



C F A CIVILS

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DRAINAGE STRATEGY & ASSESSMENT OF FLOOD RISK

FOR

PROPOSED WAREHOUSE

AT

1 CRAWFORD STREET

ROACHDALE

OL16 5RS

ON BEHALF OF

LANCASHIRE FARM DAIRIES

CFC23061

Rev 0

November 2023

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1.0 INTRODUCTION

CFA Civils is appointed by Lancashire Farm Dairies to undertake a drainage strategy including an assessment of flood risk in support of a planning application for a new warehouse at 1 Crawford Street, Rochdale, O16 5RS.

This report sets out a drainage strategy for the proposal in accordance with the National Planning Policy Framework and Building Regulations Approved Document H3 in respect of surface and foul water drainage of the site, and assesses flood risk for the proposed development referencing the guidance contained within the National Planning Policy Framework and Flood Risk & Coastal Change Guidance.

2.0 EXISTING SITE

2.1 Site Location

The site is centred on NGR 390485, 412500, and is situated on the corner of Crawford Street and Dodgson Street approximately 1.1km south-east of Rochdale town centre.

A location plan and aerial image of the site are contained within Appendices A & B to this report.

2.2 Site Description & Topography

The red-edged application land comprises a broadly trapezoidal-shaped plot with a total area of 2021m².

The site is bounded to the west by industrial premises, to the north and east by Dodgson Street and to the south by Crawford Street.

The site was formerly occupied by a large workshop building with hardstanding to the west and access off Dodgson Street in the north-western corner of the plot. The existing workshop has recently been demolished and the site has been cleared.

The land and surrounding area are reasonably flat but slopes slightly towards the west and north. Existing ground levels prior to demolition varied between 141.65m AOD midway along the western side of the site to 143.30m AOD in the south-eastern corner of the site.

A topographical survey of the site undertaken prior to demolition is contained in Appendix C to this report.

2.3 Existing Site & Area Drainage

The land lies in the Irwell Management Catchment of the North West River Basin with no main rivers on or in the immediate vicinity of the site.

The Leeds and Liverpool Canal is present passing approximately 60m to the south of the site at its closest point.

There are no watercourses within the red-edged site boundary and no other open watercourses observed with the proximity of the site.

United Utilities' public sewer records show combined sewerage in the vicinity with a 225mm diameter pipe within the site running towards the north along the western part of the site into a 300mm diameter sewer in Dodgson Street, and a 225mm diameter pipe cutting across the south-eastern corner of the site into a 375mm diameter sewer in Crawford Road.

A copy of an extract from the public sewer records is contained in Appendix D to this report.

2.4 Ground Conditions

BGS mapping indicates the underlying geology as being Superficial: Glaciofluvial Devensian Sand & Gravel, over bedrock comprising Pennine Lower Coal Measures.

Soil mapping from “Soilscapes” web-site by Cranfield Soil & Agrifood Institute, confirms the soil type in the vicinity of the application site to be free draining slightly acid sandy soils.

An intrusive ground investigation confirms the presence of a deep layer of made ground overlying wet sand or peat

Extracts from this mapping and a copy of the site investigation are contained in Appendix E to this report.

3.0 EXISTING FLOOD RISK

3.1 Fluvial Flooding [Rivers and Sea]

Flood zones are defined as follows:

Flood Zone 1 - Land having a less than 1 in 1000 annual probability of flooding from fluvial or tidal sources in any year [$<0.1\%$ AEP];

Flood Zone 2 - Land having between 1 in 100 & 1 in 1000 annual probability of flooding from fluvial sources in any year [$1\% - 0.1\%$ AEP]; or land having between 1 in 200 & 1 in 1000 annual probability of flooding from tidal sources in any year [$0.5\% - 0.1\%$ AEP];

Flood Zone 3 - Land having a 1 in 100 or greater annual probability of flooding from fluvial in any year [$>1\%$ AEP]; or land having a 1 in 200 or greater annual probability of flooding from tidal sources in any year [$>0.5\%$ AEP].

The site is indicated on the current Flood Map for Planning as being entirely in Flood Zone 1.

Environment Agency Long-term Flood Risk mapping indicates that site is at very low risk of flooding from rivers or sea.

Extracts from the Flood Maps for Planning and the Long-Term Risk mapping are contained within Appendix F to this report.

3.2 Pluvial Flooding [Surface Water]

Environment Agency Long-term Flood Risk mapping indicates that the site itself is at very low risk of flooding from surface water.

A copy of this mapping is contained in Appendix F to this report.

3.3 Reservoir Flooding

The Reservoir Flood Map indicates the site is not within an area at potential risk of flooding from reservoirs.

An extract from the Environment Agency Long-Term Risk mapping is contained within Appendix F to this report.

3.4 Groundwater Flooding

Environment Agency Long-term Flood Risk data along with the description of soil types noted in Section 2.4 above, indicate that flooding risk from this source is negligible.

3.5 Sewer Flooding

No reports of flooding to the site from nearby sewers are reported by United Utilities.

4.0 PROPOSED NEW DEVELOPMENT

It is proposed to erect a new warehouse on the site with an associated one-way access /exit between Dodgson Street and Crawford Street along the western side of the plot, and small areas of soft landscaping around the northern and southeastern edges of the site.

The new warehouse will have a total roof area of 1187m², with the new access and associated parking measuring 537m².

Ground floor slab levels are proposed as 142.20m AOD.

The proposed site layout is contained within Appendix G to this report.

4.1 Vulnerability

Flood Risk and Coastal Change guidance and the NPPF Annex 3 identifies the site use as Less Vulnerable.

Therefore, from Table 3: Flood risk vulnerability and flood zone compatibility, that land use is considered as appropriate in Flood Zone 1.

5.0 FUTURE FLOOD RISK

5.1 Climate Change

The NPPF sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change. This includes demonstrating how flood risk will be managed now and over the development's lifetime, taking climate change into account.

The assessment of future flood risk to the site takes into account climate change guidance given in "Flood Risk Assessments: Climate Change Allowances" published by The Environment Agency in February 2016 and most recently updated in May 2022.

The selection of climate change allowance should reflect the lifespan of the proposed development.

Industrial developments of this nature could reasonably be considered to have a lifespan of between 30 and 40 years. Thus, current guidance indicates for development with a lifetime between 2061 and 2100 the central allowance for the 2070's Epoch figures would apply.

As a "less vulnerable" development in situated in the Irwell Management Catchment of the Northwest River Basin District, the Central Allowance figure for both the 3.3% & 1.0% AEP events of 30% on rainfall intensities should be used for flood risk assessments and designs.

6.0 DRAINAGE STRATEGY

In accordance with the National Planning Policy Framework and Building Regulations, the site should be drained on a separate system with foul water draining to the public sewer where possible and surface water draining in the most sustainable way.

The chosen strategy should demonstrate that the site will be safe from flooding; not increase flood risk elsewhere when compared to the pre-development run-off rates; and should seek to avoid pumped systems.

6.1 Surface Water Drainage

Planning Practice Guidance and the Building Regulations Approved Document H3 outline the hierarchy to be investigated when considering a surface water drainage strategy, in the following order of priority:

- Into the ground (infiltration);
- To a surface water body;
- To a surface water sewer, highway drain, or other drainage system;
- To a combined sewer.

6.1.1 Infiltration

Desk-top mapping indicates the underlying natural ground conditions may be suitable for soakaways.

Nevertheless, the intrusive site investigation also recorded that standing water was present in the sand layer beneath the made ground encountered across the site.

Therefore, it is considered that infiltration is not a suitable method of surface water disposal from the site, and this level of the hierarchy is passed.

6.1.2 Surface Water Bodies

There are no watercourses on or within close proximity of the site.

Therefore, this is not an appropriate method of surface water disposal for the development and this level of the hierarchy is passed.

6.1.3 Surface Water Sewers

There are no surface water sewers indicated on the public sewer records in the accessible area of the development.

Therefore, this is not an appropriate method of surface water disposal for the development and this level of the hierarchy is passed.

6.1.4 Combined Sewers

An existing combined sewer network is indicated on the public sewer records with combined sewers within the site boundary and the adjoining roads.

Therefore, it is proposed to connect surface water flows from the site into this combined sewer, thus complying with the required hierarchical approach as outlined above.

6.1.5 Design

The site has been previously developed with existing connections into the combined public sewerage system.

Therefore, it is proposed to attenuate all new surface water flows into this network limited to previous peak flow rates but incorporating a 30% betterment reduction whilst including a 30% climate change increase in rainfall intensities as described previously.

This discharge may be subject to Water Industry Act: Section 106 approvals from United Utilities.

6.2 Foul Water Drainage

The public sewer records indicate a combined sewerage network serving the site.

Therefore, it is proposed to connect any new foul water flows from the site into local system.

This discharge may be subject to Water Industry Act: Section 106 approvals from United Utilities.

7.0 CONCLUSION

The site is considered to be at negligible risk from flooding.

Surface water disposal has been considered in accordance with the preferred hierarchy of options, and will be attenuated to reduced peak run-off rates, taking into account the effects of climate change and betterment.

It is proposed to drain the site on a separate system of foul and surface water pipework before combining downstream of the surface water attenuation system and discharging into the public sewerage network.

Based on all the above, the proposal will not increase flood risk elsewhere.

APPENDIX A – Location Plan



Fishwick Street

Oldham Road

Lincoln Street

Durham Street

Derby Street

Norwich Street

Dodgson Street

Crawford Street

Woodbine Street

Prince Street

Crown Street

Oldham Road

Well Th Lane

Count Street

Elder Street

Moss Street

Church Road

St Peter's Church

Tennis Court

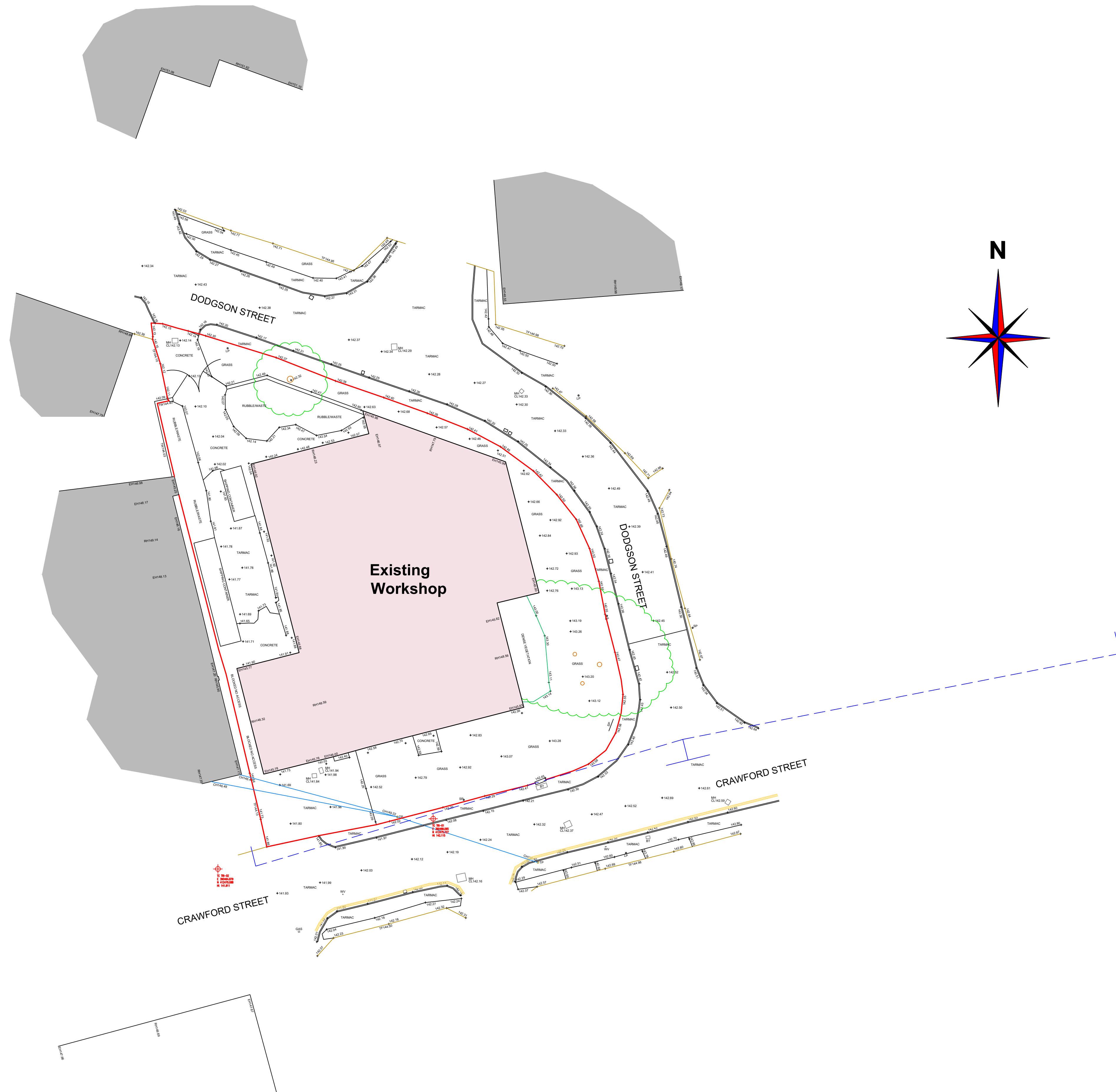
Play Space

Kingsway

APPENDIX B – Aerial Image



APPENDIX C – Topographical Survey



EXISTING SITE PLAN

This drawing is provided as a document to gain either Planning Permission or Building Regulation approval purposes only. It is not a guarantee that Planning Permission will be granted.

This drawing and all contents are the copyright of James Campbell Associates Ltd. No copies to be made from the drawing & details within unless authorised by James Campbell Associates Ltd.

The contract for the works is between the client and his / her contractor. Contractor to visit site, study the details provided within the drawing and be familiar with both the work to be carried out in accordance with the details provided. Any stated dimension must be checked prior to any form of construction. All works and materials to comply with all relevant British Standards and carry a genuine BBA certificate. The materials specified within this drawing are a guide for the contractor as they are recognised materials with genuine BBA certificate etc. Any contractor who decides to use any different materials than that noted on the drawing must inform James Campbell Associates Ltd.

Any discrepancies discovered or items found that where not visible at the time of the initial survey should be reported to James Campbell Associates Ltd for consultation with our client.

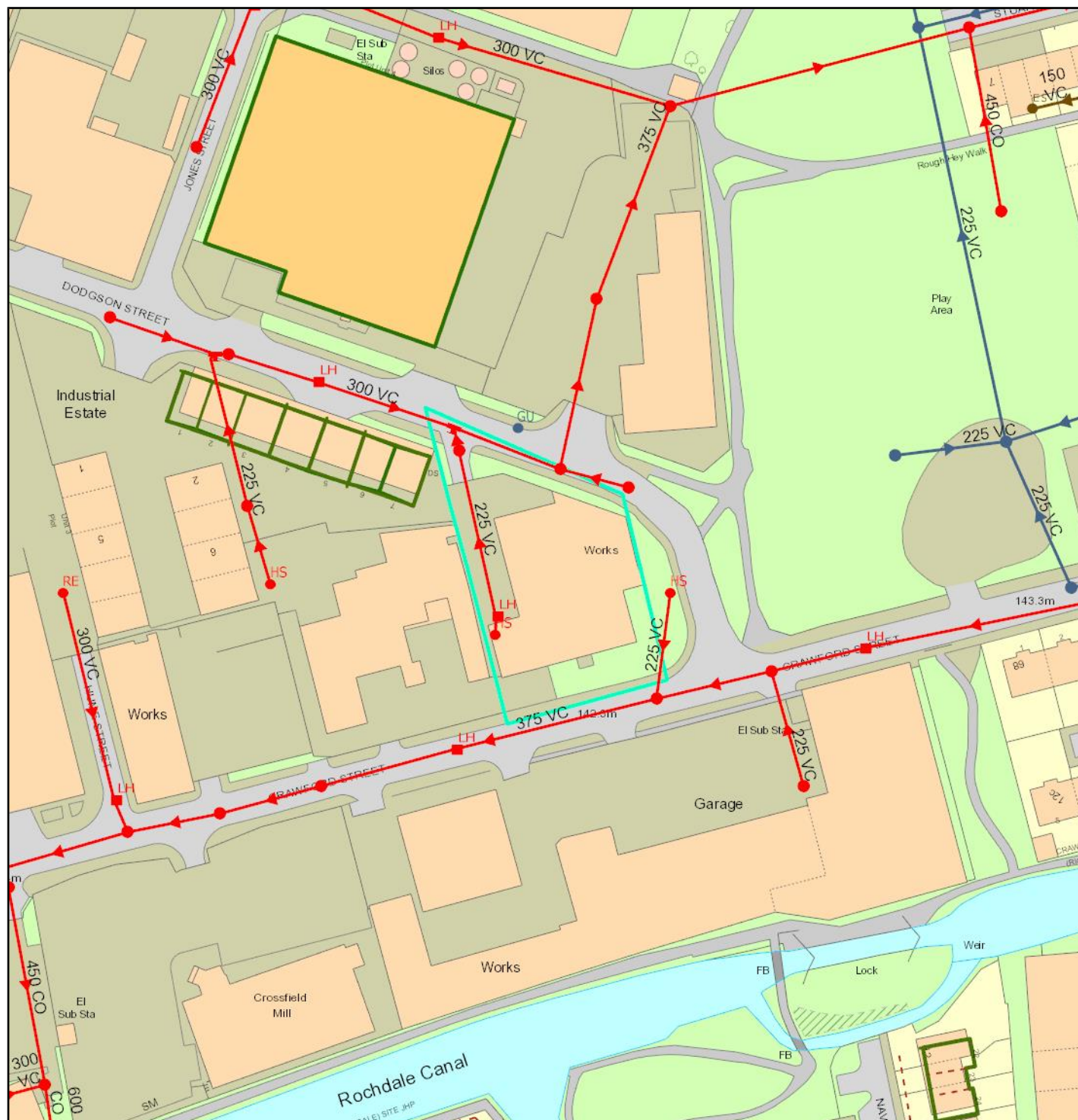
CONSTRUCTION NOTES:-

DRAWING TITLE		
EXISTING SITE PLAN		
JCA JAMES CAMPBELL ASSOCIATES LTD CHARTERED ARCHITECTURAL SERVICES  CIOB THE CHARTERED INSTITUTE OF BUILDING  CIAT		
Campbell House 173 Rochdale Road Firgrove Rochdale OL16 3BN Tel: 01706 354888 Mob: 07817 623183 Email: admin@jamescampbellassociates.co.uk Web: www.jamescampbellassociates.co.uk		
PROJECT		
NEW WAREHOUSE / STORAGE BUILDING		
LOCATION		
1 Crawford Street Rochdale		
DRAWN:-	Frank James Smith	DRAWING NUMBER:- 22.2959.2A
DATE:-	August 2022	
SCALE:-	1:250 @ A1	
ISSUE:-	A	

APPENDIX D – Public Sewer Records

SEWER RECORD

(Known to us as Venture Precision Engineering) 1 Crawford Street, Rochdale, OL16 5RS



The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities Water PLC will not accept any liability for any damage caused by the actual positions being different from those shown.

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APPENDIX E – BGS Mapping, Soil Type Mapping & Borehole Report



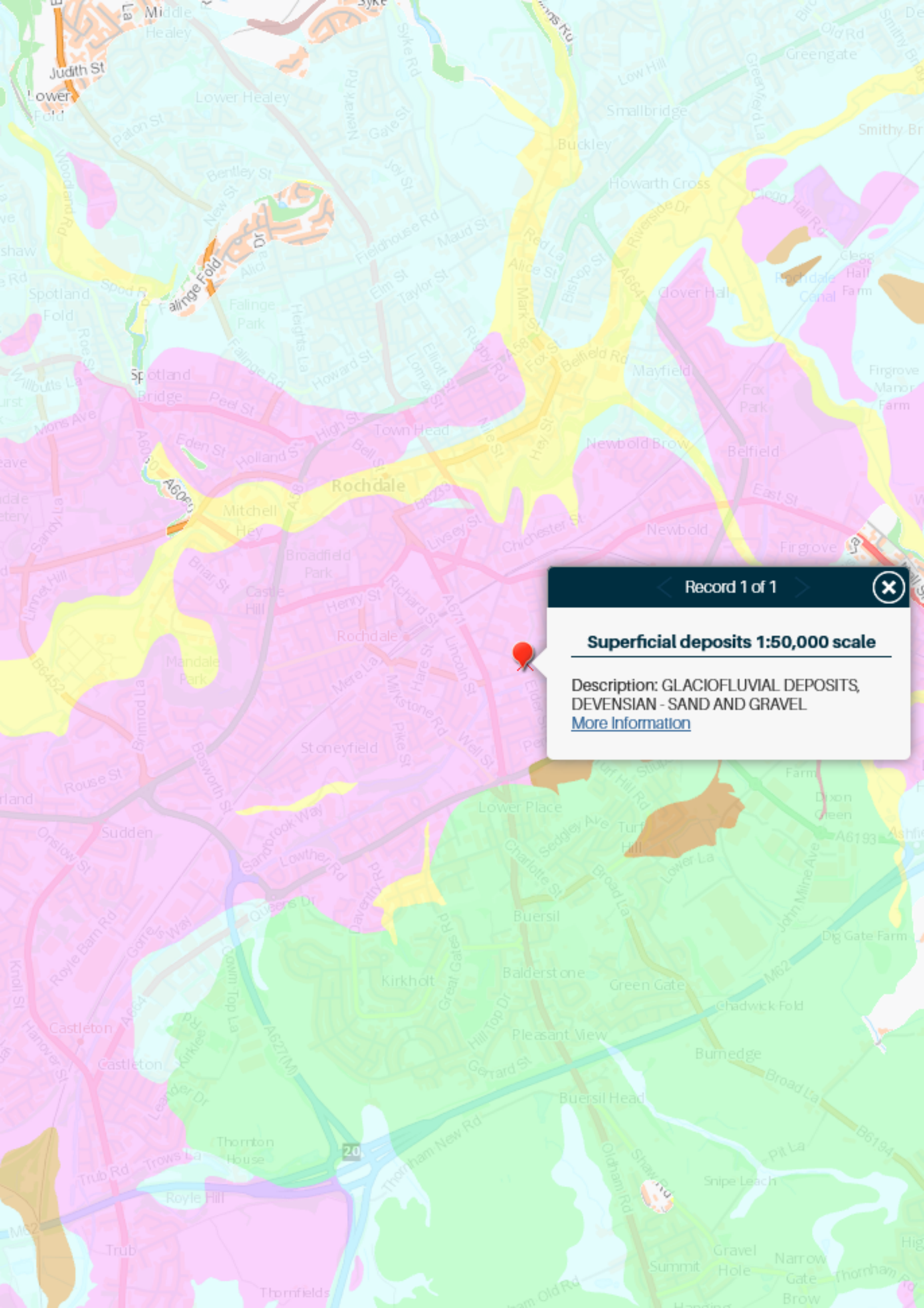
Record 1 of 1



Bedrock geology 1:50,000 scale

Description: PENNINE LOWER COAL
MEASURES FORMATION - MUDSTONE,
SILTSTONE AND SANDSTONE

[More Information](#)



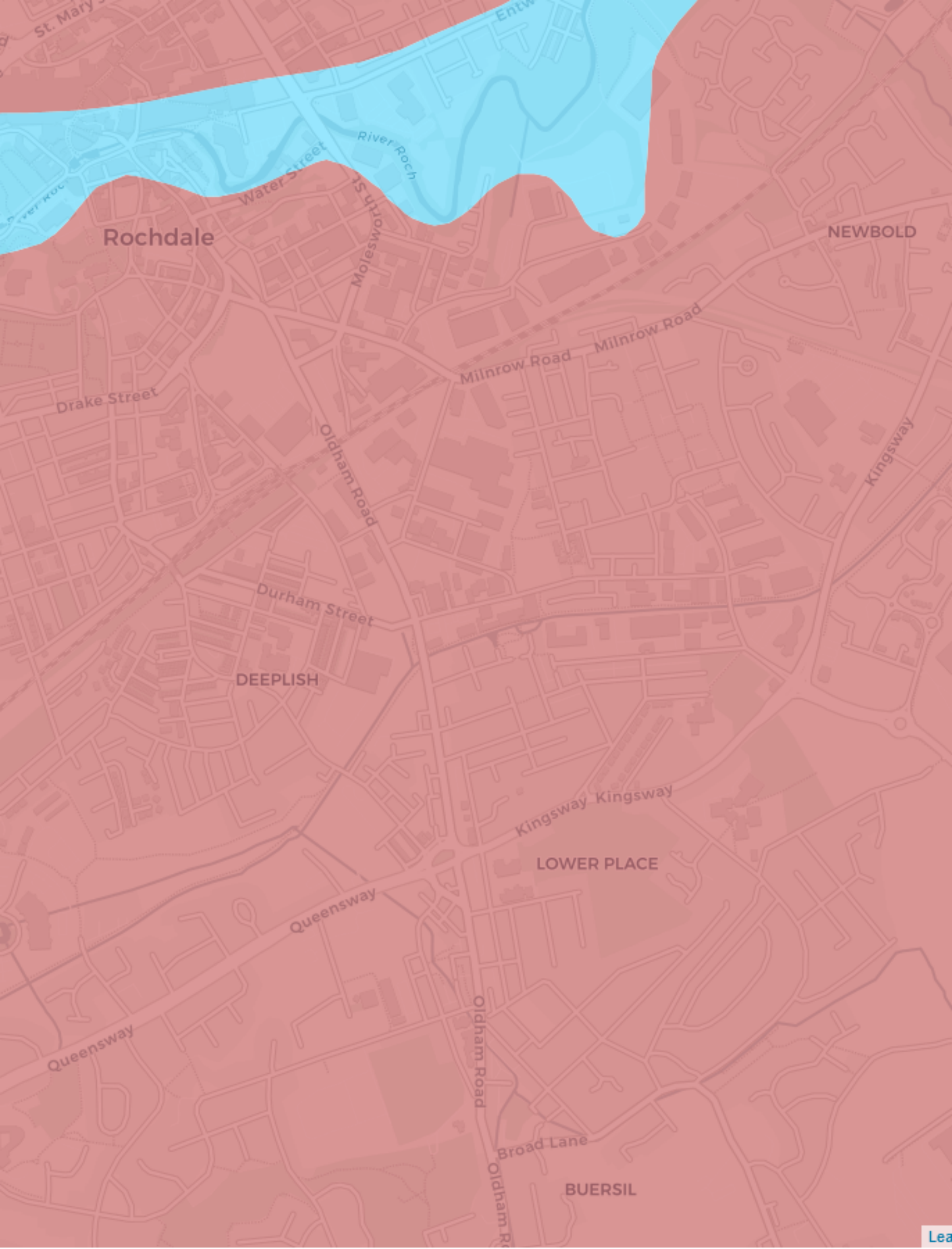
< Record 1 of 1 >



Superficial deposits 1:50,000 scale

Description: GLACIOFLUVIAL DEPOSITS,
DEVENSIAN - SAND AND GRAVEL

[More Information](#)



Rochdale

NEWBOLD

DEEPLISH

LOWER PLACE

BUERSIL

Soil Information

Click on the map for soil information

Soilscape 10:

Freely draining slightly acid sandy soils

Texture:

Sandy

Coverage:

England: 2.8%, Wales: 0.3%, England & Wales: 2.5%

Drainage:

Freely draining



Fertility:

Low



Landcover:

Arable

Habitats:

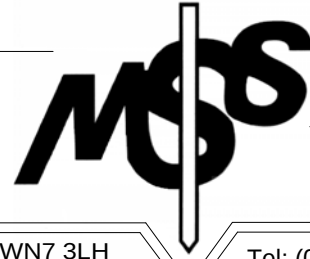
Acid dry pastures; acid deciduous and coniferous woodland; potential for lowland heath

Carbon:

Low

Drains to:

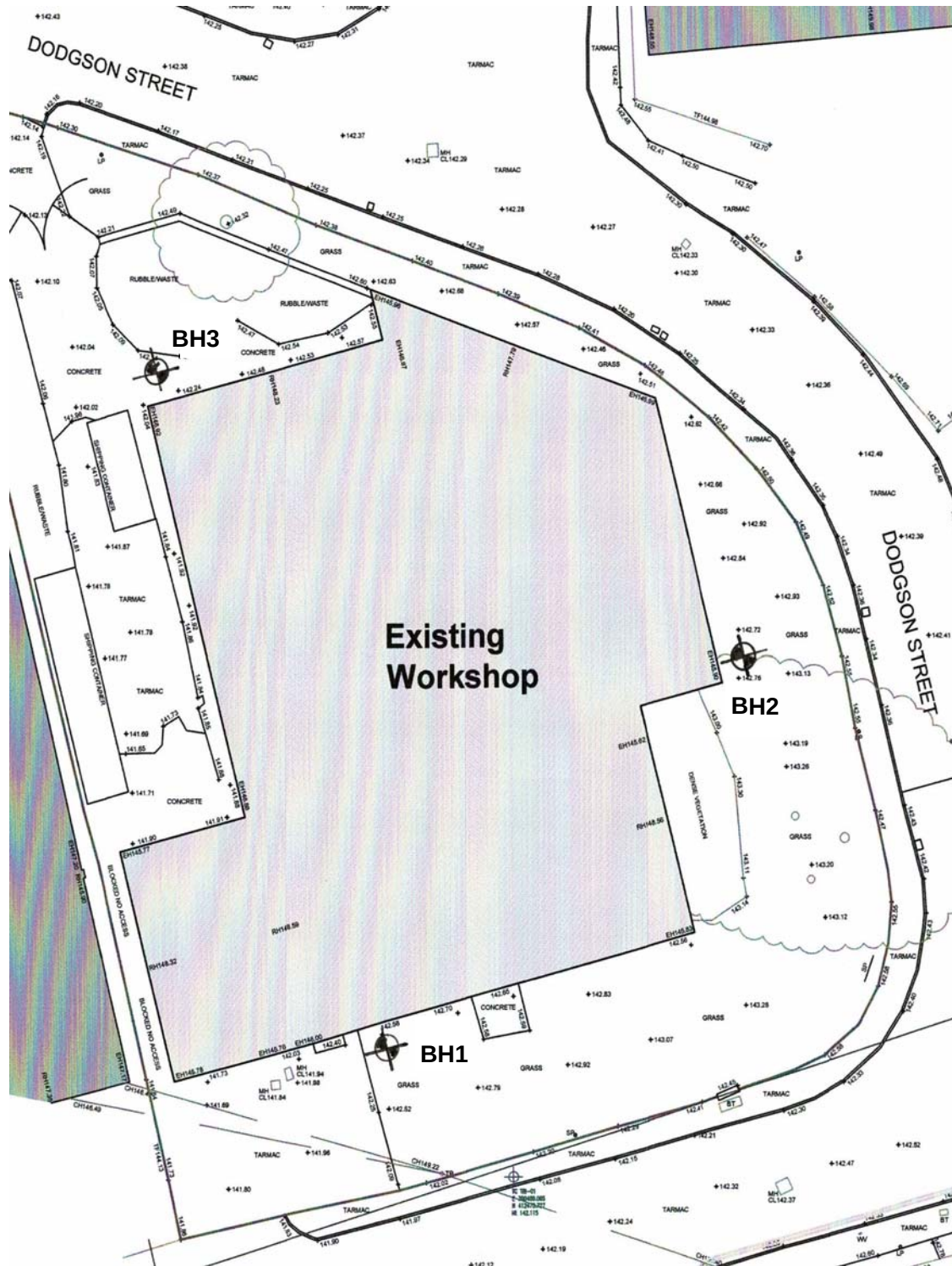
Groundwater



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MINI SOIL SURVEYS (NORTHERN) LTD. 12 BEECH WALK, LEIGH, LANCS. WN7 3LH

Tel: (01942) 269769
mssnorth@btinternet.com



KEY PLAN

SITE: 1 CRAWFORD STREET ROCHDALE

Not to Scale : diagrammatic only: all dimensions are in metres (BH. = Borehole TP. = Trial Pit)

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MINI SOIL SURVEYS NORTHERN LTD.
12 Beech Walk Leigh Lancs. WN7 3LH

Site:- 1 CRAWFORD STREET ROCHDALE

Job No. NTH 3429

Date:- 07/12/22 **BH No.1**

Description	Depth	Leg	Test/ Depth	Value
Turf over dark brown sandy topsoil with gravel, cinder and brick fragments. MADE GROUND				
Loose grey sand and angular gravel. MADE GROUND	0.30			
Loose occasionally very loose reddish brown sandy brick rubble with some sandstone fragments. Large voids 0,9 - 1,6m. MADE GROUND	0.70		1.0 DS 1.2 SPT N = 1 1.8 SPT N = 5 2.4 SPT N = 8	
Medium dense becoming dense wet light grey/brown fine to medium SAND.	2.80		3.6 SPT N = 19 4.8 SPT N = 35	
	6.00			

SPT @ 1.2m 1/0/0,0,1,0 @ 1.8m 1/2/1,1,2,1 @ 2.4m 1/2/2,2,3,1 @ 3.6m 3/4/4,5,5,5
@ 4.8m 7/8/8,9,9,9
Water encountered at 1.4m. Standing on completion at 2.8m.

Key: SPT (standard penetration test). SV (shear vane). DS (disturbed sample). U38 (38mm undisturbed sample).

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12 Beech Walk Leigh Lancs. WN7 3LH

Site:- 1 CRAWFORD STREET ROCHDALE

Job No. NTH 3429

Date:- 07/12/22 **BH No.2**

Description	Depth	Leg	Test/ Depth	Value
Turf over dark brown sandy topsoil with gravel, cinder and roots. MADE GROUND.				
Medium compact dark brown/reddish brown sand, topsoil and brick rubble with sandstone cobbles. MADE GROUND.	0.35			
Loose brown/grey occasionally dark brown clayey fine to medium SAND with frequent peaty bands/inclusions.	1.50		1.2 SPT N = 29	
			1.6 DS	
			1.8 SPT N = 5	
			2.4 SPT N = 5	
			3.6 SPT N = 9	
Medium dense becoming dense light grey/brown fine to medium SAND.	4.30		4.8 SPT N = 32	
	6.00			

SPT @ 1.2m 15/4/4,10,11,4 @ 1.8m 2/1/2,1,1,1 @ 2.4m 1/2/1,2,1,1 @ 3.6m 2/2/2,3,2,2
@ 4.8m 6/7/8,8,8,8

Water encountered at 2.0m. Standing on completion at 1.9m

Key: SPT (standard penetration test). SV (shear vane). DS (disturbed sample). U38 (38mm undisturbed sample).

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Site:- 1 CRAWFORD STREET ROCHDALE

Job No. NTH 3429

Date:- 07/12/22 **BH No.3**

Description	Depth	Leg	Test/ Depth	Value
180mm concrete over compact becoming loose dark brown sandy ash and cinder with gravel, brick fragments, some sand bands and some sandstone cobbles. MADE GROUND.			0.5 DS	
			1.2 SPT N = 7	
			1.8 SPT N = 9	
Dark brown pseudo fibrous PEAT.	1.90		2.4 SPT N = 6	
Medium dense becoming dense brown/grey turning light brown fine to medium SAND.	2.90		3.6 SPT N = 35	
	5.00			

SPT @ 1.2m 2/2/2,2,1,2 @ 1.8m 2/3/2,3,2,2 @ 2.4m 2/1/2,1,2,1 @ 3.6m 8/8/8,9,9,9
Water encountered at 1.6m. Standing on completion at 2.9m

Key: SPT (standard penetration test). SV (shear vane). DS (disturbed sample). U38 (38mm undisturbed sample).

APPENDIX F – Flood Map for Planning & EA Long-term Risk Mapping

Flood map for planning

Your reference
CFC23061

Location (easting/northing)
390483/412501

Created
24 Nov 2023 12:05

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger than 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

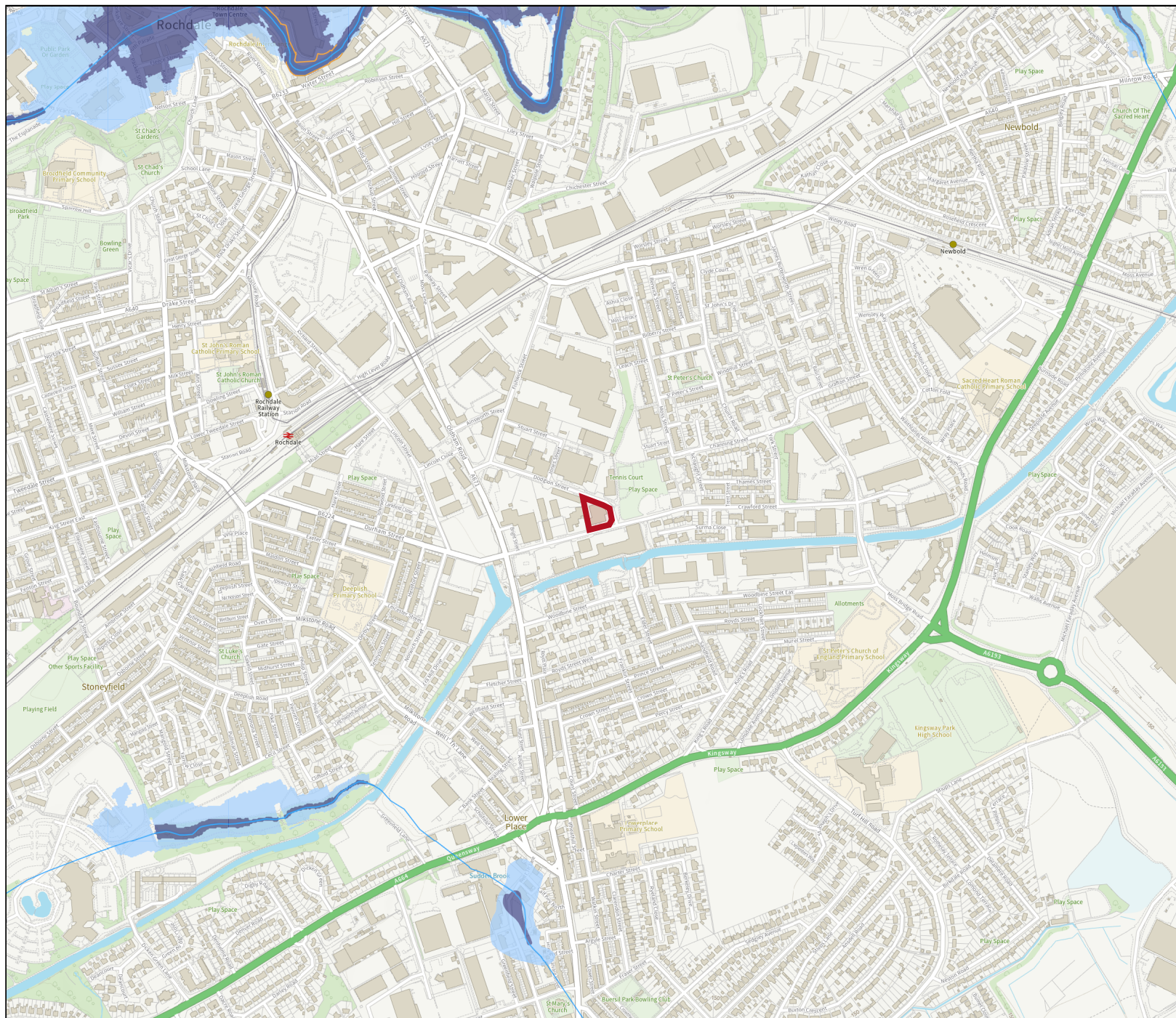
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

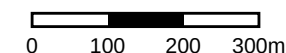
Your reference
CFC23061

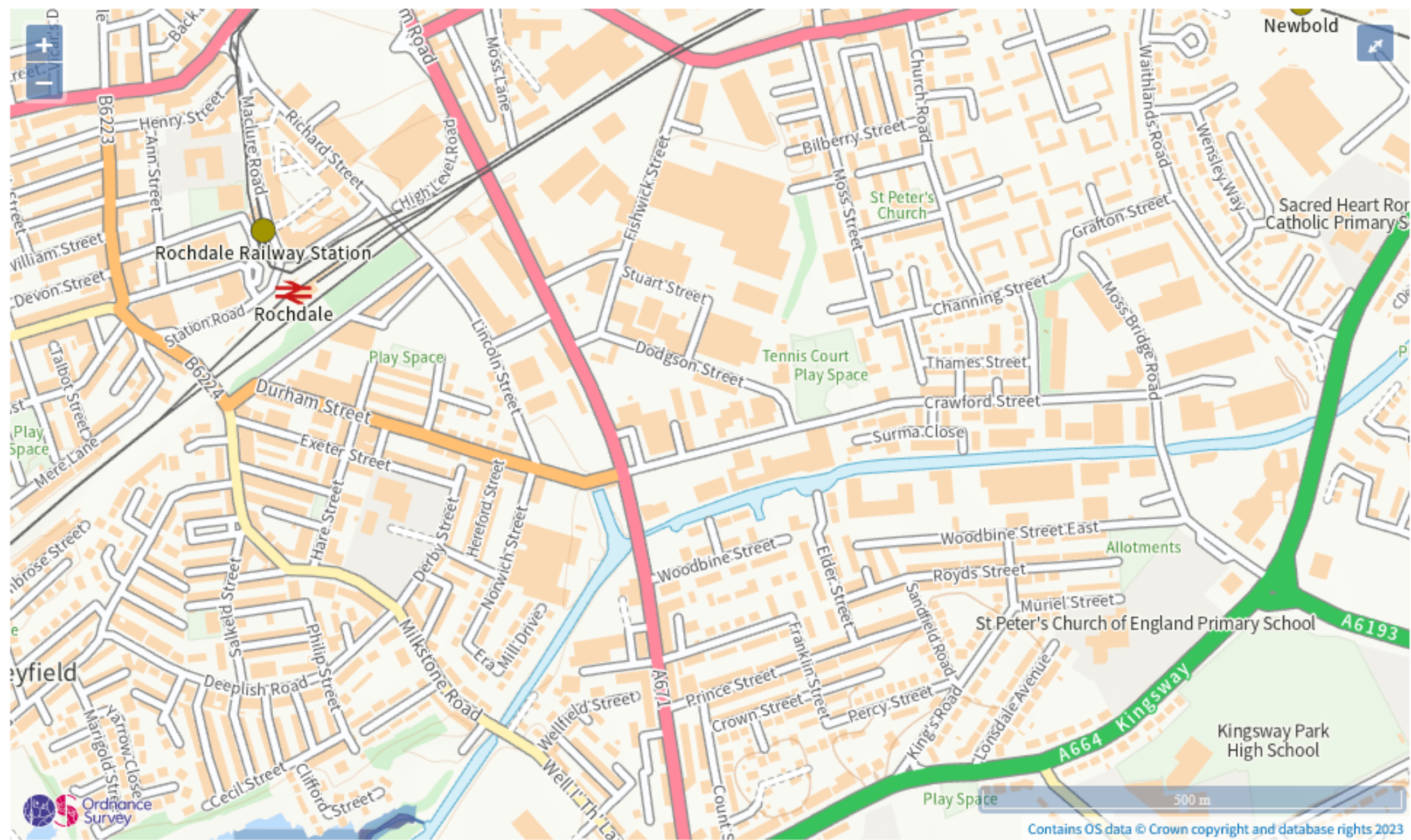
Location (easting/northing)
390483/412501

Scale
1:10000

Created
24 Nov 2023 12:05

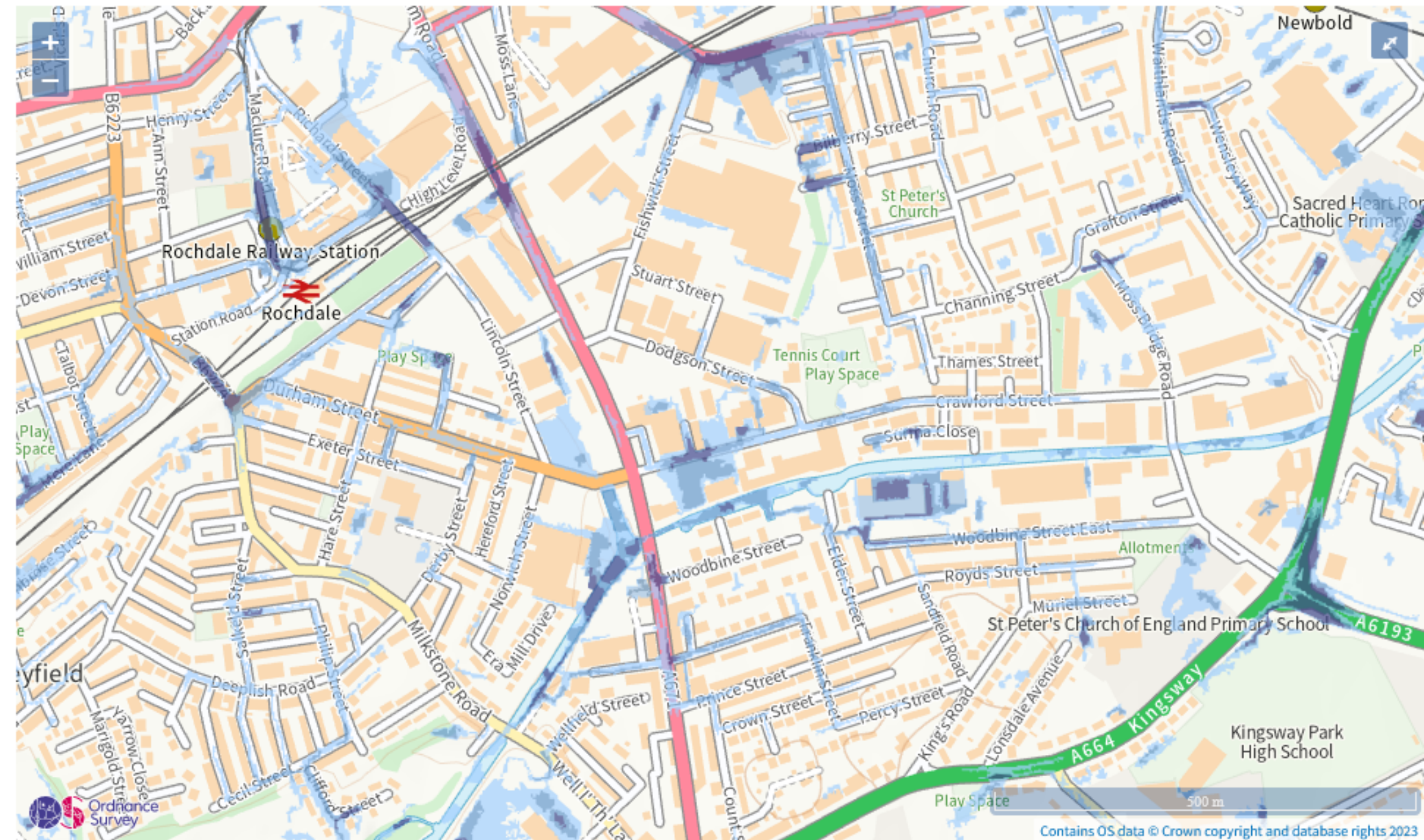
-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area





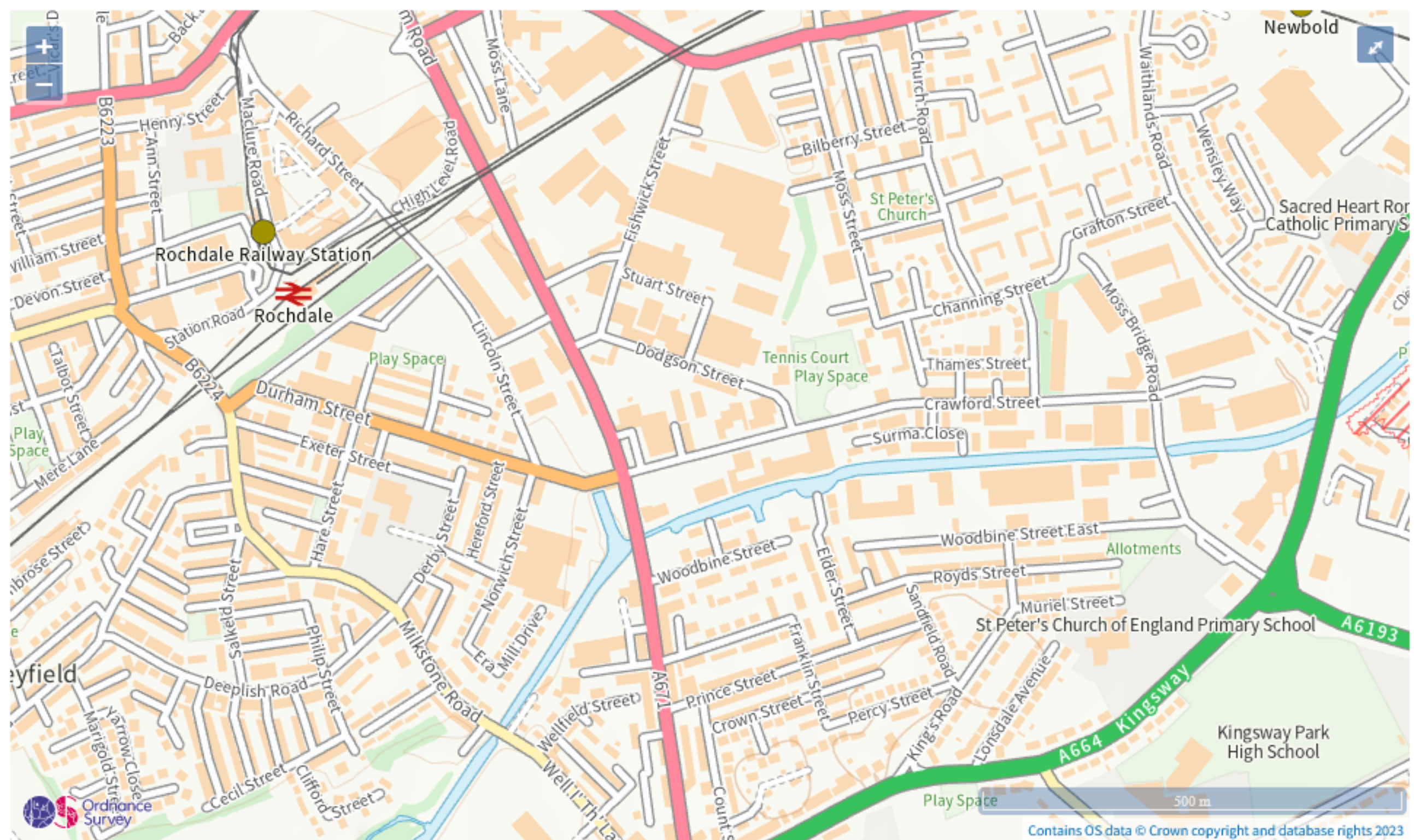
Extent of flooding from rivers or the sea

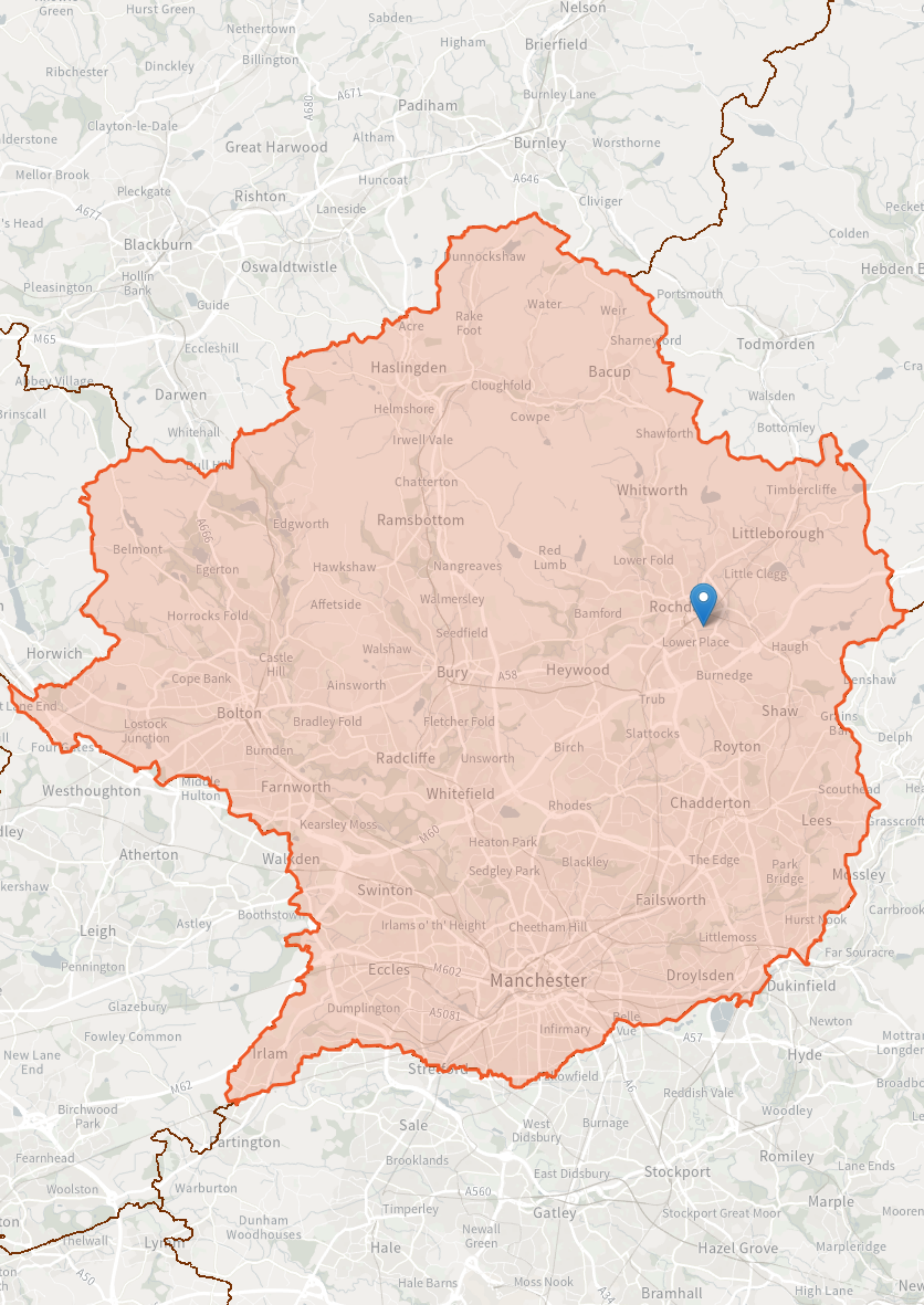
High Medium Low Very low



Extent of flooding from surface water

High Medium Low Very low





Irwell Management Catchment peak rainfall allowances

ⓧ

3.3% annual exceedance rainfall event

Epoch		
	Central allowance	Upper end allowance
2050s	25%	35%
2070s	30%	40%

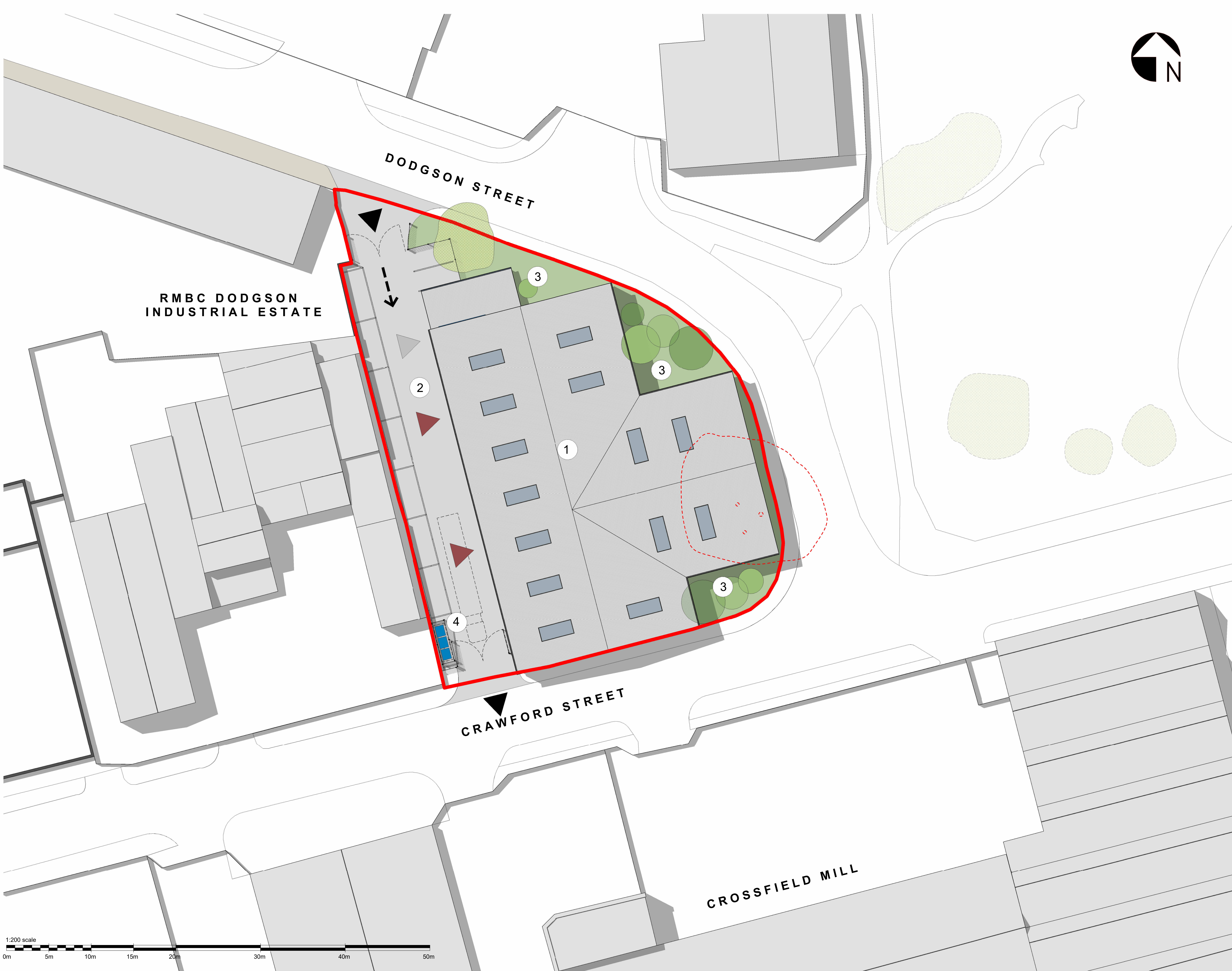
1% annual exceedance rainfall event

Epoch		
	Central allowance	Upper end allowance
2050s	25%	40%
2070s	30%	45%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

This map contains information generated by Met Office Hadley Centre (2019): UKCP Local Projections on a 5km grid over the UK for 1980-2080. Centre for Environmental Data Analysis, 2022

APPENDIX G – Proposed Site Layout



> IMPORTANT
> © This drawings copyright remains the property of this practice
> All dimensions to be checked on site
> Positions of existing services to be confirmed prior to proceeding
> Do not scale of this drawing

> STATUS DESCRIPTION
S0 - Work In Progress
S1 - Co-Ordination
S2 - Information
S3 - Internal Review / Comment
S4 - Construction Approval
D - Costing / Tender
NB: Only drawings with an A 'Code' to be used for construction

A - For Construction
AB - As Built

> NOTES

- Site Boundary - 2021m²
- Vehicle entrance / exit
- Load / unload area
- Pedestrian access
- 1 Proposed 1150m² GIA warehouse
- 2 One way route for vehicles suitable for HGVs with parking spaces on either side totalling 9
- 3 Landscaped areas / green buffer
- 4 Bin Store
- Existing tree (retained)
- Proposed tree
- Trees to be removed

REV.	DATE	DESCRIPTION
CLIENT LANCASHIRE FARM DAIRIES		
PROJECT NEW WAREHOUSE 1 CRAWFORD STREET, ROCHDALE		
DRAWING TITLE PROPOSED SITE PLAN		
STATUS WORK IN PROGRESS		CODE S0
SCALE 1 : 200@A1	DATE 10/10/23	DRAWN JO
DRG NO. 7436-FWP-L(02)02		CHECKED NA
		REV.

fwp

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