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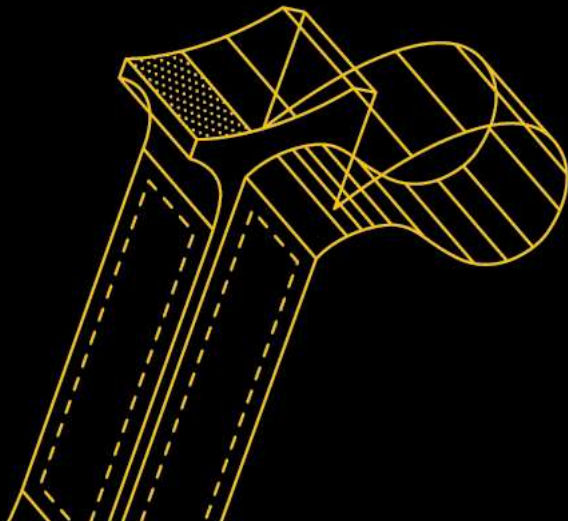
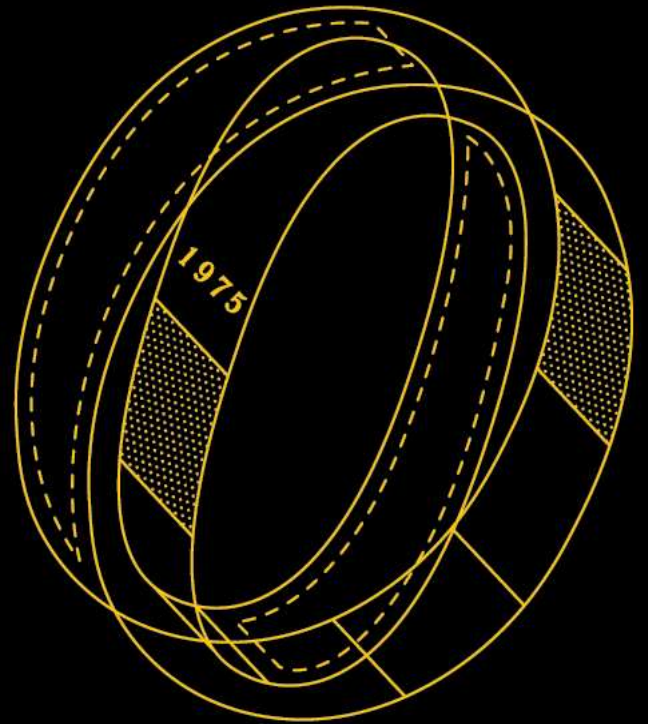
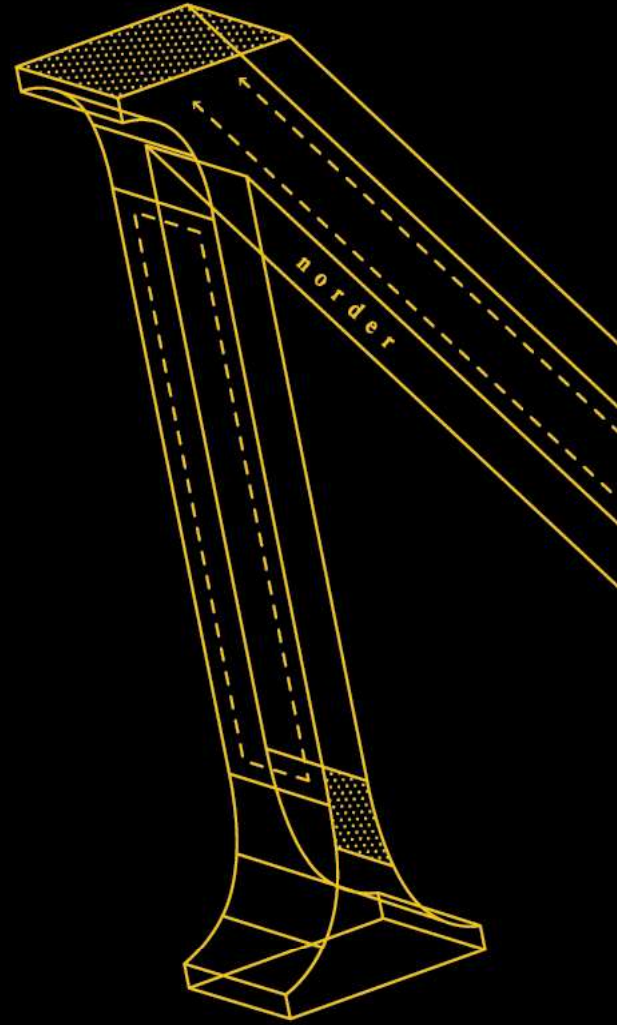
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Client: Heineken

Project Title: Heat Recovery Project
Heineken, Manchester

Document Title: Flood Risk Assessment

Document No.: 8767-NDA-XX-XX-RP-D-8301 R1



Document Control

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Date	Revision	Prepared by	Signature	Checked By	Signature
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1 Introduction

This Flood Risk Assessment (FRA) has been produced in accordance with the 2021 National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG).

The FRA has been produced on behalf of Heineken in respect of the proposed new Heat Recovery Project located within their existing brewery site at Denmark Road, Manchester, M15 6LD.

The comments and opinions contained in this report, including the conclusions and recommendations, are based on the following information:

- (i) Existing OS plans.
- (ii) Topographical survey of existing levels.
- (iii) Government and Environment Agency flood mapping.
- (iv) United Utilities sewer record plans.

This report is prepared solely for the use of Heineken and their advisers.

2 Site Information

2.1 Existing Site

The proposed development is located within the existing Heineken Brewery site off Denmark Road, Manchester, M15 6LD. Grid reference 383905 E, 395972 N. A site location plan is attached under Appendix A.

The Heineken brewery is bound by Princess Road to the west with a supermarket and retail park beyond. To the north, the site is bound by Greenheys Lane with a residential area beyond. Charles Halle Road and Denmark Road run adjacent to the eastern boundary with residential housing beyond, along with a primary school and commercial unit. To the south the site is bound by Moss Lane East, with a number of churches and social clubs and commercial units beyond.

The Bridgewater Canal runs approximately 1.75Km to the north west of the site and the River Irwell runs approximately 1.85Km to the north west of the site. Both vehicular and pedestrian access can be taken into the site via Denmark Road.

The Heineken site is approximately 7.5Ha in area and accommodates the main factory and production buildings along with the main office building. The remainder of the site is used as car parking, lorry parking and storage. The site is covered in impermeable surfacing, being a mixture of concrete and asphalt pavements, with the exception of a relatively small area of landscaping at the site entrance and to some boundaries.

The proposed Heat Recovery Project planning boundary occupies an area of approximately 2.3Km² and is located just within the southern half of the Heineken brewery site. The planning area is currently occupied by a lorry yard and existing building, which is to remain, both of which are positively drained to the surface water drainage network. The existing levels in the external development area have a general fall from the south to the north, having an approximate level of 33.09m AOD to the south and 32.91m AOD to the north.

An existing topographical survey plan showing the proposed planning boundary and existing ground levels, is attached under **Appendix B**.

2.2 Proposed Development

The proposed development consists of two new external heat store tanks located on concrete bases at ground level, accommodating an area of approximately 42m², along with the replacement and extension of the adjacent pipe bridge. New pipes run along the pipe bridge at high level into the existing building, where a new well water tank, condensers, services tank and services cowl are located at roof level.

Both vehicular and pedestrian access to the site will continue to be taken from Denmark Road.

The development will remain as fully impermeable surfacing. Proposed site layout plans are attached under **Appendix C**.

2.3 Flood Zone Classification

Flood mapping for Rivers and Seas has been obtained from the Government website and a copy of the Flood Map is attached under **Appendix D**.

The Flood Map for Planning shows that the proposed external works are located within Flood Zone 3 which has an annual probability of flooding from rivers of 1 in 100 or greater (1% or greater).

The existing building is predominantly located within a Flood Zone 1 area, which has an annual probability of flooding of less than 1 in 1000 (<0.1%), a small section of the existing building to the west, is shown to be located within Flood Zone 2 which has an annual probability of flooding from rivers of between 1 in 100 and 1 in 1000 (0.1% and 1.0%). However, the proposed development works within the plan area of the existing building are located at roof level.

There are no allocated flood storage areas within the vicinity of the site area.

The proposed Heat Recovery Project is classed as general industry and would therefore be classed as a Less Vulnerable development in accordance with Table 2 : Flood Risk Vulnerability Classification, of the PPG, associated with the NPPF. Table 3

: Flood Risk Vulnerability and Flood Zone Compatibility, of the PPG, associated with the NPPF shows that, an exceptions test is not required for a less vulnerable classification Flood Zone 3a and therefore the proposed development is appropriate within Flood Zone 3a.

3 Possible Sources of Flooding

3.1 Fluvial (Rivers)

Fluvial sources of flooding include the inundation of floodplains from rivers and watercourses, inundation of areas outside the floodplain due to the influence of bridges, embankments and other features which artificially raise water levels, overtopping or breaching of defences, blockages of culverts, flood channels or flood corridors.

The Bridgewater Canal runs approximately 1.75Km to the north west of the site and the River Irwell runs approximately 1.85Km to the north west of the site.

The Flood Map for Planning shows that the proposed external works are located within Flood Zone 3 which has an annual probability of flooding from rivers of 1 in 100 or greater (1% or greater).

The existing building is predominantly located within a Flood Zone 1 area, which has an annual probability of flooding of less than 1 in 1000 (<0.1%), a small section of the existing building to the west, is shown to be located within Flood Zone 2 which has an annual probability of flooding from rivers of between 1 in 100 and 1 in 1000 (0.1% and 1.0%). However, the proposed development works within the plan area of the existing building are located at roof level.

Environment Agency modelled data in the vicinity of the Heineken site shows node location 3 sits closest to the development area. Node 3 shows a flood level of 33.47m AOD for a 1 in 100 year storm event, a flood level of 33.75m AOD for a 1 in 100 year storm event plus 30% climate change and a flood level of 33.79m AOD for a 1 in 100 year storm event plus 35% climate change.

The proposed external slabs founding the heat store tanks have an area of approximately 42m² and are to be constructed such that the top of the slab matches the existing yard slab with a finished level of between 33.09m AOD and 32.91m AOD. The heat store tanks located above the slabs are sealed units and their function will not be affected by a flood event.

The heat store tank slabs will replace existing concrete service yard and the proposals provide an insignificant amendment to the current site arrangement and it is considered that this will have a negligible effect on the site and surrounding areas, during a flood event.

The remainder of the proposed development will be located at high level and on the roof of the existing building and will therefore have no effect on the site and surrounding areas during a flood event.

A copy of the Flood Mapping and Environment Agency correspondence is attached under **Appendix D**.

3.2 Tidal

The area and associated Rivers are not subject to tidal events.

3.3 Surface Water

Flooding from surface water can include sheet run off from adjacent land and surcharged sewers being combined, foul or surface water sewers.

The Government long term flood risk information shows that the whole of the development is located within an area having a low risk of flooding due to surface water. A low risk of flooding means that it has a chance of flooding of between 0.1% and 1% each year.

It is noted that the government website providing this information states that it is difficult to predict flooding from surface water as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

The proposed slabs founding the heat store tanks will replace existing positively drained concrete service yard and the proposals will have a negligible effect on the site and surrounding areas due to risk of flooding from surface water.

The remainder of the proposed development will be located at high level and on the roof of the existing building and will therefore the risk of flooding from surface water on the site or surrounding areas will not be increased by these items.

A copy of the long term flood risk information is attached under **Appendix D**.

3.4 Ground Water

Flooding from groundwater can include the water table rising above ground level after prolonged rainfall, remote from a watercourse, low lying areas underlain by permeable rock (aquifers), seepage directly into properties, and groundwater recovery after pumping has ceased from mining or industry.

There is no evidence of groundwater issues on the site.

3.5 Infrastructure Failure

Flooding from the failure of reservoirs, canals, industrial processes, burst water mains, blocked sewers or failed pumping stations.

United Utilities sewer records show a 2450mm brick combined sewer and a 750mm by 1020mm brick combined sewer run in a westerly direction within the carriageway of Moss Lane East. These sewers are shown to have a depth to invert of approximately 8m and 3.5m respectively.

A 620mm by 860mm brick culvert combined sewer runs in a southerly direction within Princess Road. The sewer records do not provide a depth for the sewer. The sewer connects onto the 2450mm combined sewer indicated above to continue to run in a westerly direction away from the site. A 610mm by 930mm combined sewer runs in a southerly direction within the site and under the site service road to the south. This sewer is shown to have a depth to invert of approximately 3m and runs into the 750mm by 1020mm brick combined sewer indicated above. This sewer also serves the adjacent residential development located to the east of the site.

A 680mm brick combined sewer, shown to increase to a 620mm by 770mm sewer, runs in a northerly direction within the carriageway of Denmark Road, commencing at the site entrance. This sewer is shown to have a depth to invert of approximately

2.25m. This sewer is shown to have a 750mm combined spur running into the site which stops at a dead end.

A 300mm diameter, 560mm by 710mm, and 600mm diameter combined sewers run into the site from the Police Station to its eastern boundary. These sewers are shown to connect to each other and run in a westerly direction, but are shown to end within the site boundary. A 1805mm by 3300mm surface water sewer is shown to run in a southerly direction adjacent to the western side of Denmark Road. The sewer is shown to have a depth to invert of approximately 4m and is shown to end at the site entrance.

As these drainage systems are adopted and owned by United Utilities, it is considered that these systems are likely to be adequately maintained and monitored.

A copy of the sewer records are attached under **Appendix E**.

Surface water drains run within the vicinity of the proposed works and serve a series of channel drains. The surface water drainage discharges to the west of Heineken site. As these private drainage systems are owned and maintained by the brewery as part of their site management system, they are considered to be adequately maintained.

As such, the site is considered not to be at significant risk from infrastructure failure or flooding from existing sewers.

The Government flood mapping for reservoirs shows that the whole site will potentially be affected due to the failure of reservoirs when river levels are normal. It is noted by the Environment Agency that the failure of a reservoir is very unlikely and that the maps provided reflect a credible worst case scenario for the purposes of emergency planning. It is considered the risk of flooding from the failure of a reservoir is low.

A copy of the Government flood mapping for reservoirs is attached under **Appendix E**.

3.6 Development Drainage

An increase in formally drained impermeable area could increase flood risk to a wider catchment.

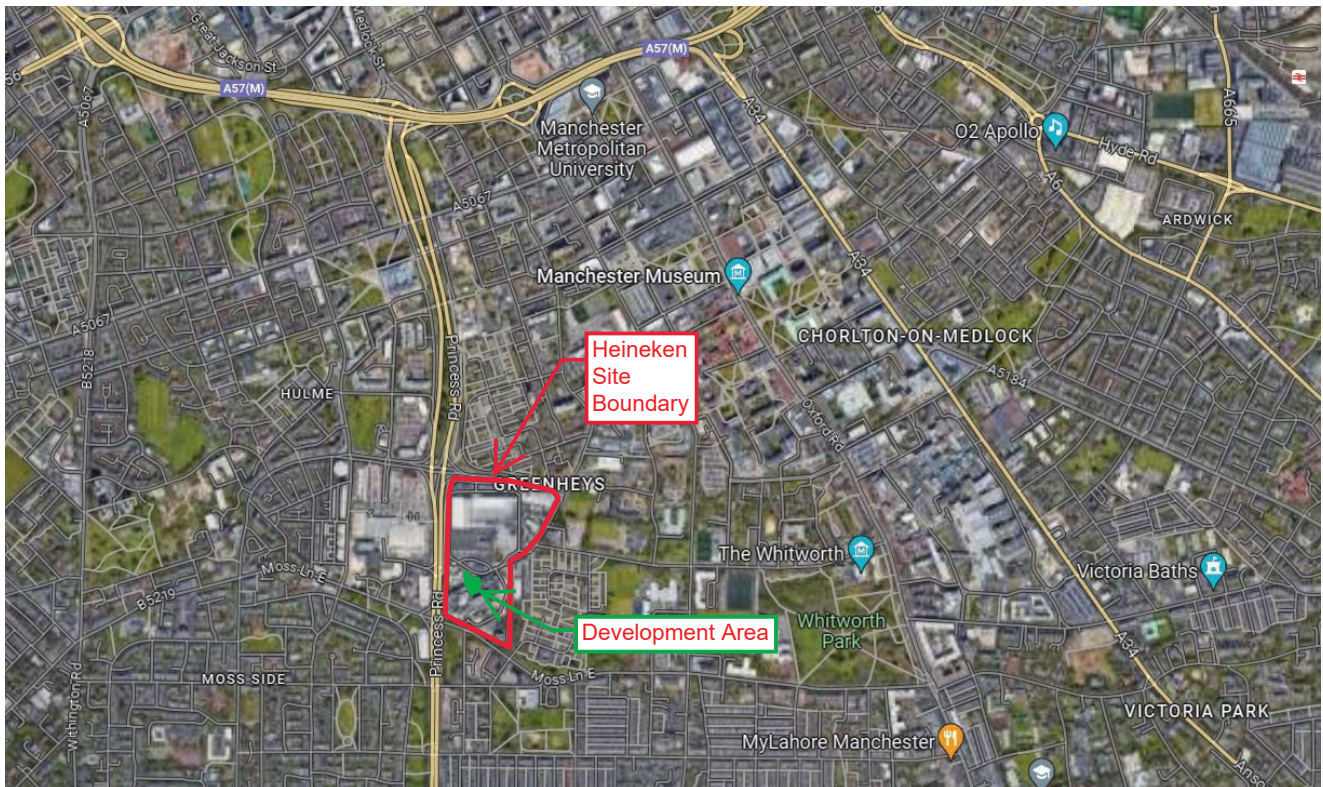
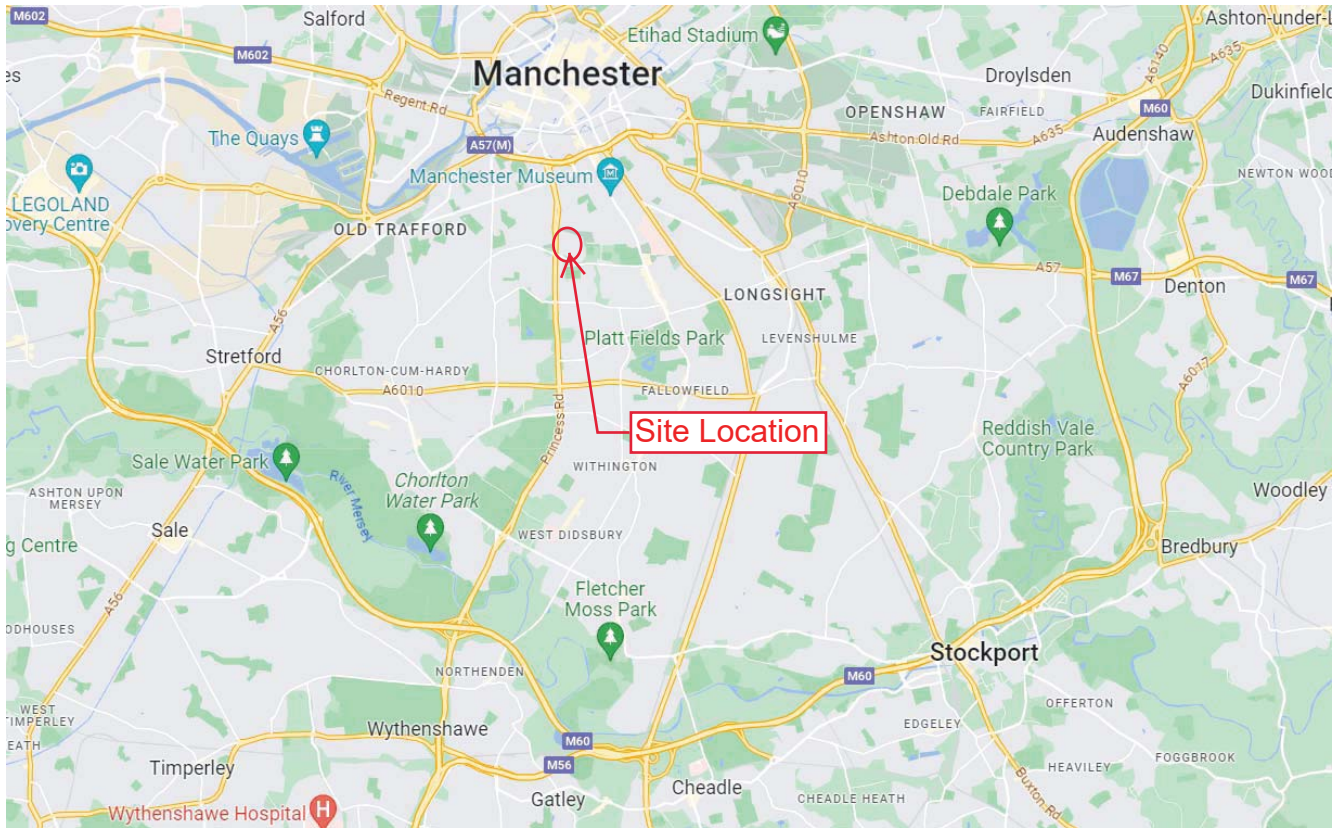
The existing development area which is to accommodate the proposed slabs founding the heat store tanks over an area of approximately 42m², is covered by impermeable concrete surfacing which is formally drained and discharged into the surrounding site drainage network. The remainder of the development proposals are at high level either located on lattice pipe bridges or on the roof of the existing building.

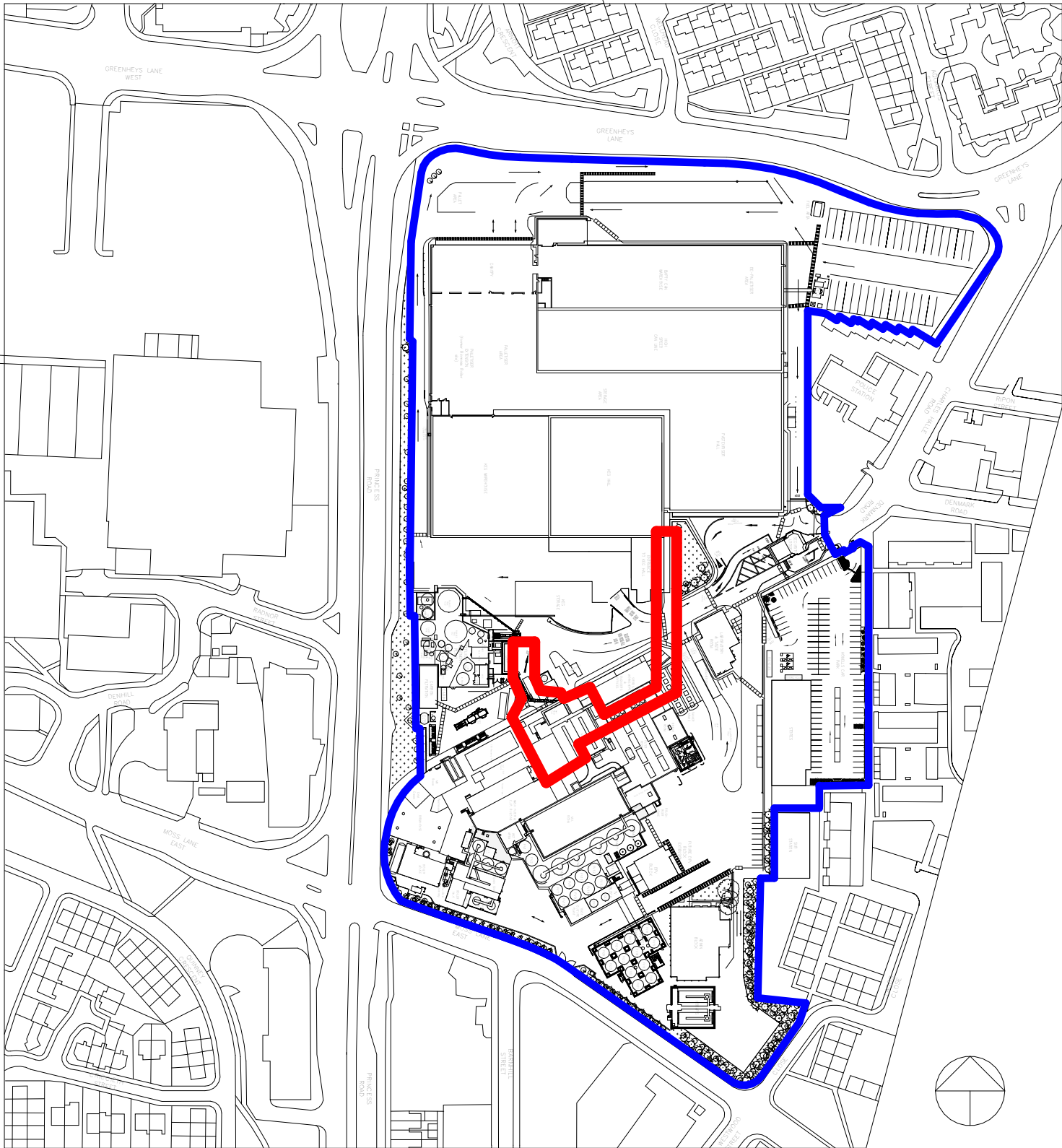
As there is no increase in formally drained impermeable area there will not be an increase in flood risk to a wider catchment due to the development proposals.

Appendix A – Site Location Plan

Heat Recovery Project Heineken Brewery, Manchester

Site Location Plan





Location Plan

1 : 2500

General Notes:

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5. Dimensions marked 'dimension to be site checked' are subject to confirmation by site measurement before construction proceeds.
6. Subcontractor surveys, such as for the purposes of steelwork installation, take precedence over 'site dimensions' indicated on this drawing. All surveys should ensure an accurate fit of components.
7. Temporary works associated with the construction of the project shall be the responsibility of the Principal Contractor.
8. Where any temporary works or scaffolding are required the Principal Contractor shall appoint a competent and suitably experienced Temporary Works Coordinator (TWC). Refer to BS 5975 for guidance on temporary works and the role of a TWC.
9. Calculations and drawings of all Contractor designed structural items associated with NDA's design responsibilities shall be submitted to the Engineer for comment at least 10 days prior to manufacture. Any comments made by NDA do not absolve the Contractor of his design responsibilities.

P1	04.08.23	Issued for Planning	TT	SW
REV	DATE	AMENDMENT	BY	CHK

CLIENT



PROJECT

Manchester Brewery
Heat Recovery Project
Exterior Facilitation Works

DRAWING TITLE

Location Plan

Norder

Engineers. Architects.
Innovators.

Beech Lawn, Green Lane, Belper, Derby DE56 1BY
Tel: 01773 824414
E-mail: enquiries@norder.co.uk

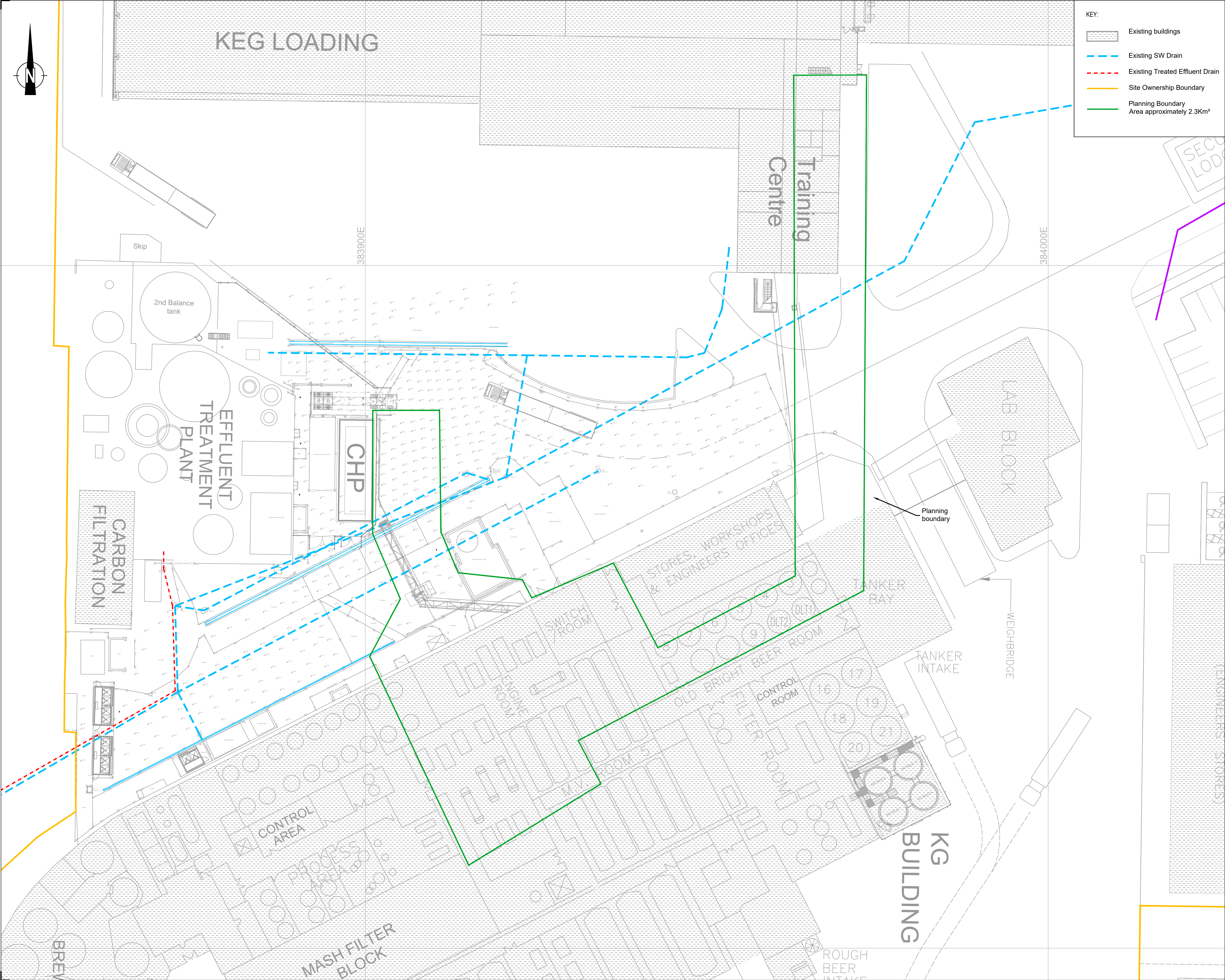
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SUITABILITY
S2 - Information

DRAWING NO.
8767-NDA-XX-XX-DR-A-1000

REV
P1

Appendix B – Existing Topographical Survey



KEY:

- Existing buildings
- Existing SW Drain
- Existing Treated Effluent Drain
- Site Ownership Boundary
- Planning Boundary
Area approximately 2.3Km²

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 - Calculations and drawings of all Contractor designed structural items associated with NDA's design responsibilities shall be submitted to the Engineer for comment at least 10 days prior to manufacture. Any comments made by NDA do not absolve the Contractor of his design responsibilities.
 - Contractor to refer to the Health and Safety File for identification of hazards, including the existence of underground and overhead utilities.
 - The contractor is to work within any planning restriction including working hours, noise levels etc.
 - Design and drawing information is based on the MSE topographical survey drawing number NDA3789-1 Heineken Manchester. NDA does not accept any liability for any inaccuracies this information may contain.

P01 31/10/23	For information	AF	RP
REV	DATE	AMENDMENT	DRW
CLIENT			CHK



PROJECT

Manchester Brewery
Heat Recovery Project

DRAWING TITLE

Existing Topographical Survey



Beech Lawn, Green Lane, Belper, Derby DE56 1BY
Tel: 01773 824414
E-mail: enquiries@norder.co.uk

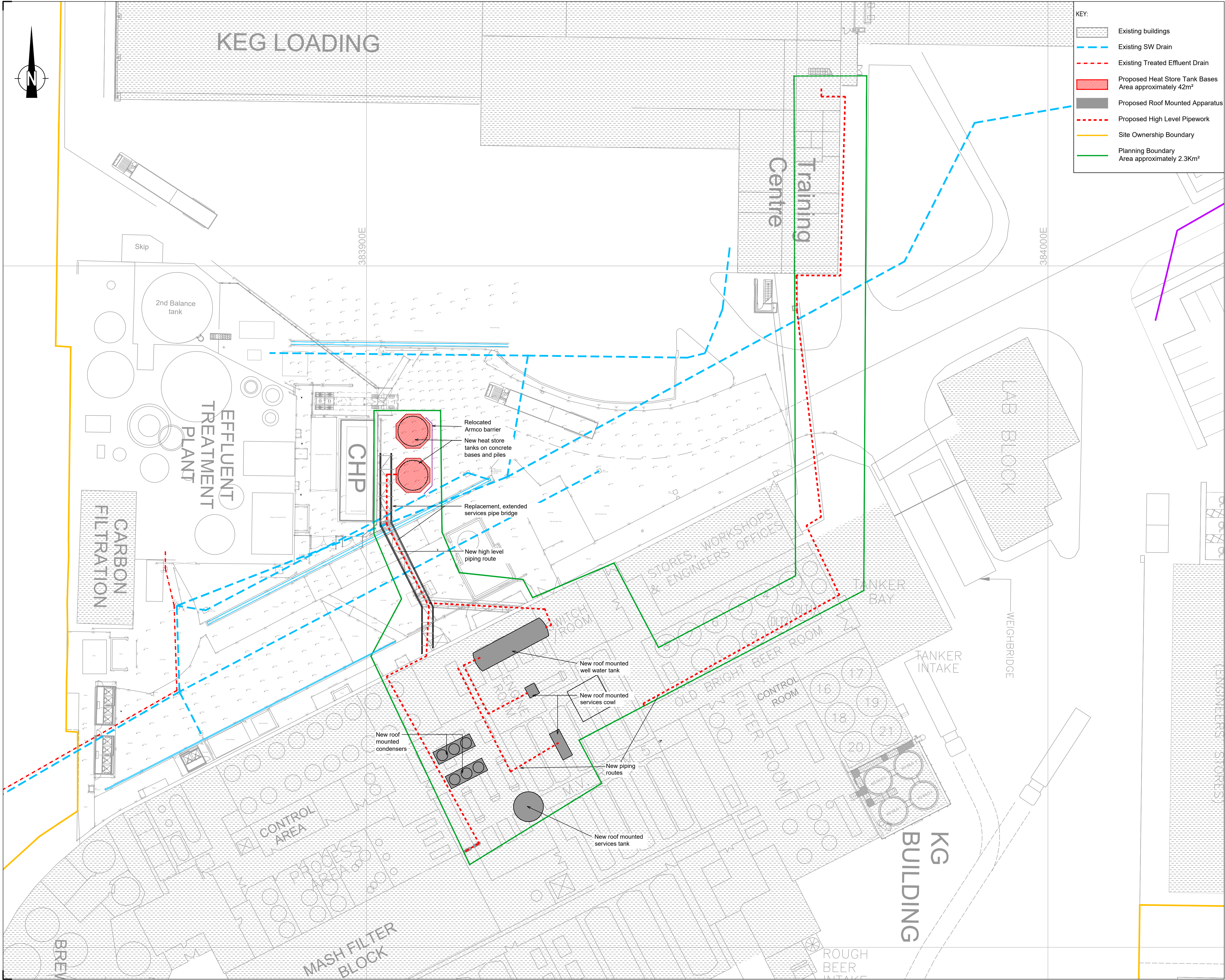
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Scale 1 : 250	A1	8767

SUITABILITY

S2 - Suitable for Information

DRAWING NO.	REV
8901-NDA-XX-XX-DR-C-1020	P01

Appendix C – Proposed Development Layout



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P01 31/10/23 For information	AF	RP
REV	DATE	AMENDMENT
CLIENT		DRW



PROJECT

Manchester Brewery
Finished Goods Warehouse

DRAWING TITLE

Proposed Development Layout
and Hard Standing Area



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E-mail: enquiries@norder.co.uk

SCALE	SHEET SIZE	NDA REF
Scale 1 : 250	A1	8767
SUITABILITY		
S2 - Suitable for Information		
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Appendix D – Flood Mapping and EA Information

Flood map for planning

Your reference
Heat Replacem

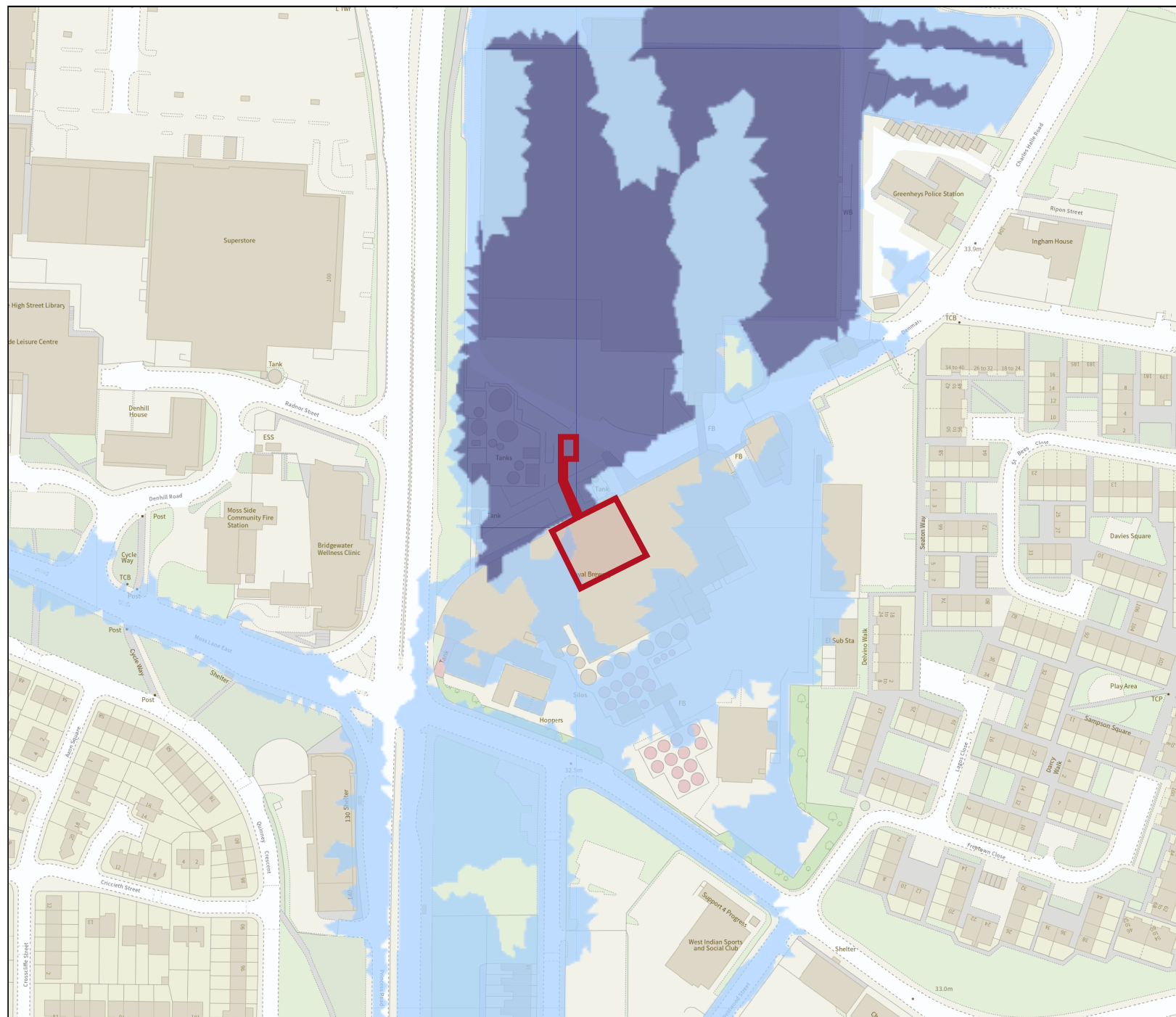
Location (easting/northing)
383916/395944

Scale
1:2500

Created
29 Oct 2023 13:41

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

0 20 40 60m



Flood risk assessment data

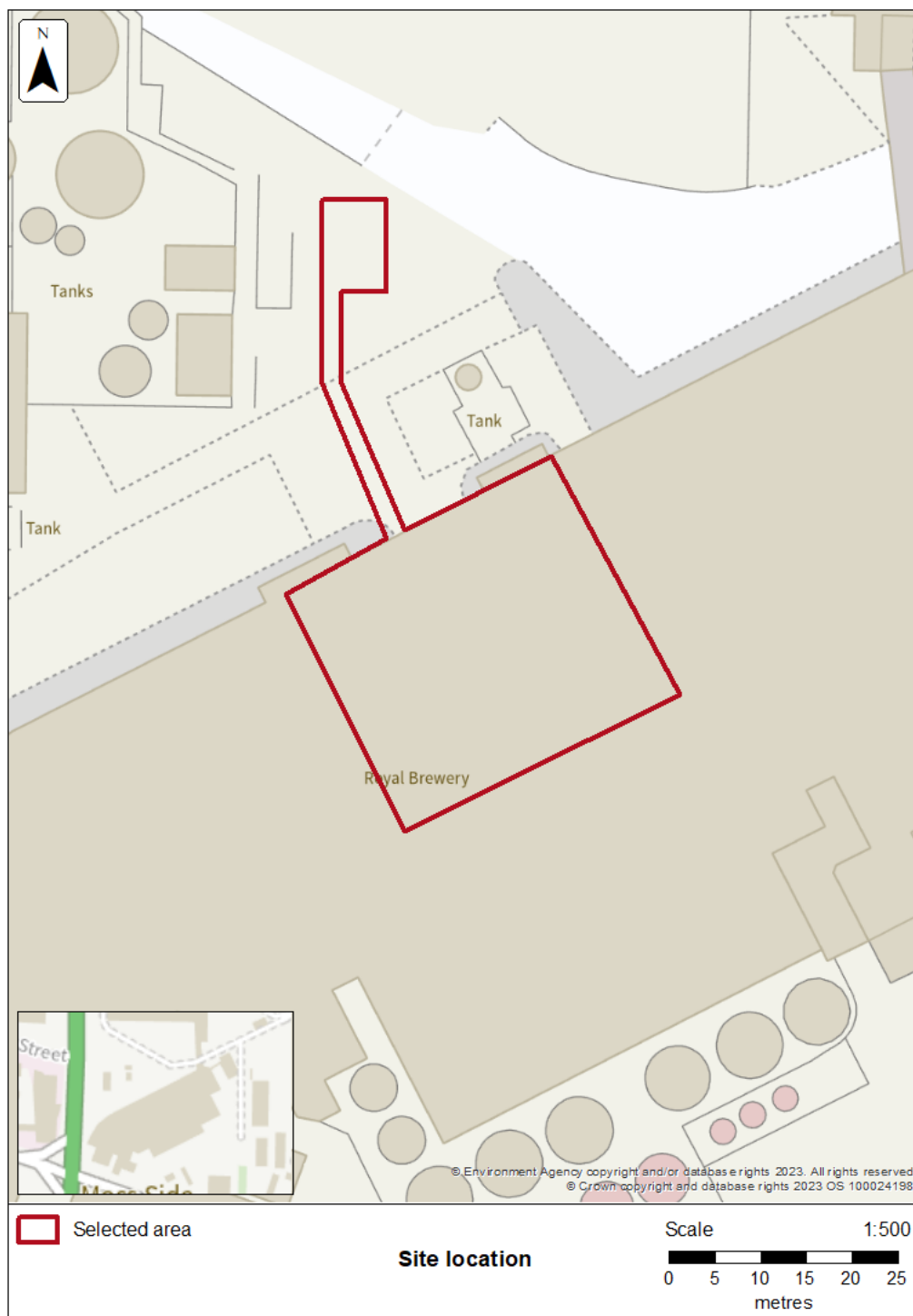
Location of site: 383914 / 395934 (shown as easting and northing coordinates)

Document created on: 29 October 2023

This information was previously known as a product 4.

Customer reference number: XV16XCXKCW1Y

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- historic flooding
- flood defences and attributes

We do not have historic flooding data for this location.

Please note that:

- flooding may have occurred that we do not have records for
- flooding can come from a range of different sources
- we can only supply flood risk data relating to flooding from rivers or the sea

You can contact your Lead Local Flood Authority or Internal Drainage Board to see if they

have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

Surface water and other sources of flooding

Use the [long term flood risk service](#) to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Corn Brook 2017

Scenario(s): No defences exist fluvial, no defences exist climate change fluvial

Date: 31 December 2017

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

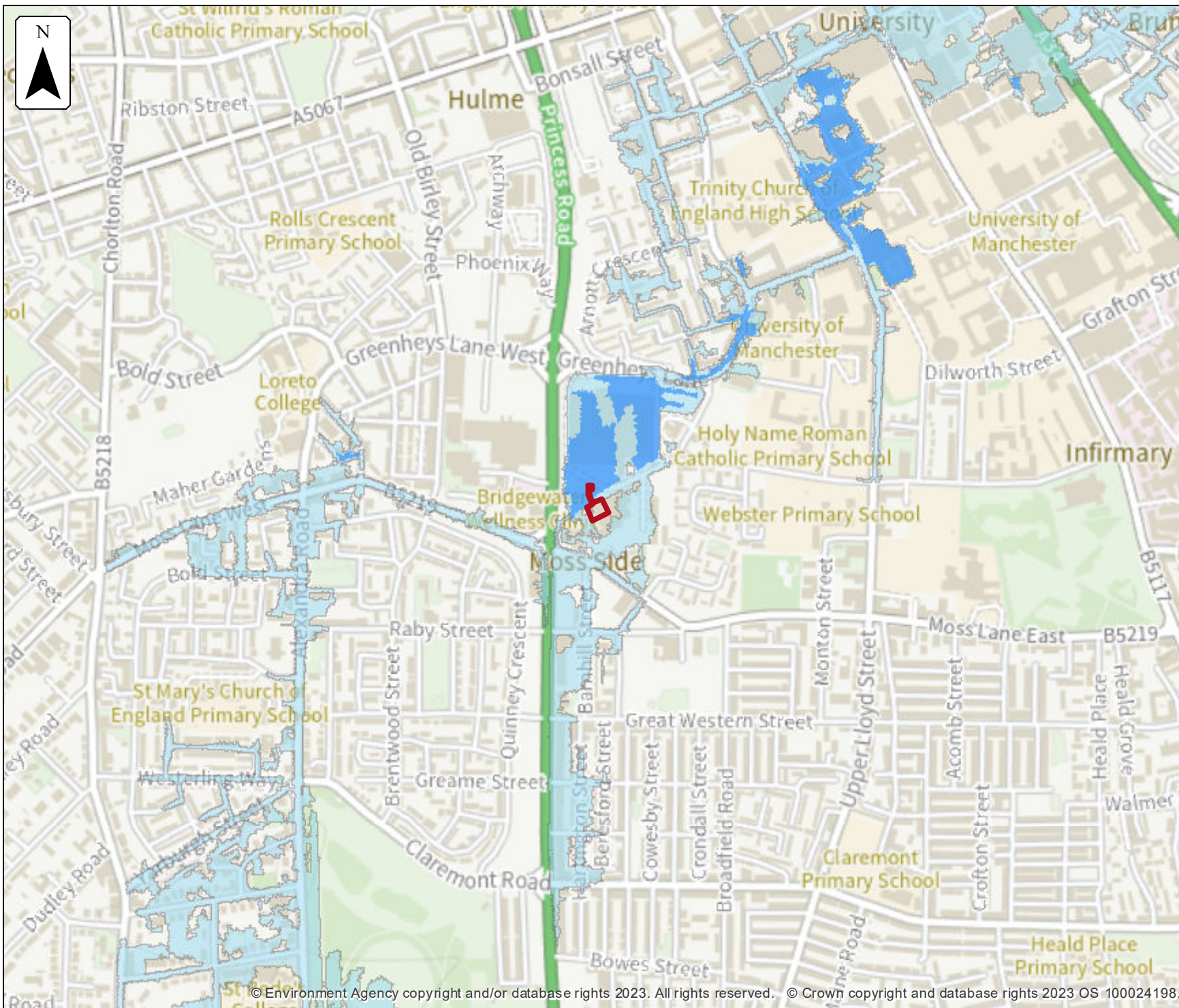
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

This data is updated on a quarterly basis as better data becomes available.



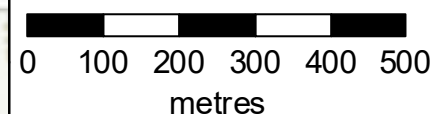
Flood map for planning

Location (easting/northing)
383914/395934

Scale
1:10,000

Created
29 Oct 2023

-  Selected area
-  Flood zone 3
-  Flood zone 2



Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

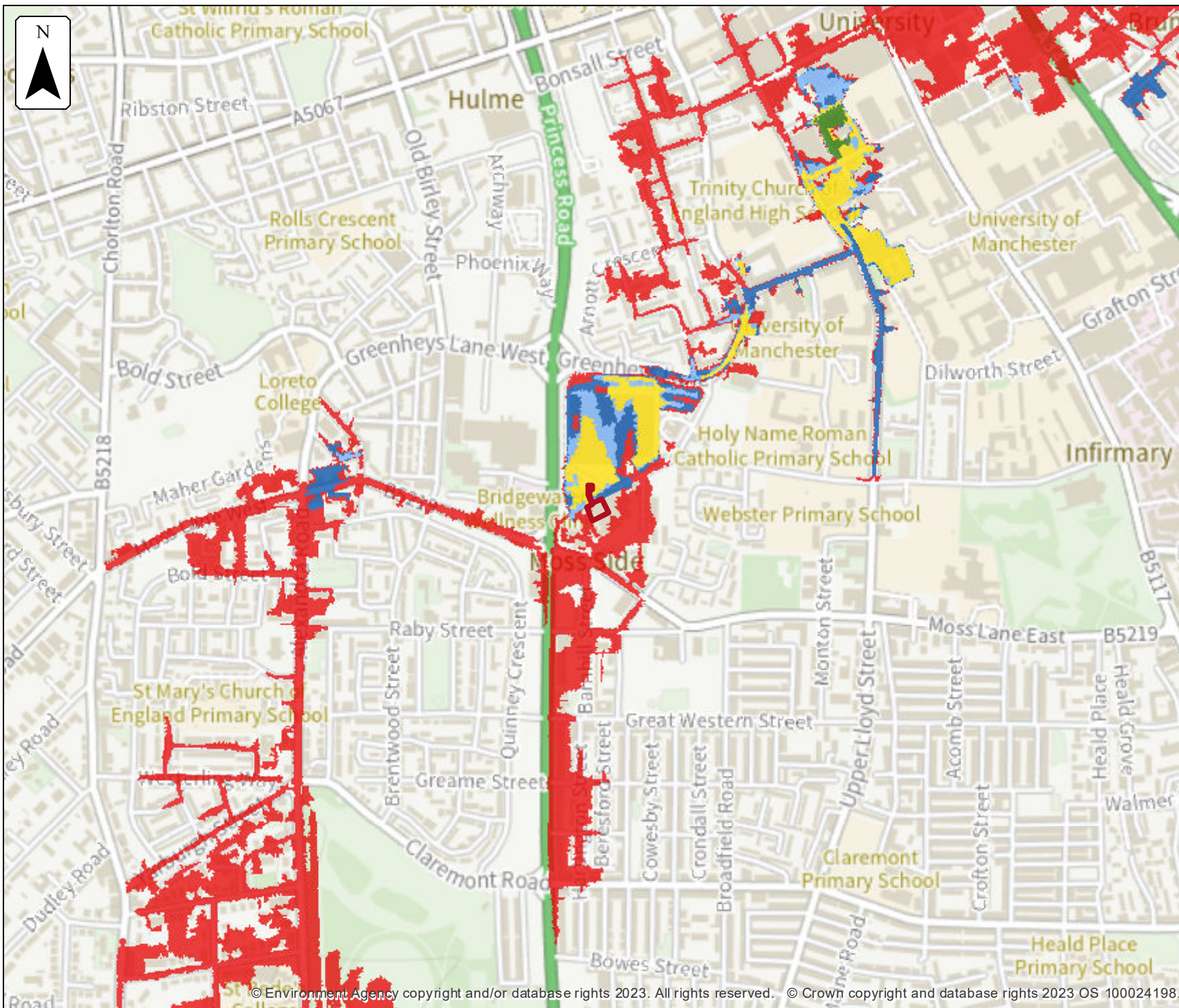
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- No defences exist modelled fluvial: risk of flooding from rivers where there are no flood defences
- No defences exist climate change modelled fluvial: risk of flooding from rivers where there are no flood defences, including estimated impact of climate change

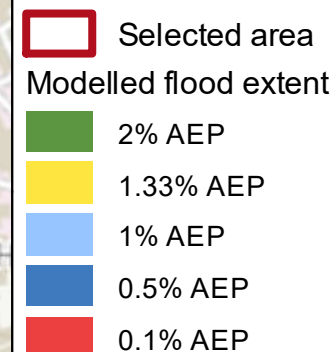


No defences exist modelled fluvial extent

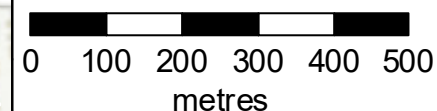
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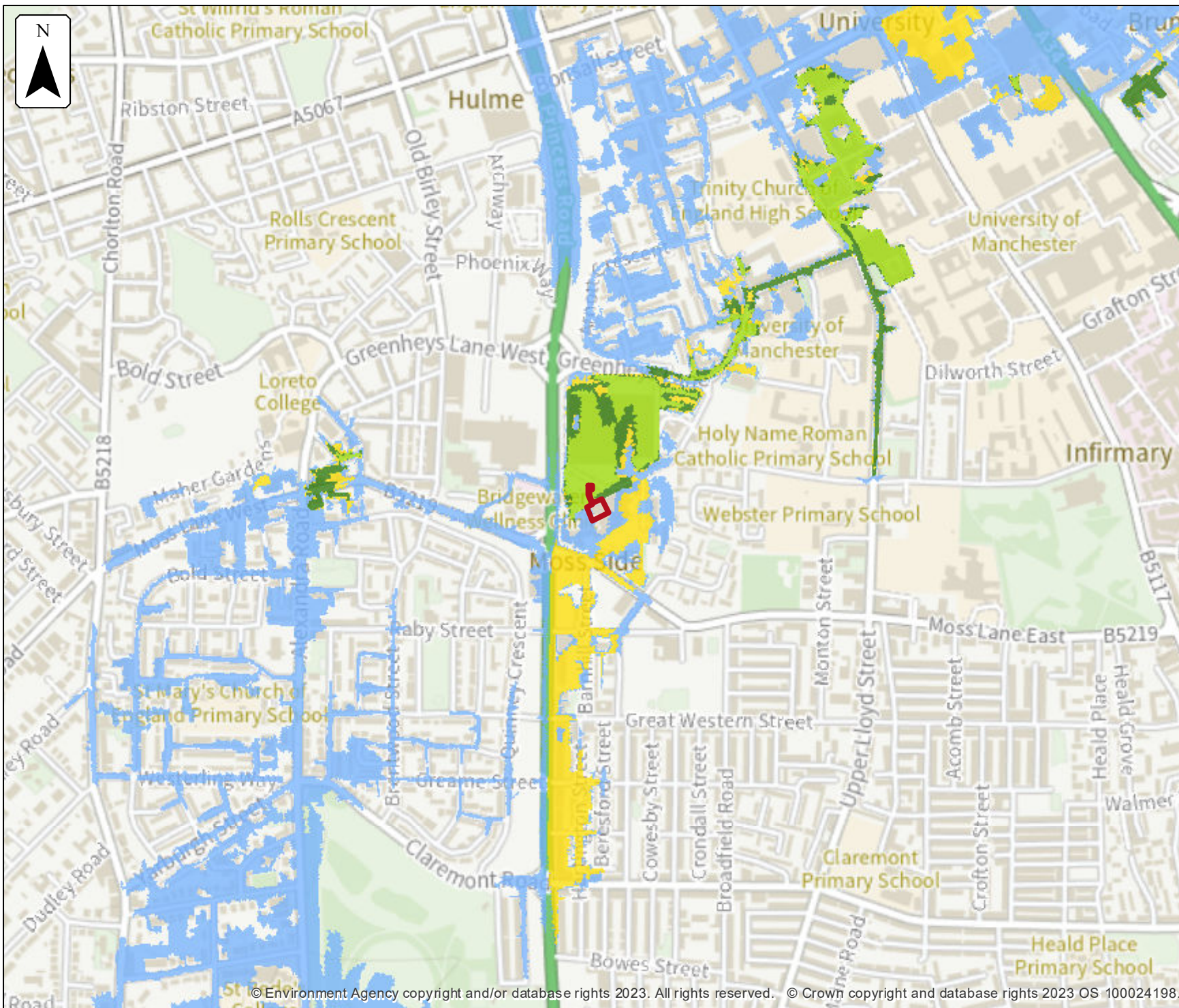
Scale Created
1:10,000 29 Oct 2023

Model name
Corn Brook 2017



Flood extents may not be
visible where they overlap
other return periods





**No defences exist
climate change
modelled fluvial extent**

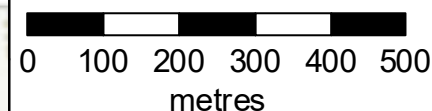
Location (easting/northing)
383914/395934

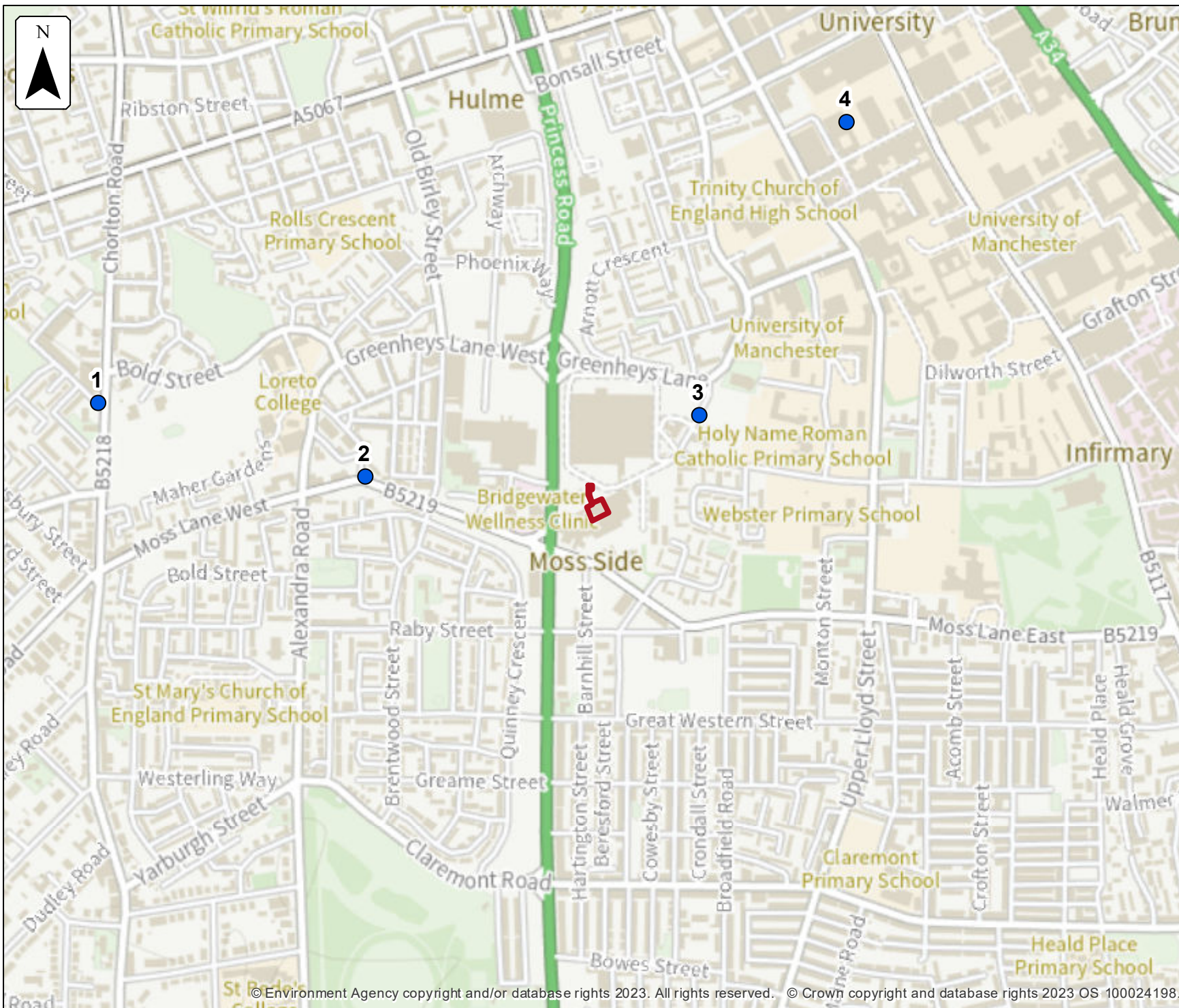
Scale Created
1:10,000 29 Oct 2023

Model name
Corn Brook 2017

- Selected area
- Main river
- Modelled flood extent
 - 1.0% AEP (+30%)
 - 1.0% AEP (+35%)
 - 1.0% AEP (+70%)
 - 0.1% AEP (+30%)

Flood extents may not be visible where they overlap other return periods





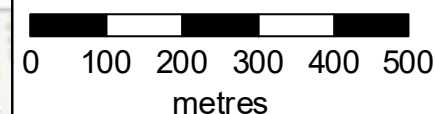
No defences exist modelled fluvial node locations

Location (easting/northing)
383914/395934

Scale Created
1:10,000 29 Oct 2023

Model name
Corn Brook 2017

-  Selected area
-  Modelled location



Modelled node locations data

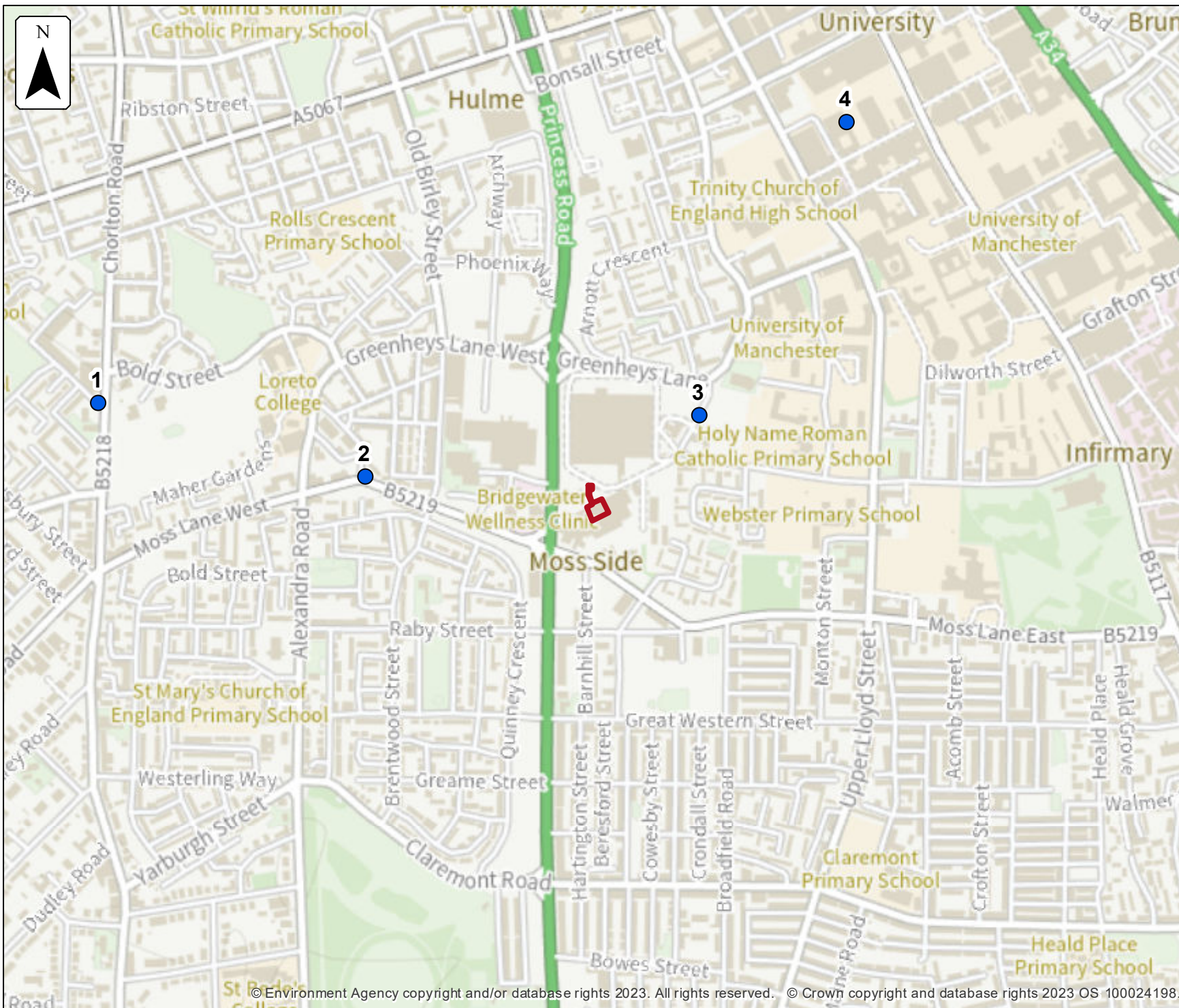
No defences exist

Label	Modelled location ID	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	952451	382950	396136	29.55	0.53	29.95	1.13	30.07	1.46	30.16	1.72	30.47	2.47	31.73	5.10
2	952452	383467	395993	30.90	0.49	31.93	1.03	32.43	1.32	32.58	1.57	32.84	2.24	33.28	4.60
3	952465	384116	396112	32.44	0.39	32.77	0.81	33.26	1.03	33.47	1.21	33.83	1.70	34.34	3.47
4	952467	384400	396681	35.44	0.57	36.89	1.20	37.13	1.56	37.27	1.84	37.41	2.65	37.66	5.49

Data in this table comes from the Corn Brook 2017 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



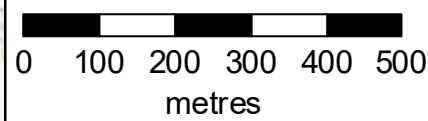
**No defences exist
climate change
modelled fluvial
node locations**

Location (easting/northing)
383914/395934

Scale Created
1:10,000 29 Oct 2023

Model name
Corn Brook 2017

-  Selected area
-  Modelled location



Modelled node locations data

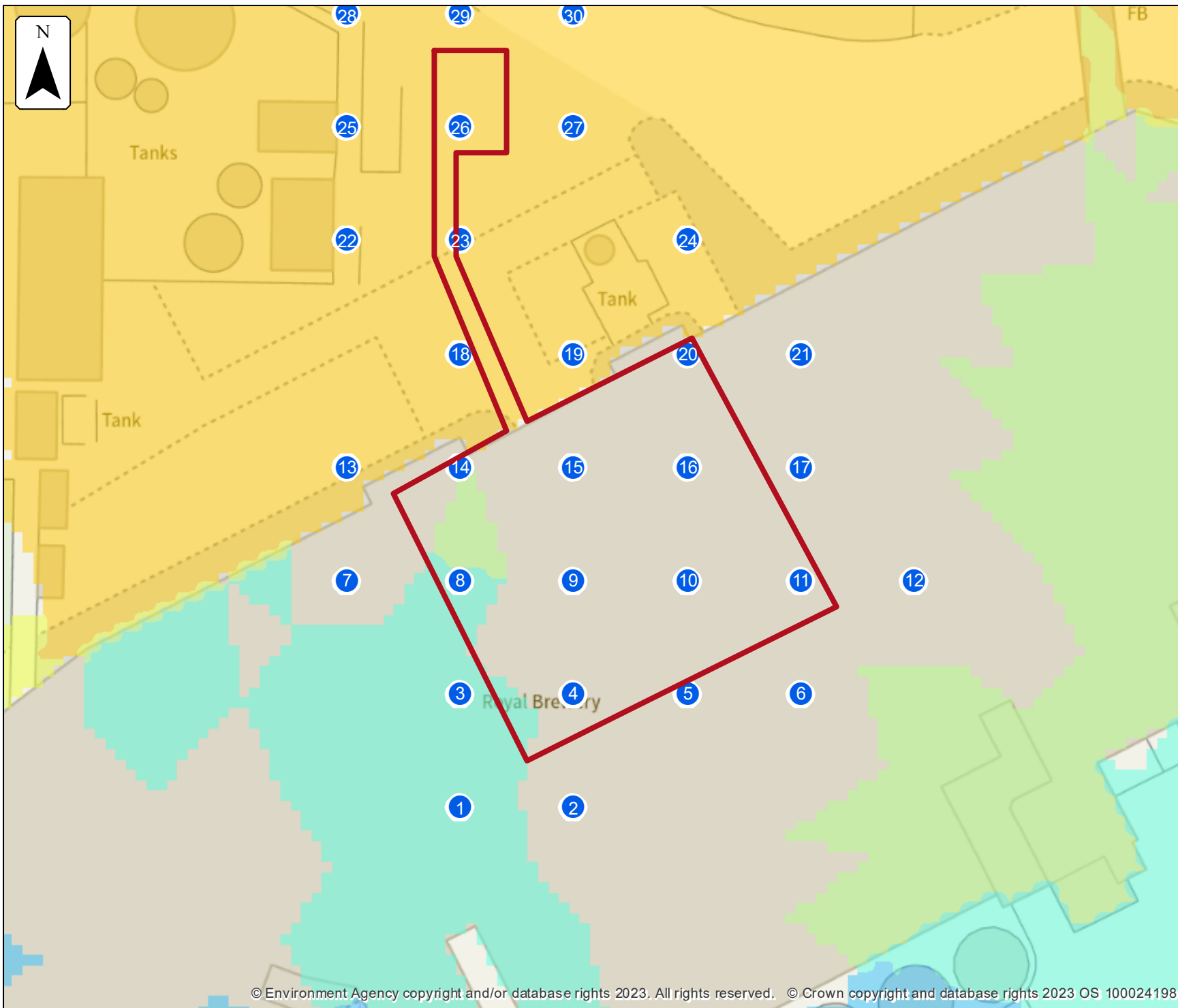
No defences exist climate change

Label	Modelled location ID	Easting	Northing	1.0% AEP (+30%)		1.0% AEP (+35%)		1.0% AEP (+70%)		0.1% AEP (+30%)	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	952451	382950	396136	30.34	2.24	30.39	2.33	30.82	2.93	31.99	6.63
2	952452	383467	395993	32.78	2.03	32.81	2.11	32.99	2.66	33.39	5.98
3	952465	384116	396112	33.75	1.57	33.79	1.63	34.02	2.05	34.46	4.51
4	952467	384400	396681	37.38	2.40	37.39	2.49	37.47	3.13	37.77	7.13

Data in this table comes from the Corn Brook 2017 model.

Level values are shown in mAOD, and flow values are shown in cubic metres per second.

Any blank cells show where a particular scenario has not been modelled for this location.



No defences exist modelled fluvial extent and height

Location (easting/northing)
383914/395934

Scale Created
1:500 29 Oct 2023

Model name
Corn Brook 2017

Sample point data

No defences exist

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	383901	395905			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.14	33.34
2	383912	395905			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
3	383901	395916			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.11	33.35
4	383912	395916			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	383923	395916			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
6	383934	395916			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	383890	395927			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
8	383901	395927			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.11	33.37
9	383912	395927			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	383923	395927			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	383934	395927			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	383945	395927			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
13	383890	395938			NoData	NoData	NoData	NoData	0.18	33.39	0.32	33.53	0.44	33.65
14	383901	395938			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
15	383912	395938			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	383923	395938			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData

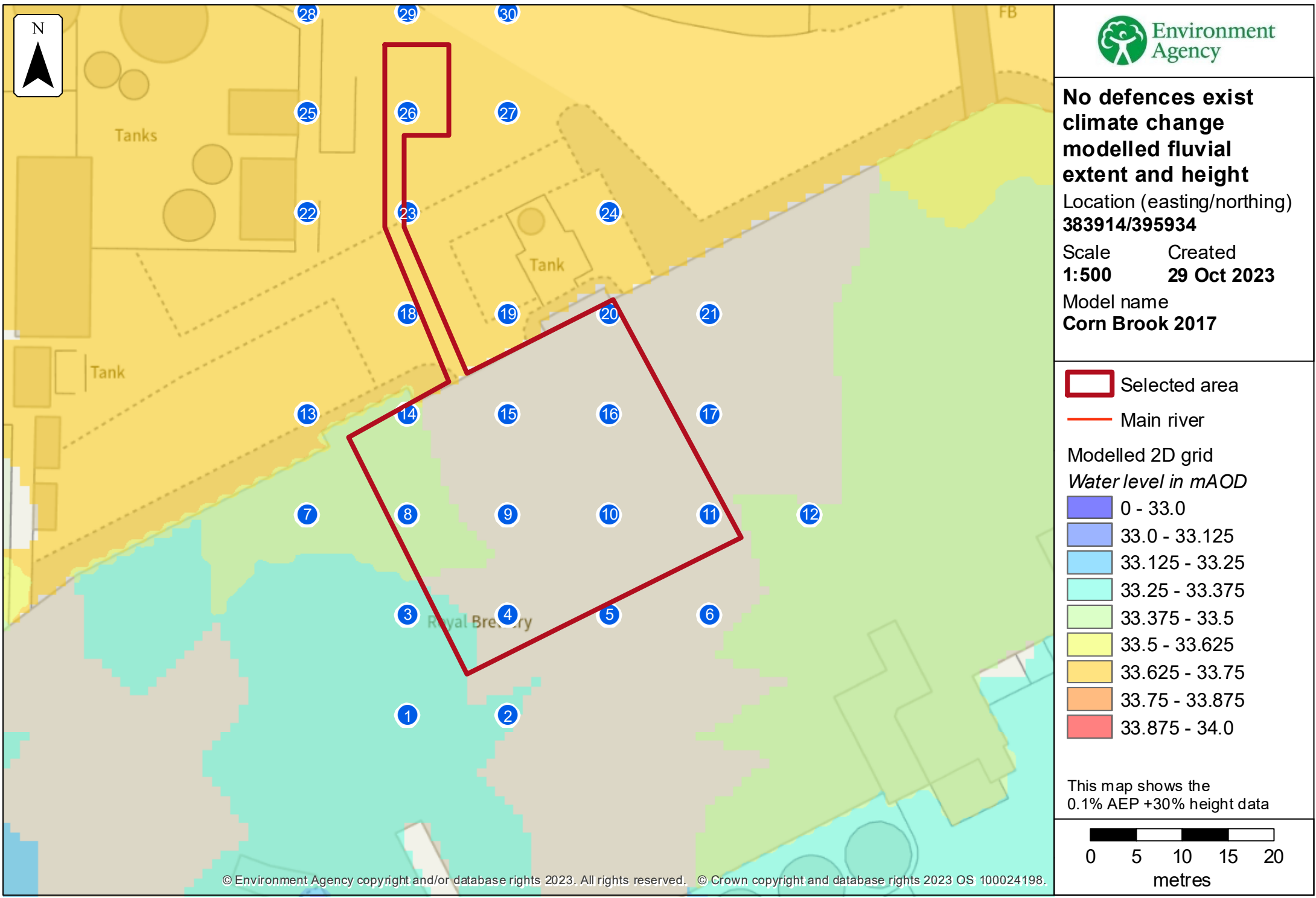
Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	383934	395938			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	383901	395949			NoData	NoData	NoData	NoData	0.17	33.39	0.31	33.53	0.43	33.65
19	383912	395949			NoData	NoData	NoData	NoData	0.16	33.39	0.30	33.53	0.41	33.65
20	383923	395949			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	383934	395949			NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	383890	395960			NoData	NoData	0.29	33.30	0.23	33.39	0.51	33.53	0.49	33.65
23	383901	395960			NoData	NoData	0.24	33.30	0.45	33.39	0.47	33.53	0.65	33.65
24	383923	395960			NoData	NoData	NoData	NoData	NoData	NoData	0.17	33.53	0.32	33.65
25	383890	395971			NoData	NoData	0.29	33.30	0.38	33.39	0.52	33.53	0.64	33.65
26	383901	395971			NoData	NoData	0.30	33.30	0.38	33.39	0.52	33.53	0.64	33.65
27	383912	395971			NoData	NoData	0.31	33.30	0.39	33.39	0.53	33.53	0.65	33.65
28	383890	395982			NoData	NoData	0.59	33.30	0.68	33.39	0.82	33.53	0.94	33.65
29	383901	395982			NoData	NoData	0.53	33.30	0.62	33.39	0.76	33.53	0.88	33.65
30	383912	395982			NoData	NoData	0.56	33.30	0.65	33.39	0.79	33.53	0.91	33.65

Data in this table comes from the Corn Brook 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



Sample point data

No defences exist climate change

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)		0.1% AEP (+30%)	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	383901	395905	NoData	NoData	NoData	NoData	NoData	NoData	0.16	33.36
2	383912	395905	NoData	NoData	NoData	NoData	NoData	NoData	0.10	33.36
3	383901	395916	NoData	NoData	NoData	NoData	NoData	NoData	0.13	33.37
4	383912	395916	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
5	383923	395916	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
6	383934	395916	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
7	383890	395927	NoData	NoData	NoData	NoData	NoData	NoData	0.10	33.38
8	383901	395927	NoData	NoData	NoData	NoData	NoData	NoData	0.12	33.39
9	383912	395927	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
10	383923	395927	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
11	383934	395927	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
12	383945	395927	NoData	NoData	NoData	NoData	NoData	NoData	0.10	33.48
13	383890	395938	0.30	33.51	0.31	33.52	0.37	33.58	0.48	33.69
14	383901	395938	NoData	NoData	NoData	NoData	NoData	NoData	0.10	33.40
15	383912	395938	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
16	383923	395938	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)		0.1% AEP (+30%)	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	383934	395938	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
18	383901	395949	0.28	33.51	0.30	33.52	0.35	33.58	0.47	33.69
19	383912	395949	0.27	33.51	0.29	33.52	0.34	33.58	0.46	33.69
20	383923	395949	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
21	383934	395949	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData
22	383890	395960	0.49	33.51	0.50	33.52	0.56	33.58	0.53	33.69
23	383901	395960	0.44	33.51	0.46	33.52	0.51	33.58	0.71	33.69
24	383923	395960	0.14	33.51	0.16	33.52	0.21	33.58	0.37	33.69
25	383890	395971	0.49	33.51	0.51	33.52	0.56	33.58	0.68	33.69
26	383901	395971	0.50	33.51	0.51	33.52	0.57	33.58	0.76	33.69
27	383912	395971	0.51	33.51	0.52	33.52	0.58	33.58	0.69	33.69
28	383890	395982	0.80	33.51	0.81	33.52	0.87	33.58	0.98	33.69
29	383901	395982	0.74	33.51	0.75	33.52	0.81	33.58	0.92	33.69
30	383912	395982	0.77	33.51	0.78	33.52	0.84	33.58	0.95	33.69

Data in this table comes from the Corn Brook 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

[Find out more about flood risk activity permits](#)

Help and advice

Contact the Greater Manchester Merseyside and Cheshire Environment Agency team at inforequests.gmmc@environment-agency.gov.uk for:

- [more information about getting a product 5, 6, 7 or 8](#)
- general help and advice about the site you're requesting data for

Appendix E – Sewer and Drainage Records



0402	34
0401	34

United Utilities
helping life flow smoothly

SEWER  United



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57311 1 lin 183

57311 1 lin 183

red - combined blue - surface water
brown - foul purple - overflow

- MANHOLE FUNCTION**
- | | |
|----|---------------|
| FO | Foul |
| SW | Surface Water |
| CO | Combined |
| OV | Overflow |

SEWER SHAPE			
CI	Circle	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified

BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vertified Clay
PP Polypropylene
PF Pitch Fibre
MAG Masonry, Courtyard

Heineken Manchester Denmark Road,

Printed by: Property Searches



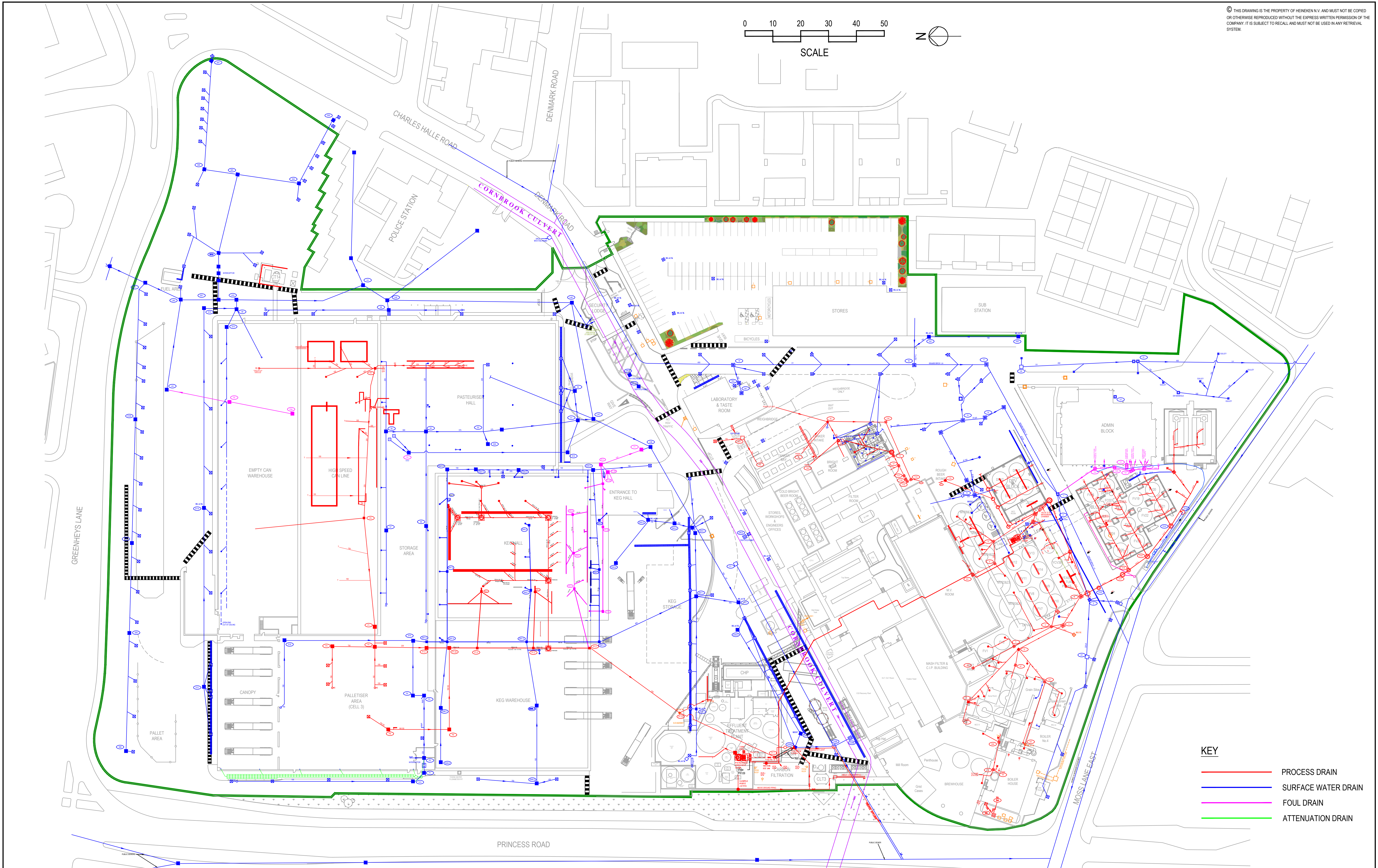
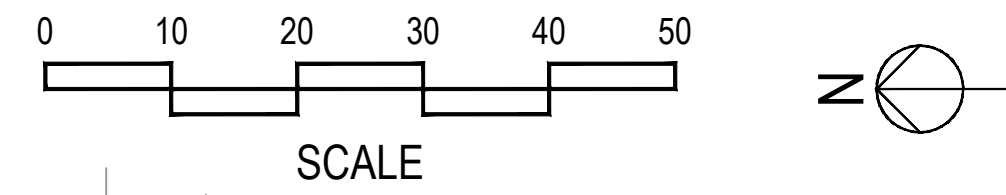
United Utilities



LEGEND	
Abandoned Foul Surface Water Combined	Public Sewer Private Sewer Section 104 Rising Main Sludge Main Overflow Water Course Highway Drain
All point assets follow the standard colour convention: ● red – combined ● blue – surface water ● brown – foul ● purple – overflow	
Manhole Head of Survey Extent of System Rooding Eye Inlet Discharge Point Vortex Percatch Washout Chamber Valve Air Valve Non Return Valve Rackway Culley Flow Meter Hatch Box Summit Drop Shaft Orifice Plate	Gate Entry Manhole Outlet Screen Chamber Inspection Chamber Bifurcation Chamber Lamp Hole T Junction / Saddle Catchpit Valve Chamber Vent Column Vortex Chamber Percatch Chamber Network Storage Tank Sewer Overflow Sewer Treatment Works Wee Pumping Station Septic Tank Control Kiosk Change of Characteristic
MANHOLE FUNCTION FO Foul SW Surface Water CO Combined OV Overflow	
SEWER SHAPE CI Circular TR Trapezoidal EG Egg AR Arch OV Oval BA Barrel FT Flat Top HO Horseshoe RE Rectangular UN Unspecified SQ Square	
SEWER MATERIAL AC Asbestos Cement BR Brick PE Polyethylene RP Reinforced Plastic Matrix CO Concrete CB Concrete Segment Bored CS Concrete Segment Unbored CC Concrete Box Culverted PSC Plastic / Steel Composite GRC Glass Reinforced Plastic DI Ductile Iron PVC Polyvinyl Chloride CI Cast Iron SI Spun Iron ST Steel VC Vertiflex Clay PP Polypropylene PF Fibre Fibres MAC Masonry, Coursed MAR Masonry, Random U Unspecified	
Address or Site Reference: Heineken Manchester Denmark Road,	

SEWER RECORDS

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KEY

- PROCESS DRAIN
- SURFACE WATER DRAIN
- FOUL DRAIN
- ATTENUATION DRAIN

U	18/01/01	SPB	DRY 1 - BLOCK & REVISED DRAINAGE ADDED.
U	15/12/00	SPB	ETP OUTLET PIPE & SAMPLE POINT SHOWN.
T	28/06/00	DJ	UPDATES TO DRAINS AROUND THE PALLETISER AREA & ATTENUATION DRAIN INSTALLED.
S	27/04/18	SPB	UPDATES TO DRAINS AROUND NEW FV BLOCK, HORAP TANKS AND NEW YEAST CULTURE PLANT.
P	13/02/16	AP	UPDATED FURTHER TO SURVEY.
P	18/05/15	AP	UPDATED FURTHER TO SITE LAYOUT CHANGES.
N	28/07/14	AP	FOUL DRAINS LAYER COLOUR CHANGE.
N	28/05/14	AP	CHIMNEY LINE UPDATES.
L	26/06/12	AP	SITE PLAN UPDATED, HOWELL'S DEMOLISHED.
K	28/09/10	AP	BRICK PUMP P1.1 POSITION CORRECTED.
REV	DATE	DRN	DESCRIPTION



Heineken UK Limited
Manchester Brewery
201 Denmark Road, Manchester, M15 6LD
Tel: 0161 226 4371

LOCATION	MANCHESTER BREWERY
PROJECT	DRAINAGE MASTER DRAWING

DRAWN BY:	BR
DATE:	07/01/99
APPROVED BY:	
DATE:	

TITLE	DRAINAGE SITE PLAN
-------	-----------------------

DRAWING No.:	87-001 Sheet 2	REV:	V
STATUS	AS BUILT	SCALE @ A1:	1:600

Heat Recovery Project Heineken, Manchester

Flood Risk From Reservoirs

Extent of flooding



Enter a place or postcode

