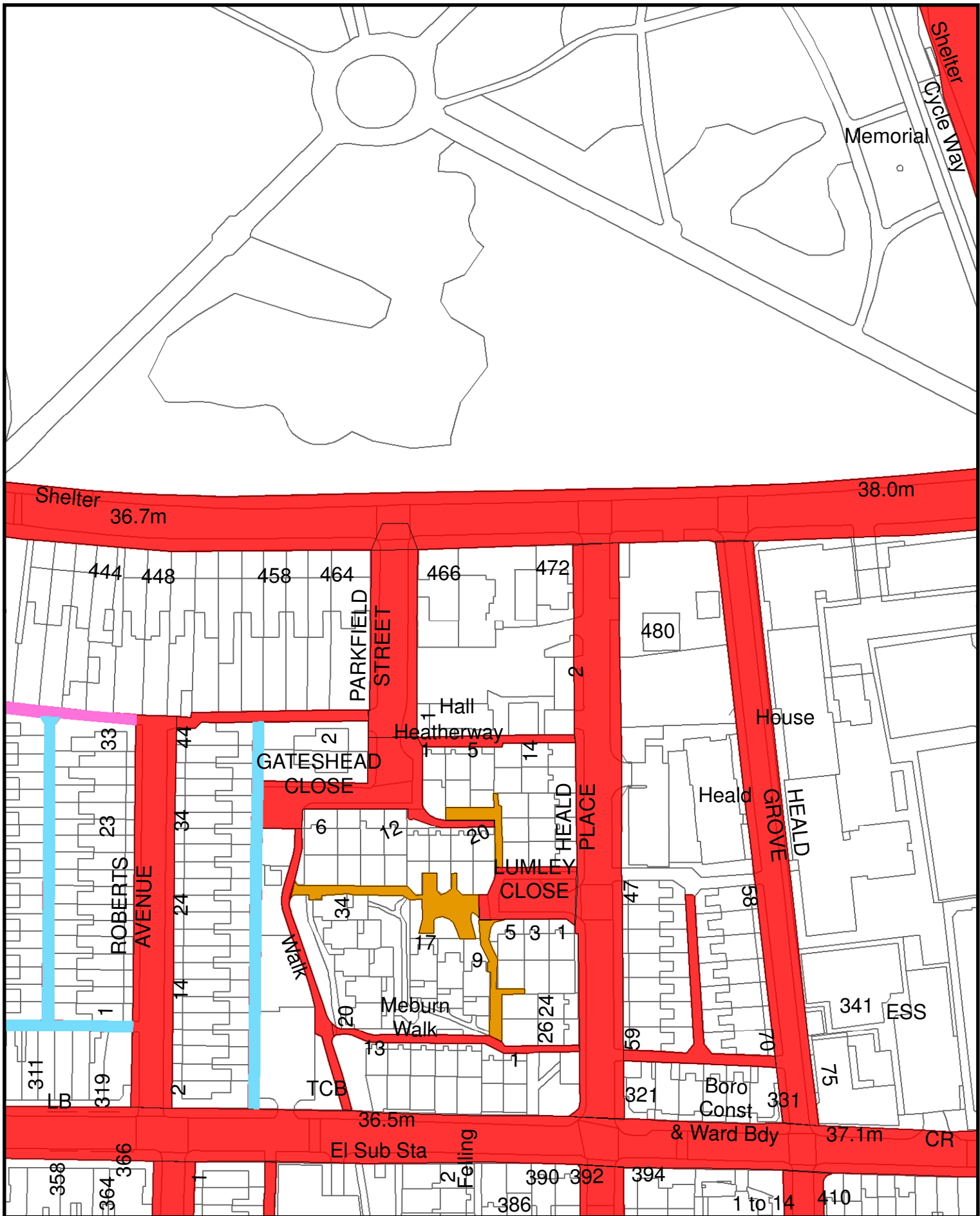
Please be aware this list is not exhaustive and it is your responsibility to identify and contact all asset owners within your search area.)

Asset Owner	Preferred contact method	Phone	Status
Arelion UK Ltd	check-network@arelion.com		Not Notified
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08000232023	Not Notified
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
Equans	nrsua.uk@equans.com	0800 130 3600	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Lumen Technologies	plantenquiries@ocugroup.com	02087314613	Not Notified
Manchester City Council	https://www.manchester.gov.uk		Not Notified
Mobile Broadband Network Limited	mbnl.plant.enquiries@turntown.com	01212 621 100	Not Notified
Sky UK Limited	nrsua@sky.uk	02070323234	Not Notified
Sota	sota.plantenquiries@ocugroup.com		Not Notified
United Utilities	WastewaterDeveloperServices@uuplc.co.uk	08707510101	Not Notified
Utility assets Ltd	assetrecords@utilityassets.co.uk		Not Notified
Verizon Business	osp-team@uk.verizonbusiness.com	01293611736	Not Notified
Virgin Media	http://www.digdat.co.uk	08708883116	Not Notified
Vodafone	osm.enquiries@atkingglobal.com	01454662881	Not Notified

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Please note that the highways maintained at public expense revealed in your report are an indicative status that has been captured onto our business system and is not the definitive adoption extent.

Highway Status	Adopted	Unadopted	Maintained	Scale: 1:1,350	North Arrow
Highway Closures	Proposed	Legal	Diversion		
Alley Gating	Adopted	Unadopted	Maintained	Proposed	
Proposed Schemes	Rail	Road	Traffic Orders		
Private Developments	Field Footpaths	Live Rail Schemes			

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