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**Withington Community Hospital
CDC Scheme**

CCS Project No: HE-014

for

**Manchester University NHS
Foundation Trust & BAM**



Manchester University
NHS Foundation Trust



Flood Risk Assessment

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1 Introduction

This flood risk assessment has been prepared by CCS Consulting in support of a full planning application for a new Endoscopy & Cardiorespiratory Development building at Withington Community Hospital, Manchester, M20 2LR (hereafter referred to as the 'Site').

This flood risk assessment has been prepared in accordance with the latest National and local planning policies, regulations, and relevant design guidance, which include:

National Planning Policy Framework (NPPF), December 2023, Paragraphs 159-169.

National Planning Practice Guidance (NPPG) ('Flood Risk and Coastal Change' section), released in March 2014 and updated in August 2022.

Environment Agency and Department for Environment, Food and Rural Affairs guidance.

Environment Agency and JBA Consulting via Landmark Envirocheck data Service.

And local policies including:

Manchester City, Salford City and Trafford Councils Level 1 SFRA (May 2010).

Manchester City, Salford City and Trafford Councils Level 2 SFRA (March 2011).

Manchester City Council – Local Flood Risk Management Strategy (March 2014).

Manchester Local Development Framework – Core Strategy Development Plan (July 2012).

The Environment Agency and Manchester City Council need to be satisfied that the granting of planning permission will address the risk of flooding to the Site, and that the proposals will not in turn increase the risk of flooding to neighbouring land and property.

This flood risk assessment has therefore been prepared to identify and evaluate the various possible sources of flood risk to which the Site might be subjected to; to identify any mitigation, protection or compensation measures deemed necessary or feasible; and to manage the surface water so it is sustainable, and does not increase the probability of flooding within, or near the Site.

2 Planning Policies and Guidance

2.1 National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG)

The NPPF (December 2023) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally prepared plans for housing and other development can be produced. This document is used to form this surface water management report, with particular attention to Paragraphs 159 to 169.

NPPF Paragraphs 159 to 169 provide guidance for planning and flood risk, where are plans should apply a sequential, risk-based approach to the location of development taking into account current and future impacts of climate change; to ensure that flood risk is not increased elsewhere due to the development; and to incorporate sustainable drainage systems.

2.2 Flood and Water Management Act

The Flood and Water Management Act takes forward some of the proposals from three previous strategy documents published by the UK Government - Future Water (2008), Making Space for Water (2008) and the UK Government's response to the Sir Michael Pitt's Review of the summer 2007 floods. In doing so it gives the EA a strategic overview role for flood risk and gives local authorities responsibility for preparing and putting in place strategies for managing flood risk from groundwater, surface water and ordinary watercourses in their areas.

2.3 Manchester Local Development Framework – Core Strategy Development Plan

Relevant Policy EN 08 state:

'All new development will be expected to be adaptable to climate change in terms of the design, layout, siting, and function of both buildings and associated external spaces. In achieving developments which are adaptable to climate change'

Relevant Policy EN 14 state:

'In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account of all sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA).

In addition to the requirements for site-specific Flood Risk Assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.

The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure'.

3 Site Setting and Description

3.1 Site Location

The Site is part of Withington Community Hospital and is in residential area of West Didsbury, which is approximately 1.5km south-west of Mauldeth Road station, approximately 1km west of Brennage station, and is bound by existing hospital car parking and building leading to Nell Lane the north, Burton Road to the east, Fielden Road to the south, and hospital buildings leading onto Elizabeth Slinger Road to the west.

The address of the site is Withington Community Hospital, Manchester, M20 2LR, with co-ordinates for the centre of the site being, Easting: 383735, Northing: 392005.

3.2 Existing Site and Topography

As detailed on the topographical survey in Appendix A, the Site is currently undeveloped and consists of trees, shrubs, and grassed areas, and therefore is deemed to be greenfield. The site has a general fall from the centre towards the Site boundary, where the levels range from approximately 34.24m AOD to approximately 32.49m AOD.

3.3 Proposed Development

The proposal is shown on the development plans in Appendix B, with a full description of the Site being stated by the Architect. In brief, and in relation to this surface water management report, the proposed development is to build a new hospital building to the centre of the Site, with an access road to the south and west, car parking to the centre / west, and soft-landscaping areas around the site boundary and adjacent to the car park.

3.4 Ground Conditions

The ground conditions can be determined by the British Geological Survey (BGS) website, where it shows the Site to have superficial deposits of Glaciofluvial deposits (sands and gravels) over bedrock consisting of Wilmslow Sandstone Formation (sandstone).

The BGS website also shows borehole log data adjacent to the Site in Burton Road (see Appendix C), which shows made ground to a depth of 2.20m, over coarse sand to a depth of 3.90m, over clay. The borehole also indicates ground water level rising in the coarse sand layers up to 3.00m bgl.

3.5 Waterbody / Rivers / Canals

There are no known waterbodies, rivers, or canals near to the Site. As detailed on the OS Water Lines Network Map in Appendix D, the nearest waterbodies are the river Mersey approximately 250m to the south, and Platt Brook approximately 2.5 km to the north.

3.6 On-Site Drainage and Public Sewers

As detailed on the United Utilities asset plan in Appendix D, there is an 825 x 1200mm surface water sewer in Burton Road (west of site), a 525mm diameter combined water sewer in Burton Road (west of site), and a 300mm diameter combined water sewer in Fielden Road (south of site).

As the Site is undeveloped it is believed that there are no drainage networks within the development / site boundary. The topographical survey however identifies existing foul and surface water networks serving the existing hospital building to the north. In particular, and relevant to this report, the topographical survey shows a 225mm diameter surface water network which is believed to discharge to the surface water sewer in Burton Road.

4 Sources of Flooding

In accordance with the NPPF, flood risk must be assessed for all sources of flooding and development of the Site should be carried out in such a way as to mitigate any potential flood risk to both the Site and third parties and their property. This section identifies all possible sources of flooding.

4.1 Fluvial Flooding

Fluvial flooding results from watercourses / rivers surcharging and flooding the surrounding areas.

4.2 Coastal Flooding

Coastal flooding results from high tides from the sea.

4.3 Pluvial Flooding

'Pluvial' flooding is that which results from rainfall generated overland flow before the run-off enters any watercourse, drain or sewer. It is more often linked to high intensity rainfall events (typically in excess of 30mm per hour). However, it can also result from lower intensity rainfall or melting snow where the ground is saturated, frozen, developed or has low permeability. This results in overland flow and ponding in depressions in the topography. In urban areas 'pluvial' flows are likely to follow the routes of highways and other surface connectivity to low spots where flooding can occur. In some cases, it can deviate from this route into adjacent developments via dropped kerbs (either for access to driveways or disability access).

4.4 Groundwater Flooding

Groundwater flooding is caused by the emergence of water from sub-surface permeable strata. Fluctuations in the groundwater table can cause flooding should the table rise above the existing ground level. Groundwater flooding events tend to have long durations, lasting days, or weeks.

4.5 Flooding from Drains and Sewers

Flooding from drains and sewers is caused when the capacity of the drains and sewers is exceeded and will result in flooding from the manholes.

4.6 Canals, Reservoirs and Other Artificial Sources

Flooding from canals, reservoirs and artificial sources is caused when the capacity of the sources is exceeded, or if there is, an infrastructure failure.

5 Sourced Data

Data from the Environment Agency; local strategic flood risk assessments; and information from other parties are to be studies to establish which sources of flooding are at the Site.

5.1 Environment Agency Flood Maps for Planning

The EA fluvial flood zone map shown in Figure 1, indicates that the Site is in Flood Zone 1 (land having a less than 1 in 1,000 annual probability of river flooding).

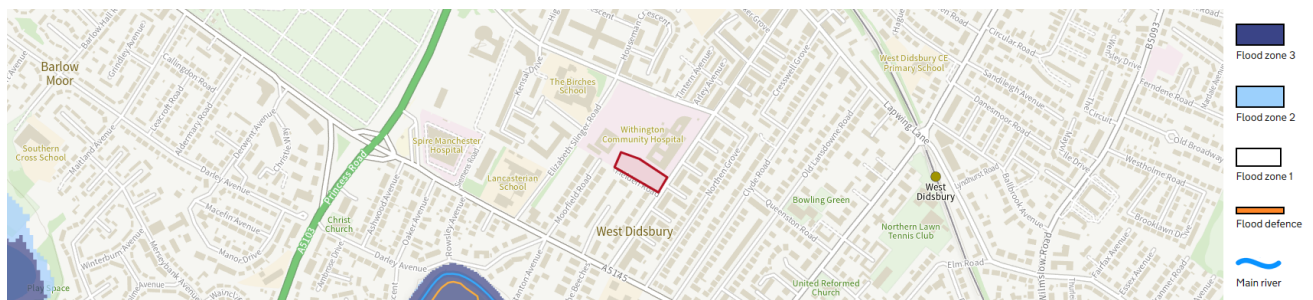


Figure 1 - EA Fluvial Flood Zone Map

The EA fluvial flood probability map shown in Figure 2, indicates the Site has a better than very low probability of fluvial flooding.



Extent of flooding from rivers or the sea

● High ● Medium ● Low ● Very low ⊕ Location you selected

Figure 2 - EA Fluvial Flood Probability Map

The EA pluvial flood probability map shown in Figure 3, indicates the Site has a very low probability of pluvial flooding. There is an isolated low probability pluvial flood area to the north of the site, but this is outside the Site boundary, and is caused by ponding due to a depression in the ground.

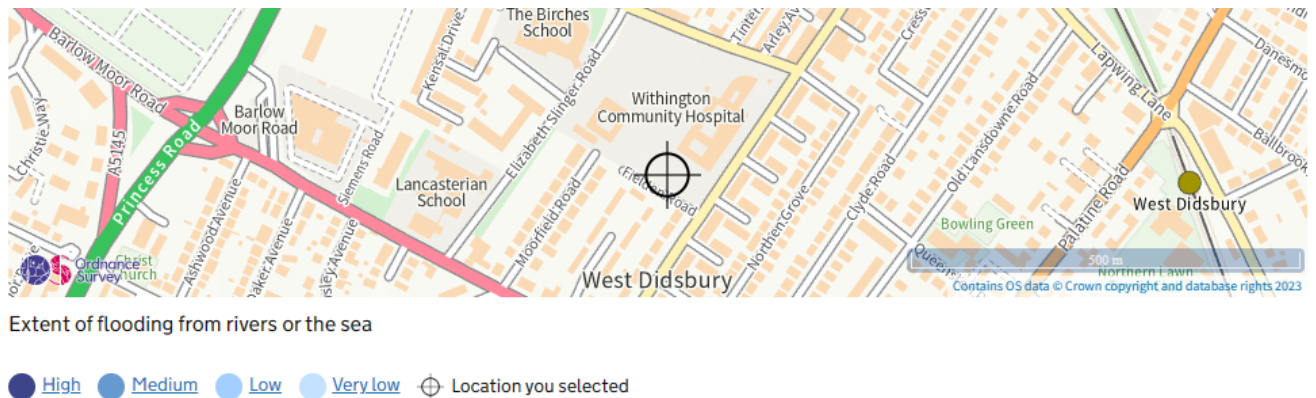


Figure 3 - EA Pluvial Flood Probability Map

The Extents of Flooding from Reservoirs Map in Figure 4 indicates that the Site is not in a flooding area when river levels are normal, or when there is also flooding from rivers.

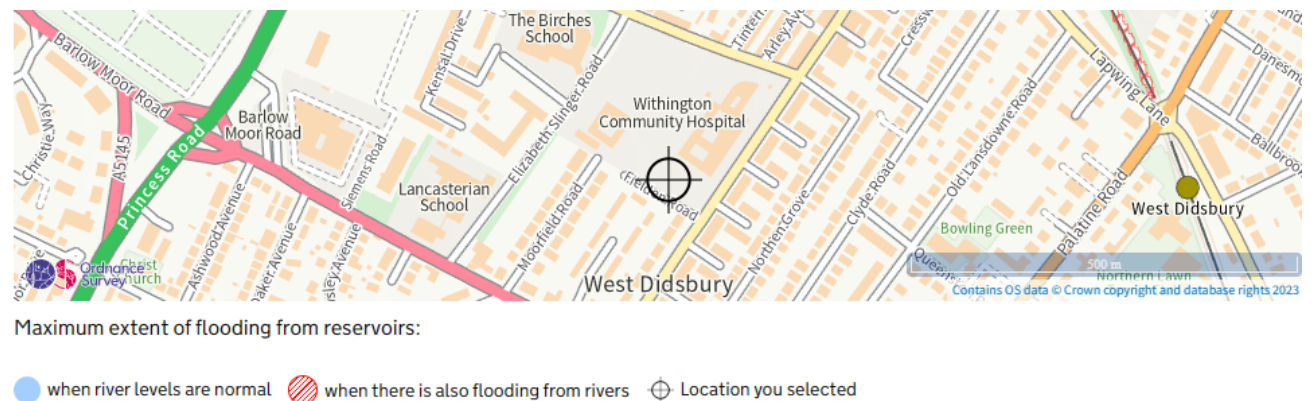


Figure 4 - EA Extents of Flooding from Reservoirs Map

5.2 Landmark Envirocheck Data Maps

Refer to Appendix F for Landmark Envirocheck flood map data. The data shown on the maps have been sourced from studies by JBA Consulting, the EA and NRW. The summary of each of the maps are as follows:

Flood Zone Map

The EA/NRW flood data map, also indicates that all the Site lies within Flood Zone 1 – low probability.

Pluvial, Fluvial and Coastal Flooding

The Envirocheck (JBA) 75-year to 1000-year return period flood map indicates that there is no pluvial, fluvial, or coastal flooding within the Site boundary.

Surface Water / Pluvial Flooding

The EA 30-year to 1000-year return period flood map indicates that there is no surface water / pluvial flooding in the Site boundary.

Ground Water

The BGS flood data map indicates that there is limited potential for groundwater flooding to occur at the Site, and the ESI groundwater flood map indicates that there is a negligible risk of ground water flooding at the Site.

Canal Failure

The Envirocheck (JBA) canal failure map indicates that the Site is in a canal flood coverage but will not be in an area of flooding if the event of a canal failure.

Historic Flood Map

The Envirocheck historic flood map indicates that there has been no history of flooding from any source at the Site.

5.3 Manchester City, Salford City and Trafford Councils Level 2 SFRA

Manchester City, Salford City and Trafford Councils Level 2 SFRA has identified the site to be in a Critical Drainage Area.

6 Probability of Flooding

Now that the extents of the sources of flooding are known from the above data, an assessment is to be made of the probability of flooding from each of the sources.

6.1 Fluvial Flooding - Probability: Low

The flood data maps indicate that the overall Site is in Flood Zone 1 (land having a less than 1 in 1,000 annual probability of river flooding).

The EA fluvial flood probability map shown in Figure 2, indicates the Site has a better than very low probability of fluvial flooding.

The JBA maps indicate that there is no fluvial or coastal flooding within Site area up to the 1000-year return period.

Therefore, as the flood maps indicate the Site to be in Flood Zone 1 and indicate no flooding up to the 1000-year return period, the probability of fluvial / coastal flooding is deemed to be low.

6.2 Pluvial Flooding - Probability: Low

The EA pluvial flood probability map shown in Figure 3, indicates the Site has a very low probability of pluvial flooding. There is an isolated low probability pluvial flood area to the north of the site, but this outside the Site boundary, and is caused by ponding due to a depression in the ground.

The Envirocheck (JBA) 75-year to 1000-year return period flood map indicates that there is no pluvial flooding within the Site boundary.

The EA 30-year to 1000-year return period flood map indicates that there is no surface water / pluvial flooding in the Site boundary.

Manchester City, Salford City and Trafford Councils Level 2 SFRA has identified the site to be in a Critical Drainage Area.

Therefore, based on the EA and JBA flood map data, there is a low probability of flooding, with the SFRA indicating the Site to be in a critical drainage area.

The probability of pluvial flooding at the Site will still be low, but with onus being on the management of the Site surface water run-off to ensure the risk of flooding to areas within the Site and near to the Site are reduced.

6.3 Ground Water Flooding - Probability: Low

The BGS flood data map indicates that there is limited potential for groundwater flooding to occur,

The ESI groundwater flood map indicates that there is a negligible risk of ground water flooding at the Site.

Therefore, based on the flood map data, the probability of groundwater flooding at the Site is deemed to be low.

6.4 Flooding from Drains and Sewers - Probability: Low

There is an 825 x 1200mm surface water sewer in Burton Road (west of site), a 525mm diameter combined water sewer in Burton Road (west of site), and a 300mm diameter combined water sewer in Fielden Road (south of site). There has been no history of flooding from the sewers, within the Site being higher than road / manhole cover levels.

Therefore, the flood water will not flow towards the Site, with the probability of flooding from drains and sewers for the Site is deemed to be low.

6.5 Canals, Reservoirs and Other Artificial Sources - Probability: Low

There are no known canals, reservoirs, or artificial sources near the development Site. The Extents of Flooding from Reservoirs Map in Figure 4, indicates that the Site is not in a flooding area; The Envirocheck (JBA) canal failure map indicates that the development Site is in the canal coverage area, but is not in a canal failure area; There has also been no history of flooding from any sources, and therefore, based on the assessed data, the risk of flooding from canals, reservoirs or artificial sources is deemed to be low.

7 Flood Risks and Vulnerability

Paragraphs 077 to 078 of the NPPG are relevant to the assessment of flood vulnerability and appropriate development of the Site. These paragraphs describe the different flood zones, flood risk vulnerability classifications, as well as flood zone 'compatibility' (appropriate development in flood zone).

7.1 Flood Zones

NPPG Paragraph 078, Table 1 indicates that the flood zones are:

Table 1 - Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	<p>This zone comprises land where water from rivers or the sea must flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:</p> <ul style="list-style-type: none"> • land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). <p>Local planning authorities should identify in their Strategic Flood Risk</p>

	<p>Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency.</p> <p>(Not separately distinguished from Zone 3a on the Flood Map)</p>
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The EA flood map data has identified that the Site to be in Flood Zone 1.

7.2 Flood Risk Vulnerability Classification

NPPG Paragraph 077 refers to NPPF Annex 3. Annex 3 describes the flood risk vulnerability classifications as:

Table 2 - Flood Zone Vulnerability Classification

Flood Risk Vulnerability Classification
<p>Essential Infrastructure</p> <p>Essential transport infrastructure (including mass evacuation routes) which should cross the area at risk; Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood; Wind turbines.</p>
<p>Highly Vulnerable</p> <p>Police and ambulance stations; fire stations and command centers; telecommunications installations required to be operational during flooding; Emergency dispersal points; Basement dwellings; Caravans, mobile homes and park homes intended for permanent residential use; Installations requiring hazardous substances consent.</p>
<p>More Vulnerable</p> <p>Hospitals; Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels; Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels; Non-residential uses for health services, nurseries and educational establishments; Landfill* and Sites used for waste management facilities for hazardous waste; Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.</p>

Less Vulnerable

Police, ambulance and fire stations which are not required to be operational during flooding; Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure; Land and buildings used for agriculture and forestry; Waste treatment (except landfill and hazardous waste facilities); Minerals working and processing (except for sand and gravel working); Water treatment works which do not need to remain operational during times of flood; Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place; car parks.

Water-Compatible Development

Flood control infrastructure; Water transmission infrastructure and pumping stations; Sewage transmission infrastructure and pumping stations; Sand and gravel working; Docks, marinas and wharves; Navigation facilities; Ministry of Defense installations; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; Water-based recreation (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms; Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

8 Flood Flows and Safe Access / Egress

To ensure that the Site is safe for its lifetime, an analysis of any flood flow displacement and safe access and egress routes are as follows:

8.1 Flood Flows and Displacement

The new building with the Site is in Flood Zone 1, and therefore, will not affect fluvial flood flows or displace fluvial flood water to neighbouring land or property.

The assessed flood maps indicate that there is no pluvial flooding with no overland pluvial flood flows from outside the Site boundary. Therefore, the new building will not affect pluvial flood flows or displace pluvial flood water to neighbouring land or property.

8.2 Safe Access and Egress

The flood data maps indicates that there is no flooding in the Site, or in the roads to the east and south of the Site during the 1000-year return period.

Safe egress and access can therefore be gained to and from the Site from the surrounding road.

9 Surface Water Management

As the Site is in a critical drainage area, and to ensure the Site does not increase flood risk to areas within or near the Site boundary, the surface water run-off is to be managed.

Refer to CCS Consulting – Surface Water Management Report (April 2024) for full surface water management details.

A summary of the surface water management, as set out in the report is as follows:

9.1 Surface Water Management Principles

The surface water for the Site is to be managed so that it adheres to the current national regulations and local authority requirements.

Run-Off Destination

Surface water run-off is to discharge to one or more of the following in the order of priority shown:

- Discharge into the ground (infiltration).
- Discharge to a surface water body.
- Discharge to a surface water sewer, highway drain or other drain.
- Discharge to combined sewer.

Design Principles

The design principles for the surface water management of the development will be to:

- Ensure that people, property, and critical infrastructure are protected from flooding.
- Ensure that the development does not increase flood risk off site.
- Ensure that SuDS can be economically maintained for the development.

Peak Surface Water Flow

DEFRA Non-Statutory Technical Standards for Sustainable Drainage Systems states:

S2 For greenfield developments, the peak runoff rate from the development to any highway drain, sewer, or surface water body for the 1 in 1 year rainfall event and the 1 in 100-year rainfall event should never exceed the peak greenfield runoff rate for the same event.

Volume Control

DEFRA National Non-statutory technical standards for sustainable drainage systems states:

S4 Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer, or surface water body in the 1 in 100-year, 6-hour rainfall event should never exceed the greenfield runoff volume for the same event.

S6 Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer, or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk.

Flood Risk within Development

DEFRA National Non-statutory technical standards for sustainable drainage systems states:

'S7 The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30-year rainfall event.

S8 The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100-year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development.

S9 The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100-year rainfall event are managed in exceedance routes that minimise the risks to people and property'.

Pollution / Water Quality

The SuDS design for the development site will ensure that the quality of any receiving water body is not adversely affected and preferably enhanced in accordance with Ciria SuDS Manual C753, Chapter 4.

Designing for Exceedance

The development site design will be such that when SuDS features fail or are exceeded, exceedance flows do not cause flooding of properties on or off site. This is achieved by completely containing the surface water within the drainage system (including areas designed to hold or convey water) for all events up to a 1 in 30-year event. The design of the site ensures that flows from rainfall more than a 1 in 100-year rainfall event are managed in exceedance routes that avoid risk to people and property both on and off site.

9.2 Surface Water Management Strategy

The surface water management strategy for the Site, based on the principles stated above are as follows:

SuDS Principles and Discharge Destination

The feasible SuDS methods being permeable paving, filter drains, swale / shallow ponds, cellular units and a flow control chamber, and the surface water destination being to a surface water sewer via an existing drainage network.

Peak Flow Control

The post development run-off rates will be an increase of the 1-year greenfield rate, but the equivalent to the 30-year greenfield rate, and a 6% reduction of the 1000-year greenfield rate. Therefore, as the greenfield rates for extreme storms have not been exceeded, the discharge rates are deemed to be acceptable, as they will meet the requirements set out in the Non-Statutory Technical Standards for Sustainable Drainage Systems.

Volume Control

The post development surface water run-off volume will be a 13% reduction of the greenfield volume for the same storm event and duration. Therefore, the discharge volume is deemed to be acceptable, as it meets the requirements set out in the Non-Statutory Technical Standards for Sustainable Drainage Systems.

Flood Risk within the Development

With the SuDS methods and attenuation volumes, no flooding will occur for all storms up to and including the 100-year + 40% storm event.

Maintenance

The management and maintenance of the surface water drainage networks and SuDS features will be by estate management of the clinical site, where the maintenance of the drainage and SuDS will form part of the overall site management / landscaping / gardening.

Surface Water Design Exceedance

In the unlikely event of an extreme storm greater than 100-year + 40% climate change, or poor maintenance of the SuDS features and / or pipework, potential flooding of the drainage network could

occur. Surface water flow paths to follow existing and proposed ground topography, where water will flow towards the development boundaries, and into Burton and Fielden Road.

Flood water will flow away from the proposed building and will not flow directly towards existing dwellings / properties outside the development boundary. The flood water within the roads will be contained due to the road having a gradient (water to flow along road) and upstand kerbs.

Water Quality

The level of water treatment is to be assessed against the details set out in Ciria SuDS Manual C753. Chapter 26 sets out the Pollution Hazard Indices for different land classifications, and how to calculate that against the SuDS mitigation indices to show suitable levels of treatment. The mitigation indices are greater than the pollution hazard index, and therefore suitable water quality is achieved.

Construction Environment Management Plan

All existing drainage networks within the development area are to be maintained during construction. The pipe network, cellular units, and flow control chamber are to be the first part of the drainage network to be built. This will ensure that the surface water discharge is suitably restricted without pollutants or flooding.

10 Residual Risk

It is difficult to completely guard against flooding since extreme events greater than the design standard event are always possible, however, there are practicable ways to minimise the risk such as by allowing a freeboard (safety margin) and by using suitable construction and management techniques.

This flood risk assessment has been prepared in accordance with the NPPF, Local Planning Policy and the NPPG. Any recommendations regarding floor levels are based on the relevant British Standards (BS8533), the standing advice provided by the EA or based on common practice.

CCS Consulting Ltd do not warrant that the advice in this report will guarantee the availability of flood insurance either now or in the future.

The owner/occupier of the buildings will be required to carry out maintenance on any SuDS devices within the Site boundary. It will be the owner's /occupier's responsibility to regular upkeep the drainage network on Site throughout the lifetime of the development to ensure that flood risk on and off Site is managed effectively.

11 Flood Risk Assessment Conclusion / Summary

Based the assessed flood data for the Site, the probability of flooding from all sources to the Site is deemed to be low.

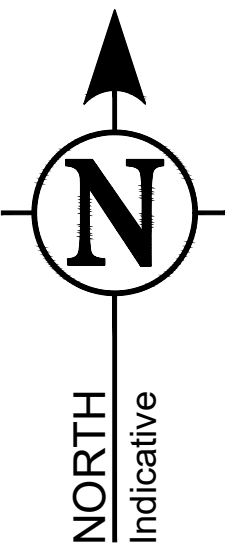
No flood water flows will be affected, and no flood water will be displaced.

Safe access and egress can be gained to and from the proposed building up to the 1000-year return period.

The surface water will be managed using SuDS methods to control the water at source, reduce pollutants, and to reduce the risk of flooding to areas within or near the Site.

In terms flood risk the development is deemed to be acceptable.

Appendix A - Topographical Survey Plan



TOPOGRAPHICAL & MEASURED BUILDING SURVEYS					
ABBREVIATIONS & SYMBOLS					
AA	Asphalt	DR	Drain	ESD	Electric Shutoff Device
AB	Asphalt	ED	Electric Disconnector	ESL	Electric Switch
AC	Asphalt Gravel	FD	Flow Down	ESR	Sign Post
AD	Asphalt	FE	Flow End	ESR	Sign Post
AE	Asphalt	FF	Flow Front	ESR	Sign Post
AF	Asphalt	FG	Flow Front	ESR	Sign Post
AG	Asphalt	FG	Flow Front	ESR	Sign Post
AL	Asphalt	FG	Flow Front	ESR	Sign Post
AM	Asphalt	FG	Flow Front	ESR	Sign Post
AN	Asphalt	FG	Flow Front	ESR	Sign Post
AO	Asphalt	FG	Flow Front	ESR	Sign Post
AP	Asphalt	FG	Flow Front	ESR	Sign Post
AR	Asphalt	FG	Flow Front	ESR	Sign Post
AS	Asphalt	FG	Flow Front	ESR	Sign Post
AT	Asphalt	FG	Flow Front	ESR	Sign Post
AV	Asphalt	FG	Flow Front	ESR	Sign Post
AW	Asphalt	FG	Flow Front	ESR	Sign Post
AX	Asphalt	FG	Flow Front	ESR	Sign Post
AY	Asphalt	FG	Flow Front	ESR	Sign Post
AZ	Asphalt	FG	Flow Front	ESR	Sign Post
BA	Asphalt	FG	Flow Front	ESR	Sign Post
BB	Asphalt	FG	Flow Front	ESR	Sign Post
BC	Asphalt	FG	Flow Front	ESR	Sign Post
BD	Asphalt	FG	Flow Front	ESR	Sign Post
BE	Asphalt	FG	Flow Front	ESR	Sign Post
BF	Asphalt	FG	Flow Front	ESR	Sign Post
BG	Asphalt	FG	Flow Front	ESR	Sign Post
BH	Asphalt	FG	Flow Front	ESR	Sign Post
BI	Asphalt	FG	Flow Front	ESR	Sign Post
BJ	Asphalt	FG	Flow Front	ESR	Sign Post
BK	Asphalt	FG	Flow Front	ESR	Sign Post
BL	Asphalt	FG	Flow Front	ESR	Sign Post
BM	Asphalt	FG	Flow Front	ESR	Sign Post
BN	Asphalt	FG	Flow Front	ESR	Sign Post
BO	Asphalt	FG	Flow Front	ESR	Sign Post
BP	Asphalt	FG	Flow Front	ESR	Sign Post
BQ	Asphalt	FG	Flow Front	ESR	Sign Post
BR	Asphalt	FG	Flow Front	ESR	Sign Post
BS	Asphalt	FG	Flow Front	ESR	Sign Post
BT	Asphalt	FG	Flow Front	ESR	Sign Post
BU	Asphalt	FG	Flow Front	ESR	Sign Post
BV	Asphalt	FG	Flow Front	ESR	Sign Post
BW	Asphalt	FG	Flow Front	ESR	Sign Post
BX	Asphalt	FG	Flow Front	ESR	Sign Post
BY	Asphalt	FG	Flow Front	ESR	Sign Post
BZ	Asphalt	FG	Flow Front	ESR	Sign Post
CA	Asphalt	FG	Flow Front	ESR	Sign Post
CB	Asphalt	FG	Flow Front	ESR	Sign Post
CC	Asphalt	FG	Flow Front	ESR	Sign Post
CD	Asphalt	FG	Flow Front	ESR	Sign Post
CE	Asphalt	FG	Flow Front	ESR	Sign Post
CF	Asphalt	FG	Flow Front	ESR	Sign Post
CG	Asphalt	FG	Flow Front	ESR	Sign Post
CH	Asphalt	FG	Flow Front	ESR	Sign Post
CI	Asphalt	FG	Flow Front	ESR	Sign Post
CJ	Asphalt	FG	Flow Front	ESR	Sign Post
CK	Asphalt	FG	Flow Front	ESR	Sign Post
CL	Asphalt	FG	Flow Front	ESR	Sign Post
CM	Asphalt	FG	Flow Front	ESR	Sign Post
CN	Asphalt	FG	Flow Front	ESR	Sign Post
CO	Asphalt	FG	Flow Front	ESR	Sign Post
CP	Asphalt	FG	Flow Front	ESR	Sign Post
CQ	Asphalt	FG	Flow Front	ESR	Sign Post
CR	Asphalt	FG	Flow Front	ESR	Sign Post
CS	Asphalt	FG	Flow Front	ESR	Sign Post
CT	Asphalt	FG	Flow Front	ESR	Sign Post
CU	Asphalt	FG	Flow Front	ESR	Sign Post
CV	Asphalt	FG	Flow Front	ESR	Sign Post
CW	Asphalt	FG	Flow Front	ESR	Sign Post
CX	Asphalt	FG	Flow Front	ESR	Sign Post
CY	Asphalt	FG	Flow Front	ESR	Sign Post
CZ	Asphalt	FG	Flow Front	ESR	Sign Post
DA	Asphalt	FG	Flow Front	ESR	Sign Post
DB	Asphalt	FG	Flow Front	ESR	Sign Post
DC	Asphalt	FG	Flow Front	ESR	Sign Post
DD	Asphalt	FG	Flow Front	ESR	Sign

Topographical Survey

Trees are drawn to scale
heights should be used

All building names, descriptions, number of storeys, construction type incl

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including: sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to start work.

Detail, services and features may not have been surveyed if obstructed or reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal bound line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx. 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

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Do not scale from this drawing

SURVEY CONTROL CO-ORDINATES			
STATIONS	EASTINGS	NORTHINGS	LEVEL
0001	363716.801	392062.132	32.511
0002	363737.297	392040.497	32.089
0003	363760.250	392056.846	32.755
0004	363814.261	392015.657	33.092
0005	363770.903	391910.552	33.143
0006	363678.219	392009.554	32.015
000A	363771.236	392011.886	32.827
000A	363950.254	392013.966	32.794
00A1	363762.190	392002.077	33.986

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (4) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this system must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE
-----	-------------	-------	------	------



LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

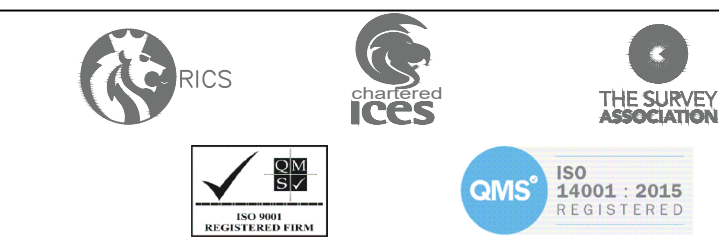
0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH
NOTTINGHAM YORK

PROJECT TITLE
Withington Community Hospital

DRAWING DETAIL

UTILITY SURVEY Sheet 1 of 1				
CLIENT NHS Foundation Trust - Manchester University				SCALE 1:200
SURVEYOR JDS	SURVEY DATE Dec 2022	CHECKED BY AG JDS	APPROVED BY JDS	DWG ST FINAL
DRAWING NUMBER 45019MCUG-01			REVISION	ISSUE D 23/12/22



Appendix B - Proposed Site Plan



Ground Floor GA Plan
1:100

GENERAL NOTES:
DAY Architectural Ltd accepts no responsibility for any costs, losses or claims whatsoever arising from these drawings, specifications and related documents unless there is full compliance with the Client or any unauthorised user of the following:
1. All boundaries, dimensions and levels are to be checked on site before construction and any discrepancies reported to the Architect / Designer.
2. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
3. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
4. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
5. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
6. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
7. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
8. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
9. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:
10. Particular care should be taken to ensure that any discrepancies with the Client or any unauthorised user of the following:

P3	STAGE 2 ISSUE
P2	Issued for Information
P1	Issued for Information
REV	DESCRIPTION

28.03.24	MA
22.03.24	MA
19.03.24	MA
DATE	REV BY

CLIENT	Manchester University Hospital NHS Foundation Trust
PROJECT	Cardiorespiratory, Withington Community Hospital

DRAWING	Proposed Site Plan
SCALE	1:100 @ A0
PROJECT	1342-22
CLIENT REF	22162
DRAWN BY	MA
CHECKED BY	SOB
ORIGIN	VOLUME
DAY	WCH127
LEVEL	00
TYPE	DR
ROLE	A
NUMBER	02002
REVISION	P3
SUBMITTAL	INFORMATION

DAY

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Appendix C - Ground Investigation Data

5789542654
8383 9203

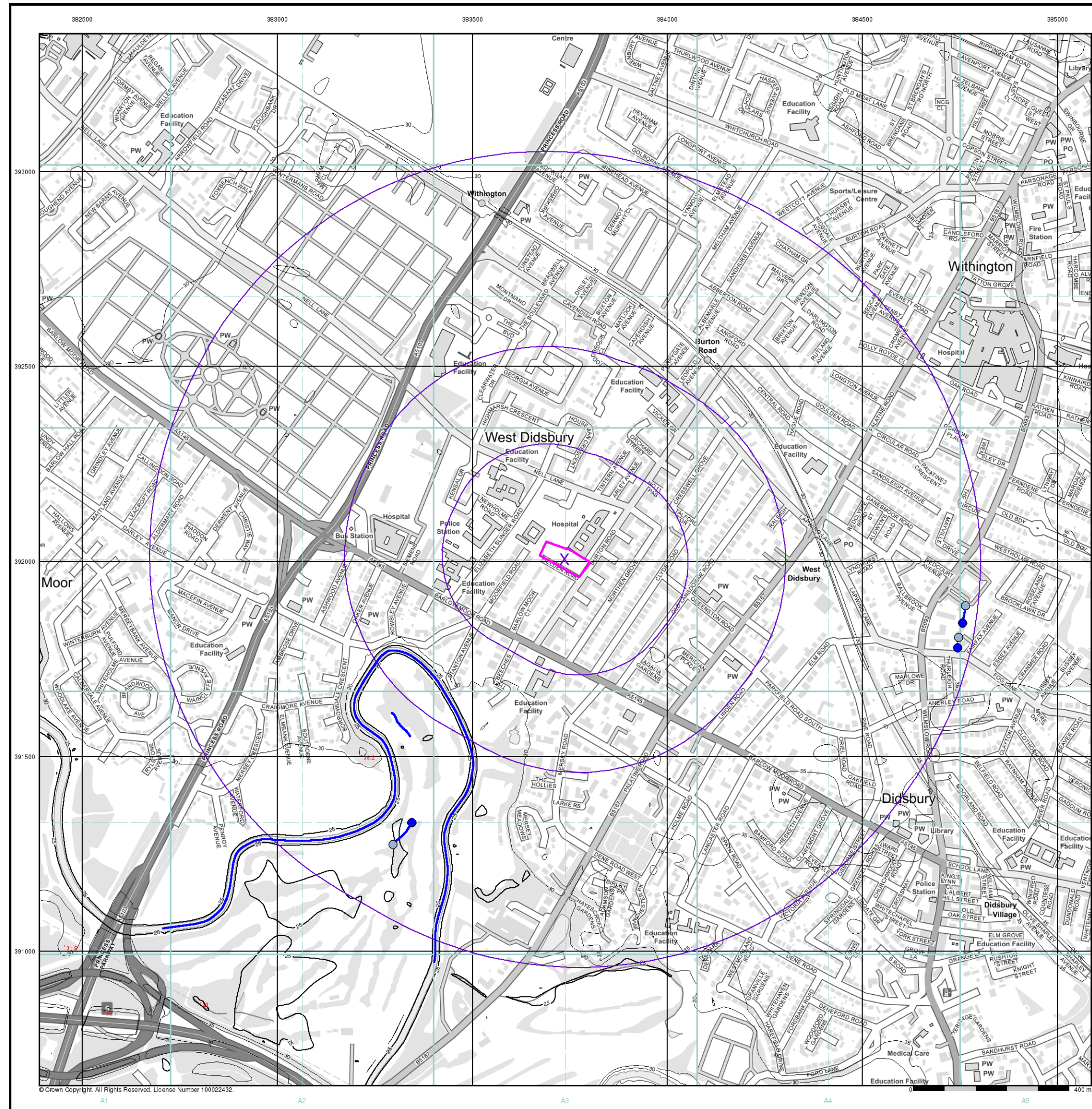
DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION		No. of Blows	Legend
							From	To		
			0.40		Bituminous surfacing onto concrete					
			0.70		Brown-black silt, sand, ash, cinders, gravel, brick, clay etc. MADEGROUND	D1	0.50			
21-2-87	0.00	DRY	1.40		Very loose grey-brown very gravelly fine to coarse SAND with clay lenses	D2 P1 B1	1.00 1.55 1.80	1.85 2.20	3	
22-2-87			2.20		MADEGROUND					
			2.70		Very loose grey-brown gravelly fine to coarse SAND	P2 B2	2.35 2.70	2.65 3.20	1	
			3.90		Medium-dense brown slightly silty and very gravelly fine to coarse SAND	P3 W1	3.35 3.65	3.65	11	
					Stiff/very stiff brown silty and sandy CLAY with silt and sand laminae and lenses and fine to medium gravel becoming firm/stiff silty and slightly sandy laminated CLAY with occasional fine gravel below 5.20 m and stiff below 6.0 m	D3 U1 D4 U2 D5 U3 D6	4.00 4.30 4.85 5.20 5.75 6.00 6.55	4.75 5.65 6.45		
22-2-87	4.50	DRY	6.55		END OF BOREHOLE					

SAMPLE TEST KEY	D - DISTURBED SAMPLE	B - BULK SAMPLE	U - UNDISTURBED SAMPLE
	P - SPT SAMPLE	W - WATER SAMPLE	

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

COMMERCIAL
IN CONFIDENCE

Appendix D - OS Water Network Map



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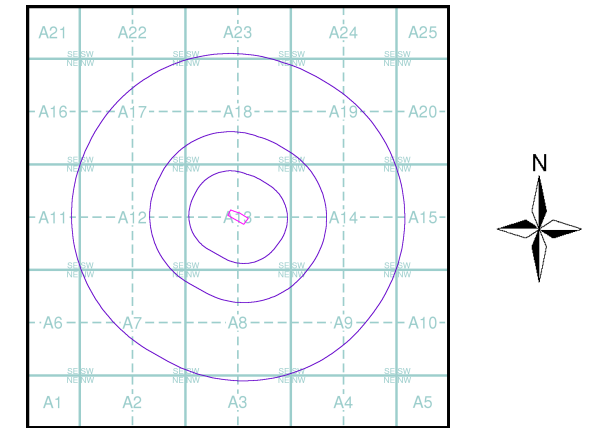
OS Water Network Lines Map (1:10,000)

- General**
- Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point

- OS Water Network Data**
- | | |
|--------------|-------------------------|
| Canal | Drain |
| Reservoir | Other |
| Foreshore | Lake |
| Marsh | Transfer |
| Tidal River | Lock Or Flight Of Locks |
| Inland River | Sea |
| Junction | Source |
| Outlet | Other |
| Pseudo | |

- Contours (height in meters)**
- Standard Contour 105 100 95
- Master Contour 100 95
- Spot Height 167.3
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



- Order Details**
- Order Number: 309147548_1_1
- Customer Ref: 900 - Withington
- National Grid Reference: 383740, 392010
- Slice: A
- Site Area (Ha): 0.57
- Search Buffer (m): 1000

- Site Details**
- Site at 383740, 392010

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Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Appendix E - United Utilities Asset Plan

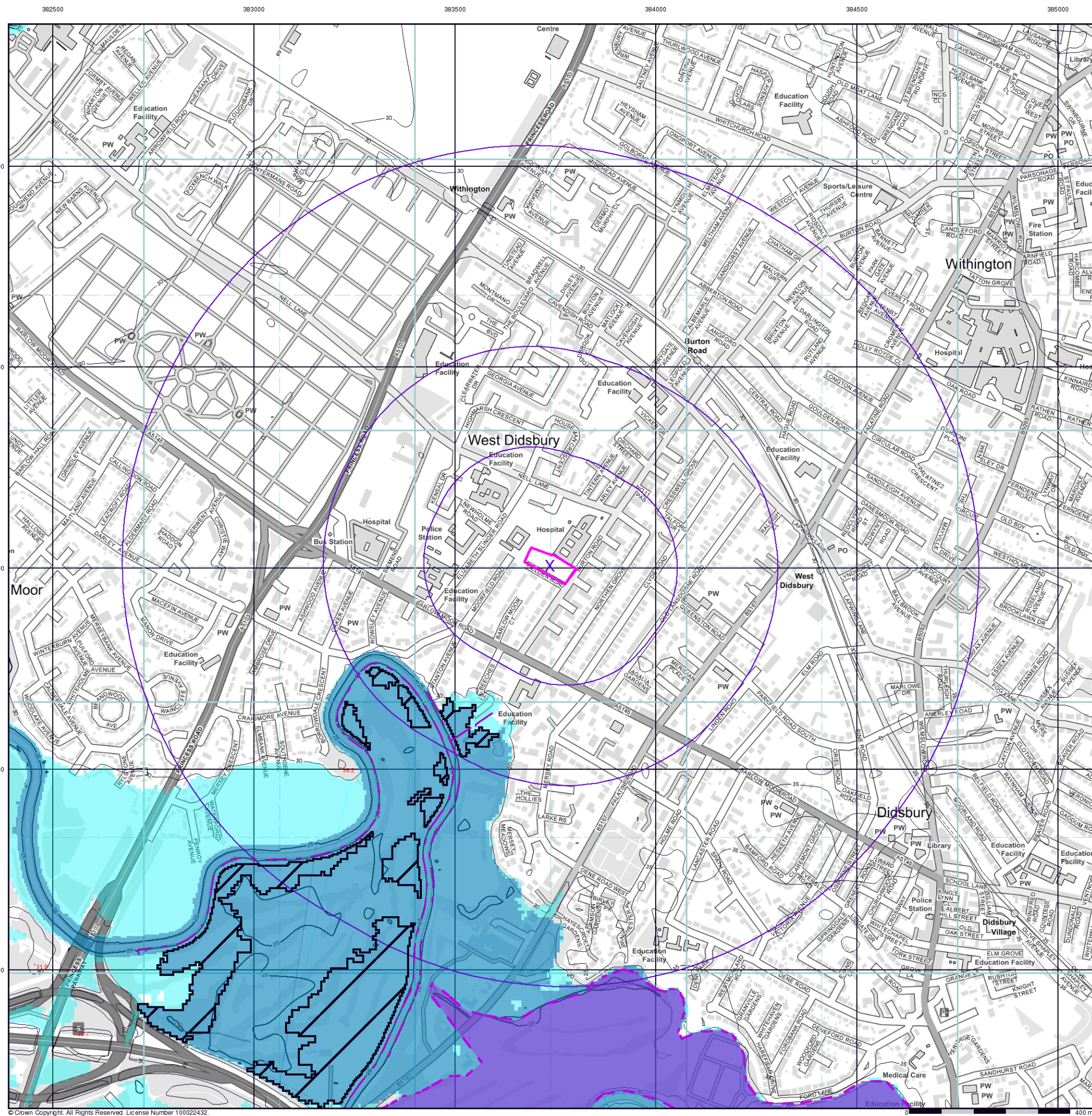


The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Reho	Cover	Func	Invert	Size x	Size y	Shape	Mat	Length	Grad
7205	CO	CO	0	300	300	VC	15.48372	1 in 524	
8879	UN	CO	225	225	225	VC	5.269934	1 in 30	
8002	CO	CO	0	300	300	VC	21.05922	1 in 106	
7904	31.61	SW	26.43	300	300	BR	10.47266	1 in 280	
8701	33.18	SW	24.89	825	825	BR	76.84399	1 in 53	
8701	33.08	CO	25.34	375	375	VC	10.03215	1 in 1170	
8710	CO	CO	0	150	150	VC	2.834257		
7202	CO	CO	0	150	150	VC	5.549199		
8700	33.41	CO	30.56	225	225	VC	5.587659		
7202	CO	CO	0	300	300	VC	88.77625		
9800	33.21	FO	26.62	375	375	VC	100.8876		
9139	CO	CO	0	150	150	VC	3.412462		
5100	32.09	CO	28.07	375	375	VC	61.84858		
8841	CO	CO	0	300	300	VC	11.54543		
9817	CO	CO	0	225	225	VC	13.43007		
9912	CO	CO	0	150	150	VC	12.15411		
4700	32.16	CO	27.12	300	300	VC	90.37699		
6200	31.83	CO	25.97	1500	1500	BR	146.0208		
9101	32.42	CO	29.11	300	300	VC	64.63745		
6704	33.25	CO	29.71	225	225	VC	12.64911		
9102	32.78	SW	25.62	825	825	BR	128.7051		
9151	CO	CO	0	100	100	PVC	3.873959		
9912	CO	CO	0	150	150	VC	17.47439		
7801	33.1	CO	225	225	225	VC	9.926783		
9101	32.78	CO	26.04	1800	1800	BR	31.05445		
8001	32.69	CO	26.98	300	300	VC	6.219544		
8948	CO	CO	0	100	100	VC	6.959341		
9700	33.78	CO	30.8	450	450	BR	93.00338		
9137	CO	CO	0	150	150	VC	2.40768		
8712	CO	CO	0	375	375	VC	4.69148		
7702	33.48	SW	24.32	1200	1200	CO	85.60374		
8718	CO	CO	0	100	100	VC	3.123973		
7203	CO	CO	0	150	150	VC	4.791372		
8714	CO	CO	0	150	150	VC	21.04261		
9309	CO	CO	0	150	150	VC	7.713778		
8745	CO	CO	0	100	100	VC	3.638474		
8005	32.82	SW	25.26	825	825	BR	14.26587		
8005	32.82	SW	25.26	825	825	BR	150.0833		
8005	32.82	SW	25.26	825	825	BR	19.05672		
8707	CO	CO	0	150	150	VC	17.11178		
8902	CO	CO	0	225	225	VC	6.520931		
8800	32.76	CO	25.28	675	675	BR	59.06036		
8800	32.76	CO	25.28	675	675	BR	64.14047		
0901	32.83	CO	27.29	225	225	VC	22.83351		
9902	32.41	CO	30.78	225	225	VC	65.60488		
6702	33.4	CO	0	675	675	BR	27.24969		
5102	31.82	CO	28.78	300	300	VC	17.20465		
4900	32.54	CO	25.81	225	225	VC	6.659684		
7701	32.4	CO	29.42	225	225	VC	35.22083		
8810	CO	CO	0	150	150	VC	92.13034		
8916	CO	CO	0	225	225	VC	7.136762		
8818	CO	CO	0	225	225	VC	6.387374		
8818	CO	CO	0	225	225	VC	21.9079		
9103	32.68	CO	28.7	225	225	VC	12.04159		
9103	32.68	CO	28.22	1500	1500	BR	130.1761		
9714	CO	CO	0	150	150	VC	8.506866		
7204	CO	CO	0	300	300	VC	30.64482		
9141	CO	CO	0	150	150	VC	1.720775		
8811	CO	CO	0	150	150	VC	12.54253		
0301	32.61	CO	26.35	1500	1500	BR	56.60389		
0905	CO	CO	0	100	100	VC	6.940521		
8800	33.04	CO	28.41	375	375	VC	92.35857		
9903	CO	CO	0	150	150	VC	5.079626		
9904	CO	CO	0	225	225	VC	1.04784		
8733	CO	CO	0	375	375	VC	7.611504		
6203	CO	CO	0	450	450	BR	3.479422		
9901	32.76	CO	28.99	300	300	VC	75.54848		
5304	31.56	CO	26.41	450	450	BR	5.103233		
6706	33.42	CO	25.46	450	450	VC	18.38478		
9202	CO	CO	0	150	150	VC	6.138181		
9015	32.41	CO	29.47	225	225	VC	26.41669		
7804	CO	CO	0	150	150	VC	10.63828		
8804	CO	CO	0	150	150	VC	11.50908		
9712	CO	CO	0	150	150	VC	10.46995		
8909	CO	CO	0	150	150	VC	6.256584		
5708	CO	CO	0	150	150	VC	12.96276		
9906	CO	CO	0	150	150	VC	1.387729		
8711	CO	CO	0	150	150	VC	5.784056		
9803	32.89	CO	23.12	2600	2600	BR	223.7074		
9725	CO	CO	0	150	150	VC	11.50096		
9900	32.98	CO	26.71	375	375	VC	104.561		
9205	32.41	CO	30.92	150	150	VC	20.59129		
0704	CO	CO	0	225	225	VC	24.26864		
9207	32.71	SW	26.11	825	825	BR	128.999		
5001	CO	CO	0	300	300	VC	70.80254		
6700	33.57	CO	23.39	2600	2600	BR	112.1006		
9802	CO	CO	0	150	150	VC	43.78187		
8800	33.68	CO	25.64	450	450	VC	34.0147		
9722	CO	CO	0	150	150	VC	8.897624		
8201	32.24	CO	29.92	225	225	VC	49.83014		
9802	33.85	CO	31.33	450	450	BR	101.8442		
9921	CO	CO	0	225	225	VC	7.798248		
7809	33.16	CO	29.96	100	100	VC	11.6919		
9005	CO	CO	0	100	100	VC	5.837942		
9205	32.51	CO	29.71	225	225	VC	8.602325		
8801	32.58	CO	26.13	300	300	VC	53.83729		
8704	CO	CO	0	100	100	VC	17.16888		
8804	CO	CO	0	100	100	VC	1.700394		
8912	CO	CO	0	225	225	VC	29.98889		
4301	31.38	CO	25.86	1500	1500	BR	70.10715		
9045	CO	CO	0	150	150	VC	10.99521		
6701	33.57	CO	25.58	525	525	VC	14.56022		
6204	CO	CO	0	675	675	BR	46.88557		
9900	CO	CO	0	225	225	VC	34.05365		
7811	CO	CO	0	150	150	VC	6.267654		
9925	CO	CO	0	150	150	VC	16.17339		
8739	CO	CO	0	150	150	VC	29.07333		
7900	33.12	CO	25.77	625	625	VC	76.27988		
5802	32.99	CO	26.39	675	675	BR	40.05917		
9007	CO	CO	0	100	100	VC	6.605479		
9047	CO	CO	0	150	150	VC	20.02811		
8908	CO	CO	0	150	150	VC	11.81484		
9726	CO	CO	0	150	150	VC	21.23095		
8806	CO	CO	0	100	100	VC	6.035951		
6202	CO	CO	0	375	375	VC	24.73813		
8809	CO	CO	0	150	150	VC	16.56984		
9939	CO	CO	0	150	150	VC	11.26034		
9000	32.59	CO	29.68	300	300	VC	34.73535		
0201	32.45	CO	31.55	150	150	VC	13.0384		
7204	32.51	CO	30.59	150	150	VC	8.944272		
7202	CO	CO	0	150	150	VC	33.61886		
7609	CO	CO	0	150	150	VC	11.34898		
9006	CO	CO	0	100	100	VC	5.924034		
9202	32.56	CO	28.65	300	300	VC	21.40903		
9001	32.69	CO	30.07	225	225	VC	32.43091		
9801	33.44	BR	30.44	450	450	BR	87.80942		
9913	CO	CO	0	150	150	VC	6.886971		
8700	33.64	CO	30.01	450	450	VC	5.830952		
6808	CO	CO	0	150	150	VC	12.9111		
8708	CO	CO	0	150	150	VC	19.35541		
5830	CO	CO	0	150	150	VC	5.892676		
8804	32.76	CO	31.1625	300	300	VC	37.11025		
5829	CO	CO	0	150	150	VC	8.867601		
9951	CO	CO	0	100	100	VC	11.7948		
7901	32.76	CO	27.77	300	300	VC	43.999		
4800	32.54	CO	25.07	675	675	BR	93.00993		
9043	CO	CO	0	150	150	VC	15.80206		
8000	32.89	CO	25.88	525	525	VC	105.125		
9232	CO	CO	0	150	150	VC	14.457897		
7812	CO	CO	0	150	150	VC	23.39453		
8246	CO	CO	0	150	150	VC	8.070077		
8203	32.49	CO	225	225	225	VC	30.23423		
7800	33.2	CO	25.69	525	525	VC	121.8312		
7201	CO	CO	0	150	150	VC	23.82521		
9104	32.78	CO	30.51	225	225	VC	57.00877		
0708	CO	CO	0	150	150	VC	24.03356		
6703	33.33	CO	25.4	675	675	BR	5.595854		
0715	CO	CO	0	150	150	VC	19.35541		
5101	32.08	CO	28.69	300	300	VC	8.882467		
8104	32.65	CO	26.01	525	525	VC	112.8698		
0201	31.47	CO	25.86	1600	1600	BR	13.80244		
0205	32.55	CO	30.47	225	225	VC	29.68164		
8100	32.37	CO	30.01	225	225	VC	14.86658		
8702	33.44	CO	26.24	375	375	BR	59.07793		
8705	33.43	SW	24.34	1					

Appendix F - Landmark Envirocheck Flood Map Data



EA/NRW Flood Data Map (1:10,000)

General

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

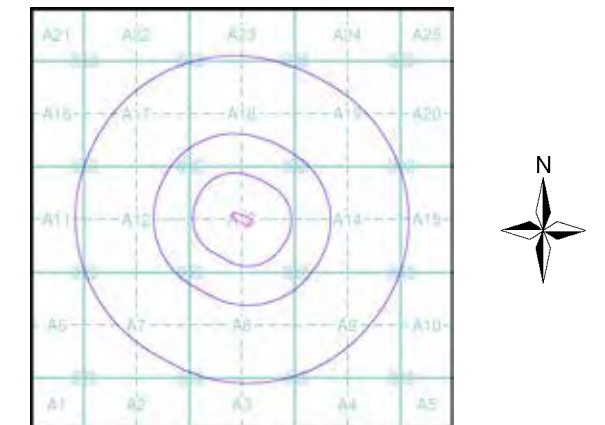
Flood Data

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Contours (height in metres)

- Standard Contour 105 — MLW — Mean Low Water
- Master Contour 100 — MHW — Mean High Water
- Spot Height 167.8

EA/NRW Flood Data Map - Slice A

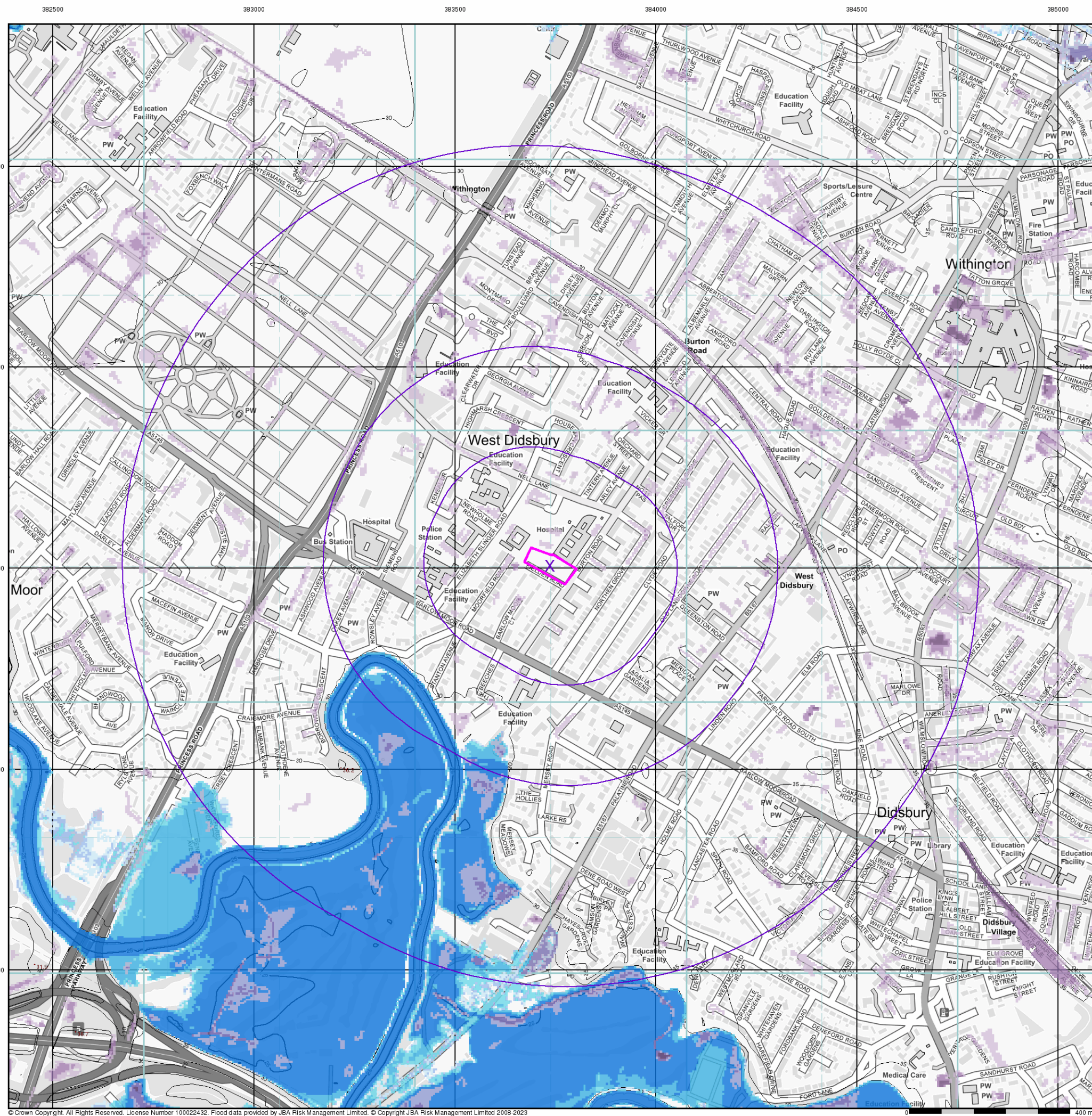


Order Details

Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details

Site at 383740, 392010



JBA 75 Year Return Flood Map (Undefended) (1:10,000)

General

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

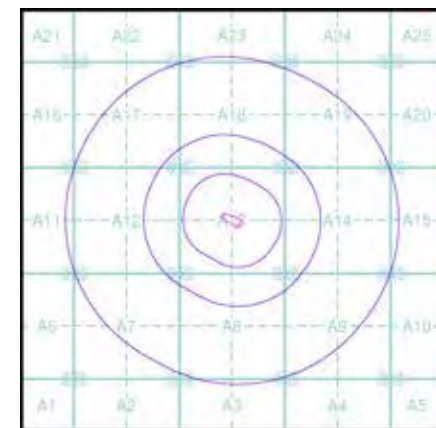
Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

Contours (height in metres)

- Standard Contour 105 100 95
- Master Contour
- Spot Height 167.8
- MLW Mean Low Water
- MHW Mean High Water

JBA 75 Year Return Flood Map (Undefended) - Slice A

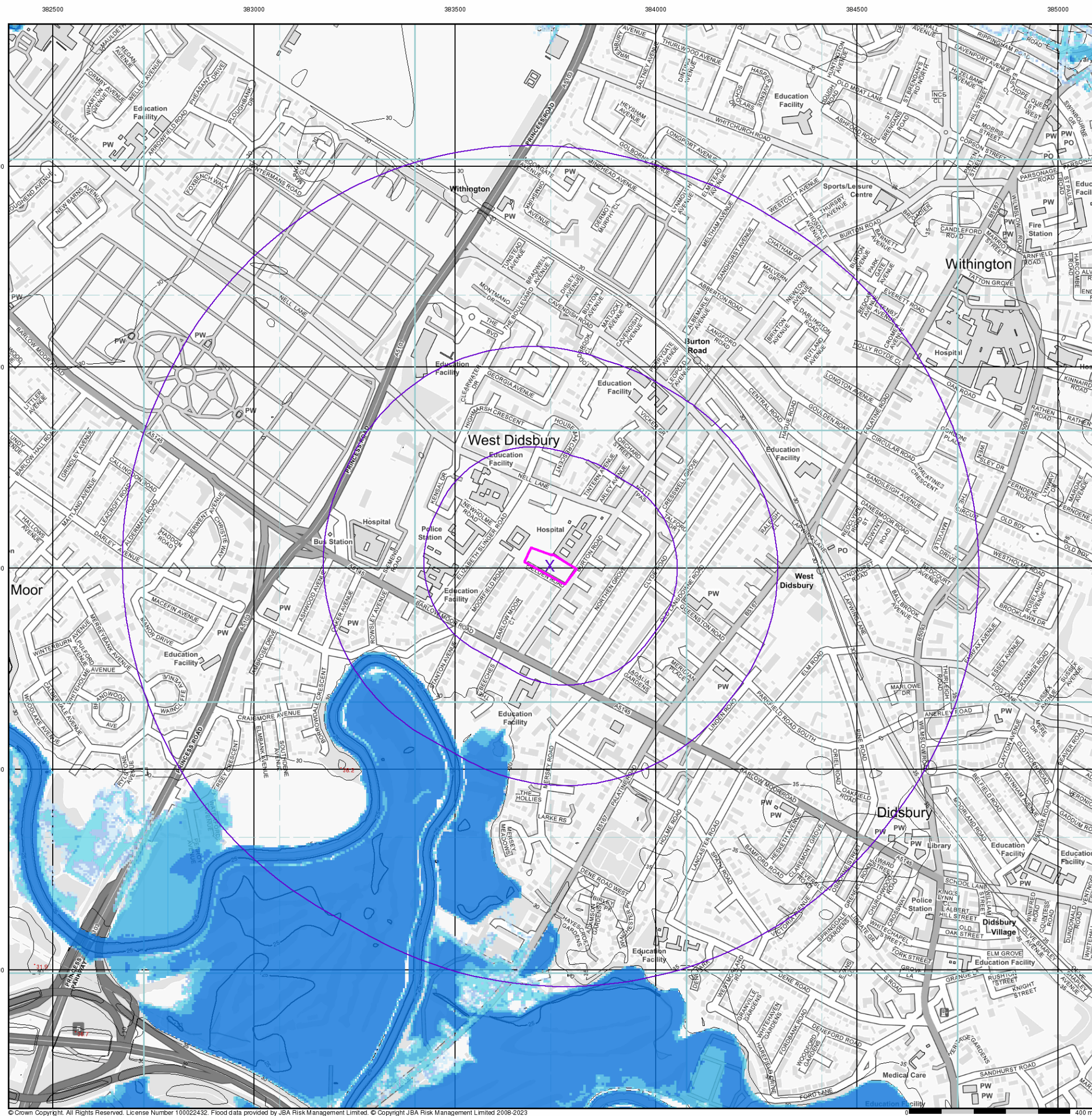


Order Details

Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details

Site at 383740, 392010



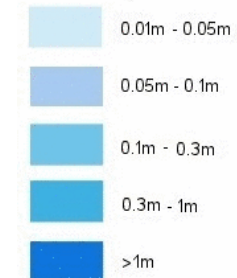
JBA 100 Year Return Flood Map (Undefended) (1:10,000)

General

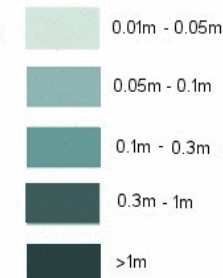
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Fluvial Depth



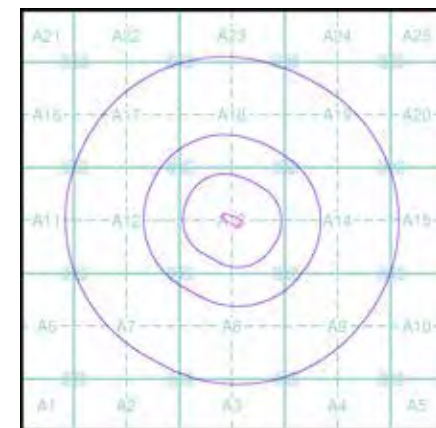
Coastal Depth



Contours (height in metres)



JBA 100 Year Return Flood Map (Undefended) - Slice A

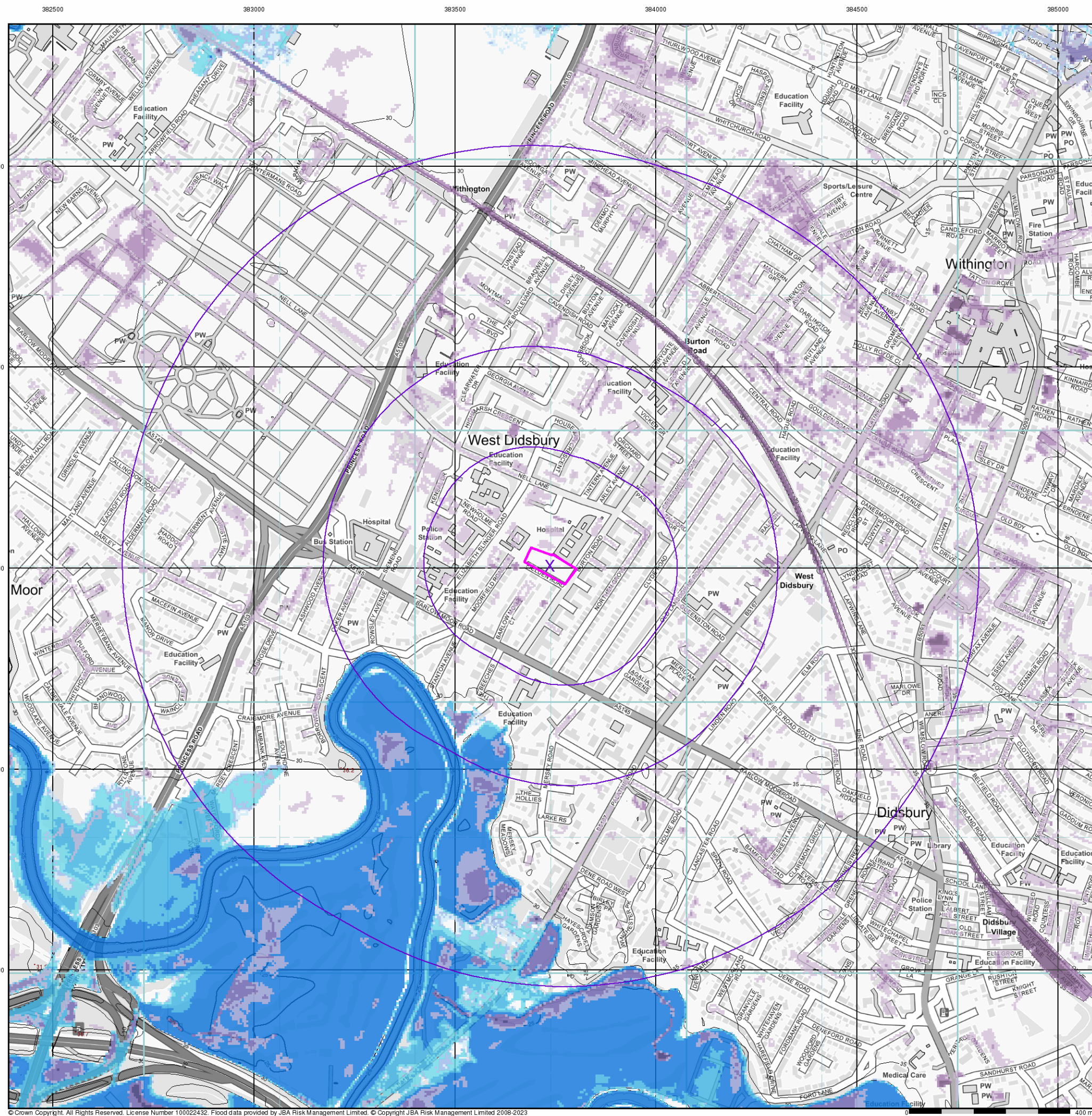


Order Details

Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details

Site at 383740, 392010



JBA 200 Year Return Flood Map (Undefended) (1:10,000)

General

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

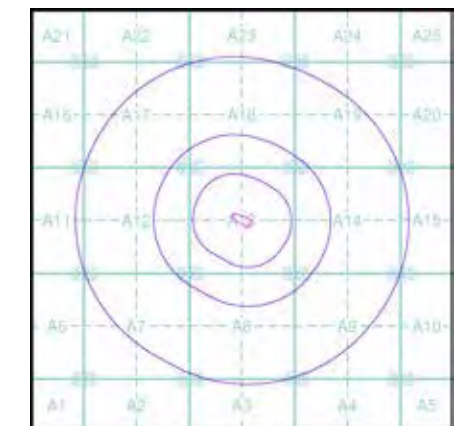
Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

Contours (height in metres)

- Standard Contour 105 100 95
- Master Contour
- Spot Height 167.8
- MLW Mean Low Water
- MHW Mean High Water

JBA 200 Year Return Flood Map (Undefended) - Slice A

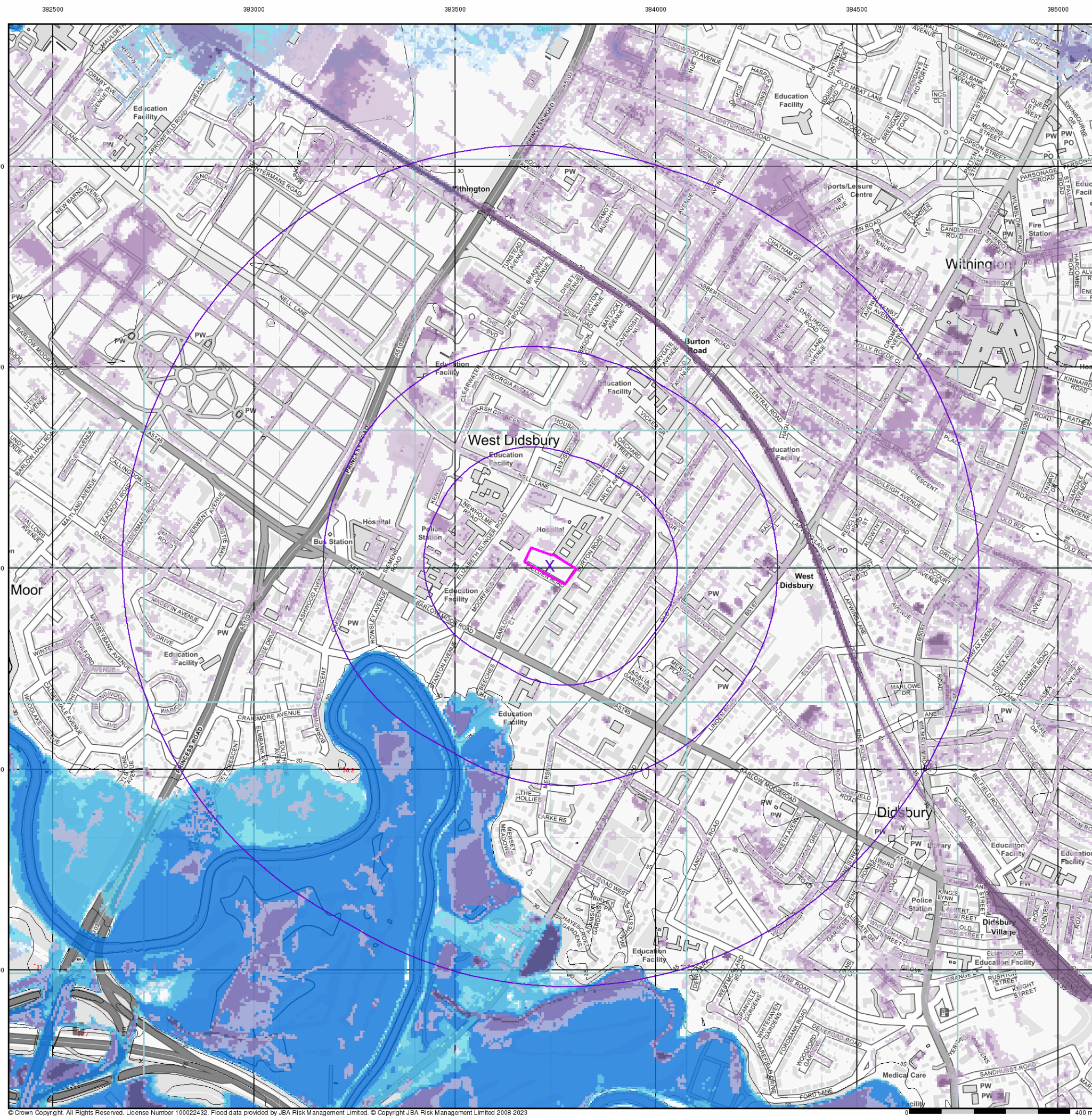


Order Details

Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details

Site at 383740, 392010



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JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

General

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

Modelled Flood Depth

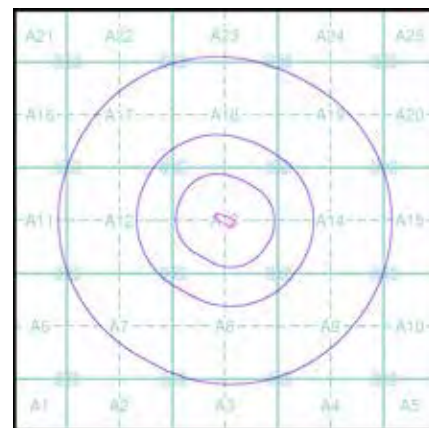
Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

Contours (height in metres)

Standard Contour 105
Master Contour 100
Spot Height 167.8

MLW Mean Low Water
MHW Mean High Water

JBA 1000 Year Return Flood Map (Undefended) - Slice A



Order Details

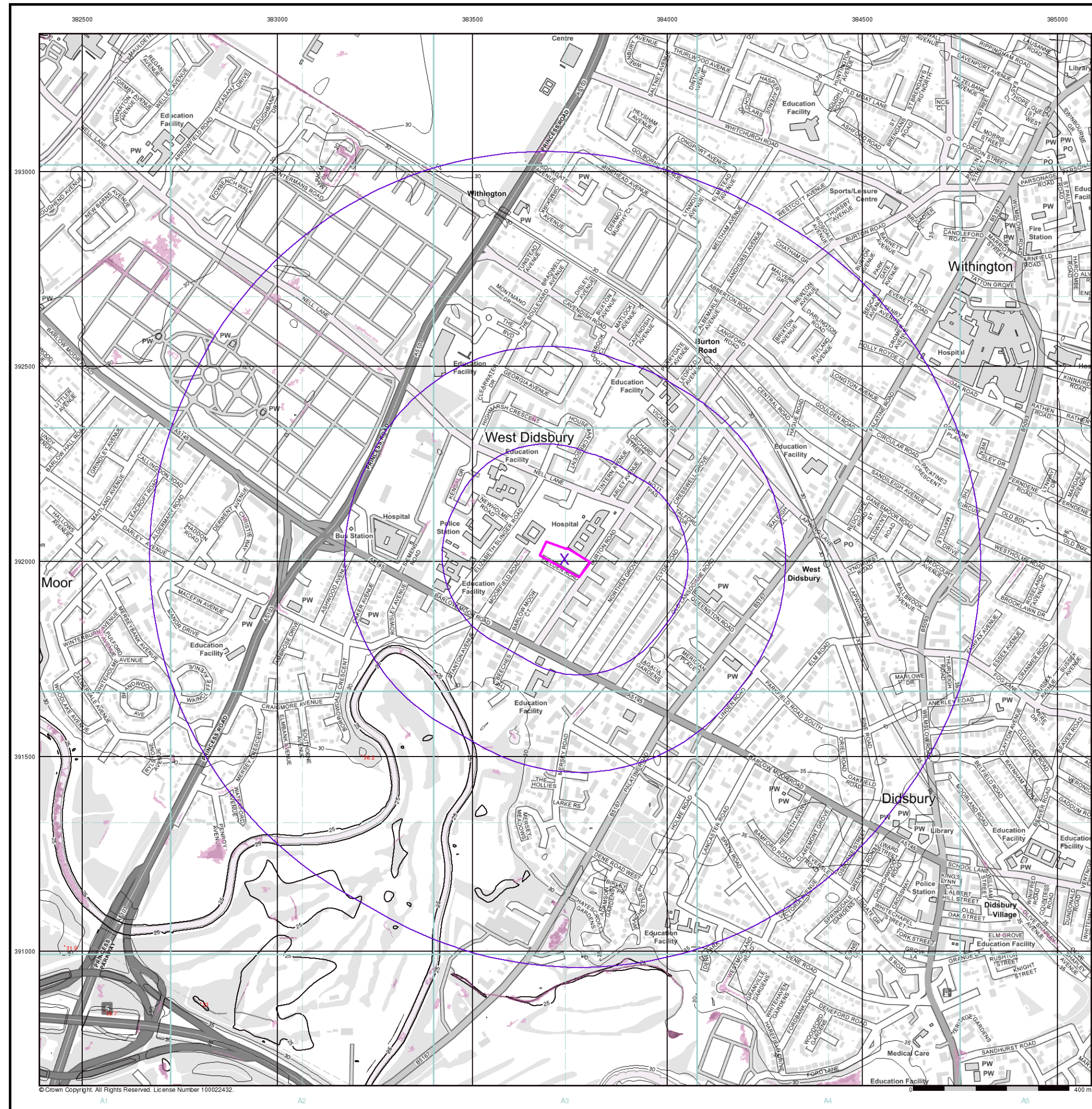
Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details

Site at 383740, 392010

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EA/NRW Surface Water 30 Year Return Depth Map (1:10,000)

General
Specified Site Specified Buffer(s) X Bearing Reference Point

Surface Water Depth

0 - 0.15m
0.15 - 0.30m
0.30 - 0.60m
0.60 - 0.90m
0.90 - 1.20m
> 1.20m

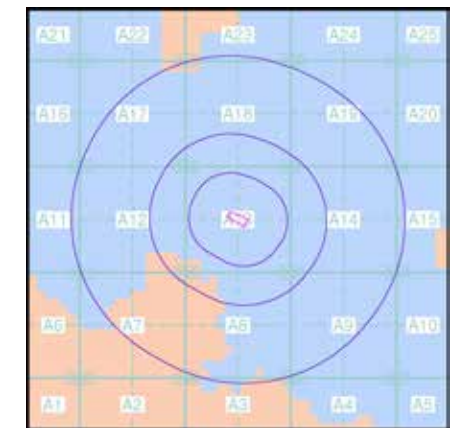
Contours (height in metres)

Standard Contour 105 100 95
Master Contour 105 100 95
Spot Height *167.8
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below
National to county
County to town
Town to street
Street to parcels of land
Property

EA/NRW Suitability Map - Slice A



Order Details

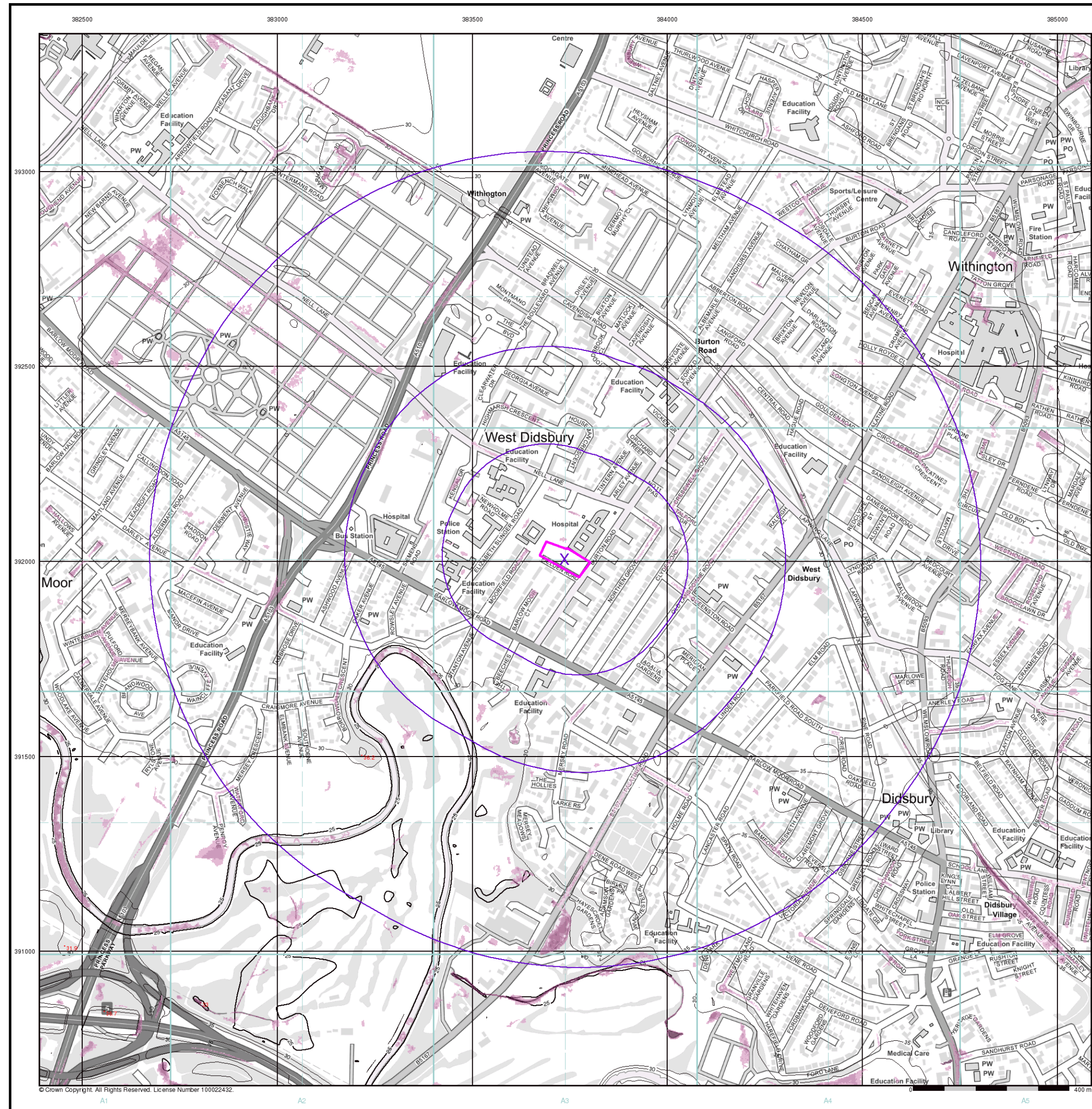
Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details

Site at 383740, 392010

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EA/NRW Surface Water 100 Year Return Depth Map

General
Specified Site Specified Buffer(s) Bearing Reference Point

Surface Water Depth

0 - 0.15m
0.15 - 0.30m
0.30 - 0.60m
0.60 - 0.90m
0.90 - 1.20m
> 1.20m

Contours (height in metres)

Standard Contour 105 100 95

Master Contour 105 100 95

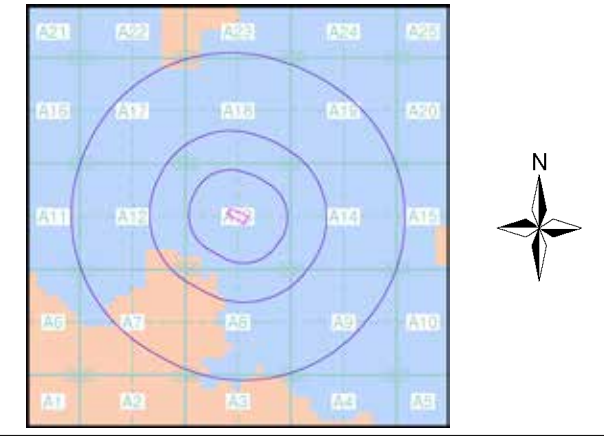
Spot Height *167.8

MLW Mean Low Water
MHW Mean High Water

Suitability
See the suitability map below

National to county	Street to parcels of land
County to town	Property
Town to street	

EA/NRW Suitability Map - Slice A



Order Details

Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details
Site at 383740, 392010

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EANRW Surface Water 1000 Year Return Depth Map (1:10,000)

General

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

Surface Water Depth

0 - 0.15m
0.15 - 0.30m
0.30 - 0.60m
0.60 - 0.90m
0.90 - 1.20m
> 1.20m

Contours (height in metres)

Standard Contour	105	100	95
Master Contour	105	100	95
Spot Height	*167.8		
MLW	Mean Low Water		
MHW	Mean High Water		

Suitability

See the suitability map below

National to county	Street to parcels of land
County to town	Property
Town to street	

EANRW Suitability Map - Slice A

Order Details

Order Number:	309147548_1_1
Customer Ref:	900 - Withington
National Grid Reference:	383740, 392010
Slice:	A
Site Area (Ha):	0.57
Search Buffer (m):	1000

Site Details

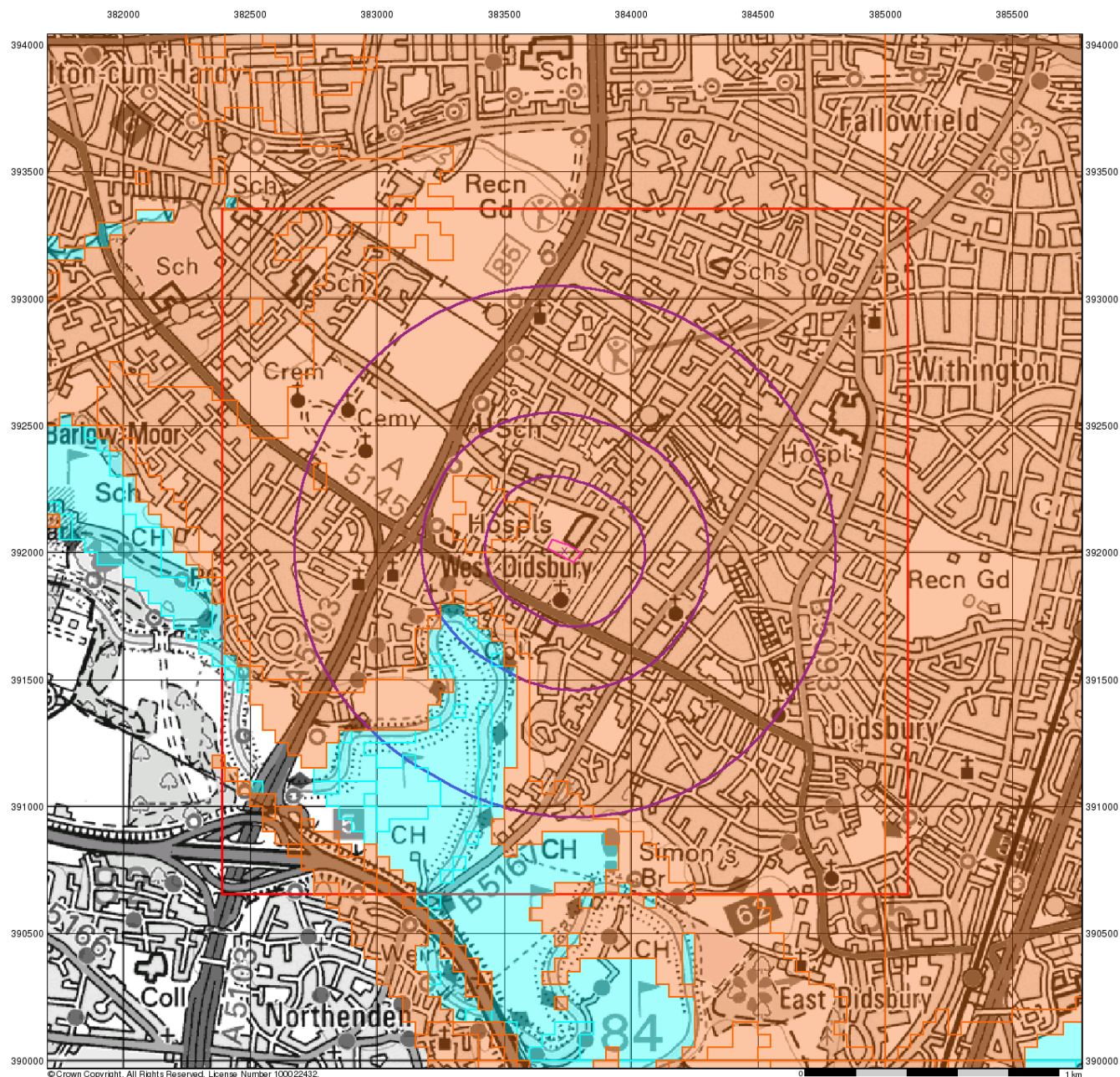
Site at 383740, 392010

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BGS Flood Data (1:50,000)

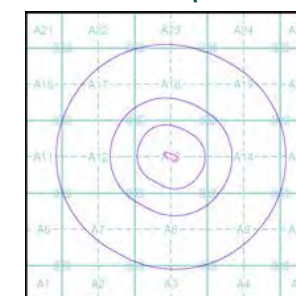
General

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

BGS Groundwater Flooding Susceptibility

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

BGS Flood Data Map - Slice A



Order Details

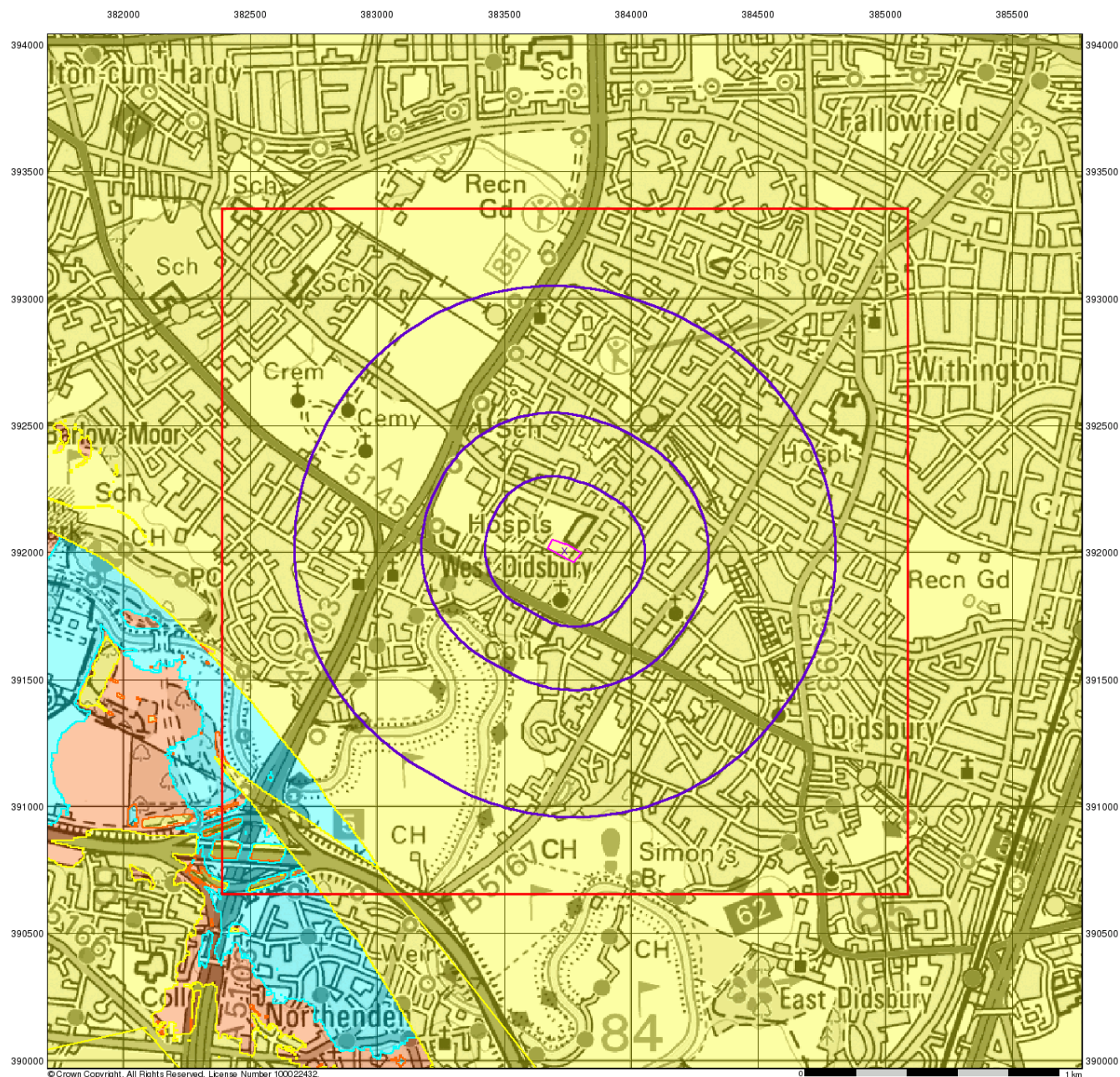
Order Number: 309147548_1_1
 Customer Ref: 900 - Withington
 National Grid Reference: 383740, 392010
 Slice: A
 Site Area (Ha): 0.57
 Search Buffer (m): 1000

Site Details

Site at 383740, 392010

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0 1 km

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GeoSmart Information Groundwater Flood Map (1:50,000)

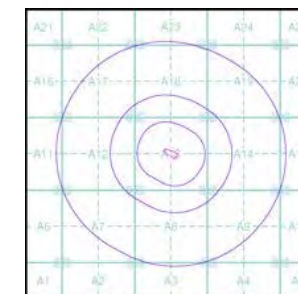
General

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

GeoSmart Information Groundwater Flooding Risk

- High Risk
- Moderate Risk
- Low Risk
- Negligible Risk

GeoSmart Information Groundwater Flood Map - Slice A



Order Details

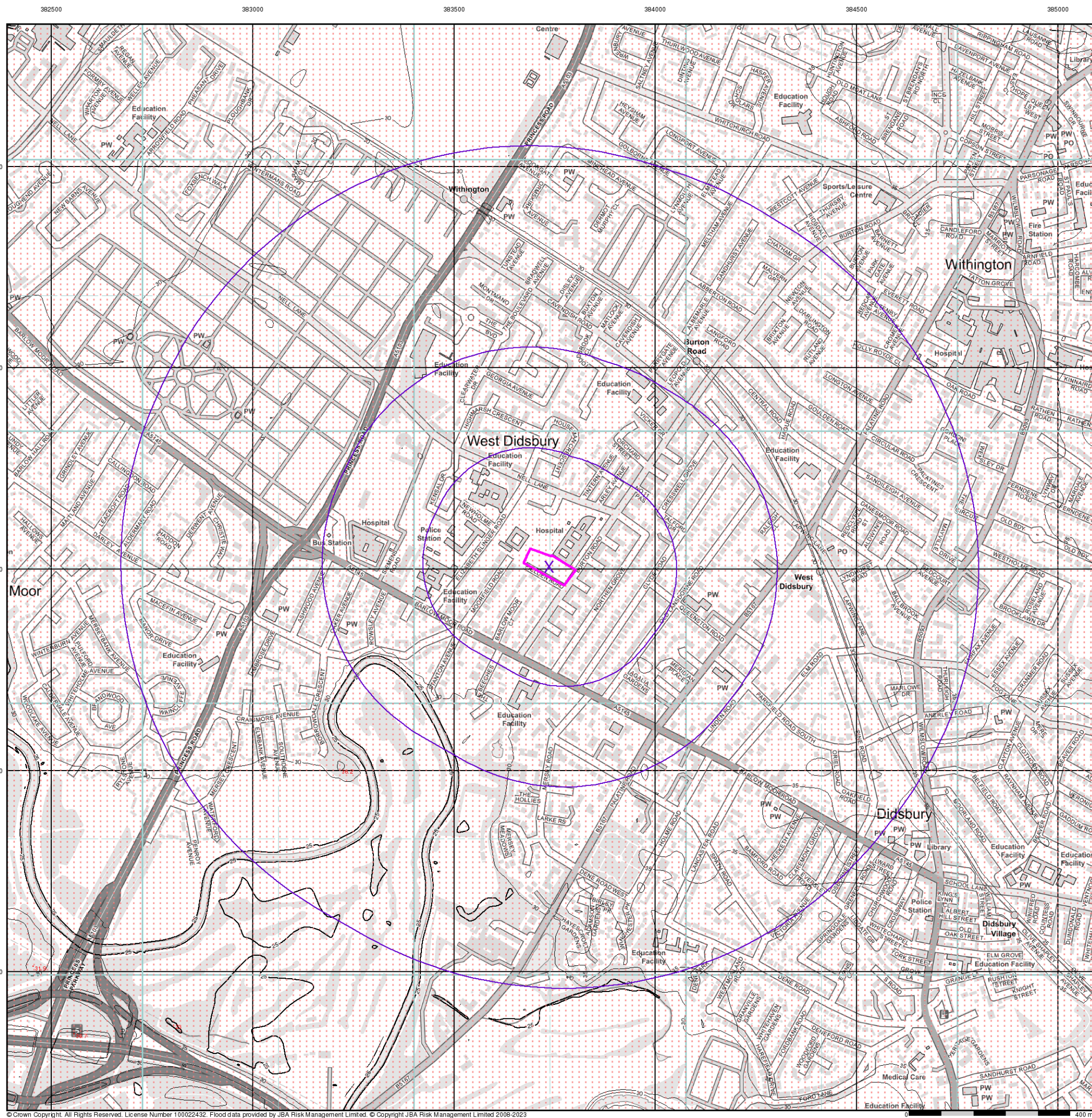
Order Number: 309147548_1_1
 Customer Ref: 900 - Withington
 National Grid Reference: 383740, 392010
 Slice: A
 Site Area (Ha): 0.57
 Search Buffer (m): 1000

Site Details

Site at 383740, 392010

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JBA Canal Failure Map (1:10,000)

General

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

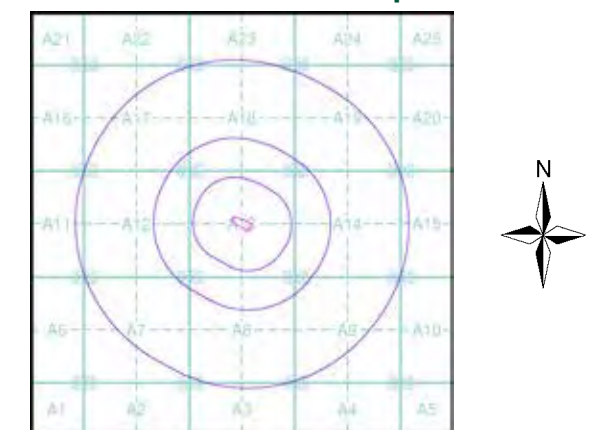
Flood Data

- Canal Failure
- Coverage

Contours (height in metres)

- Standard Contour 105 100 95
- Master Contour
- Spot Height *167.8
- MLW Mean Low Water
 - MHW Mean High Water

JBA Canal Failure Flood Map - Slice A

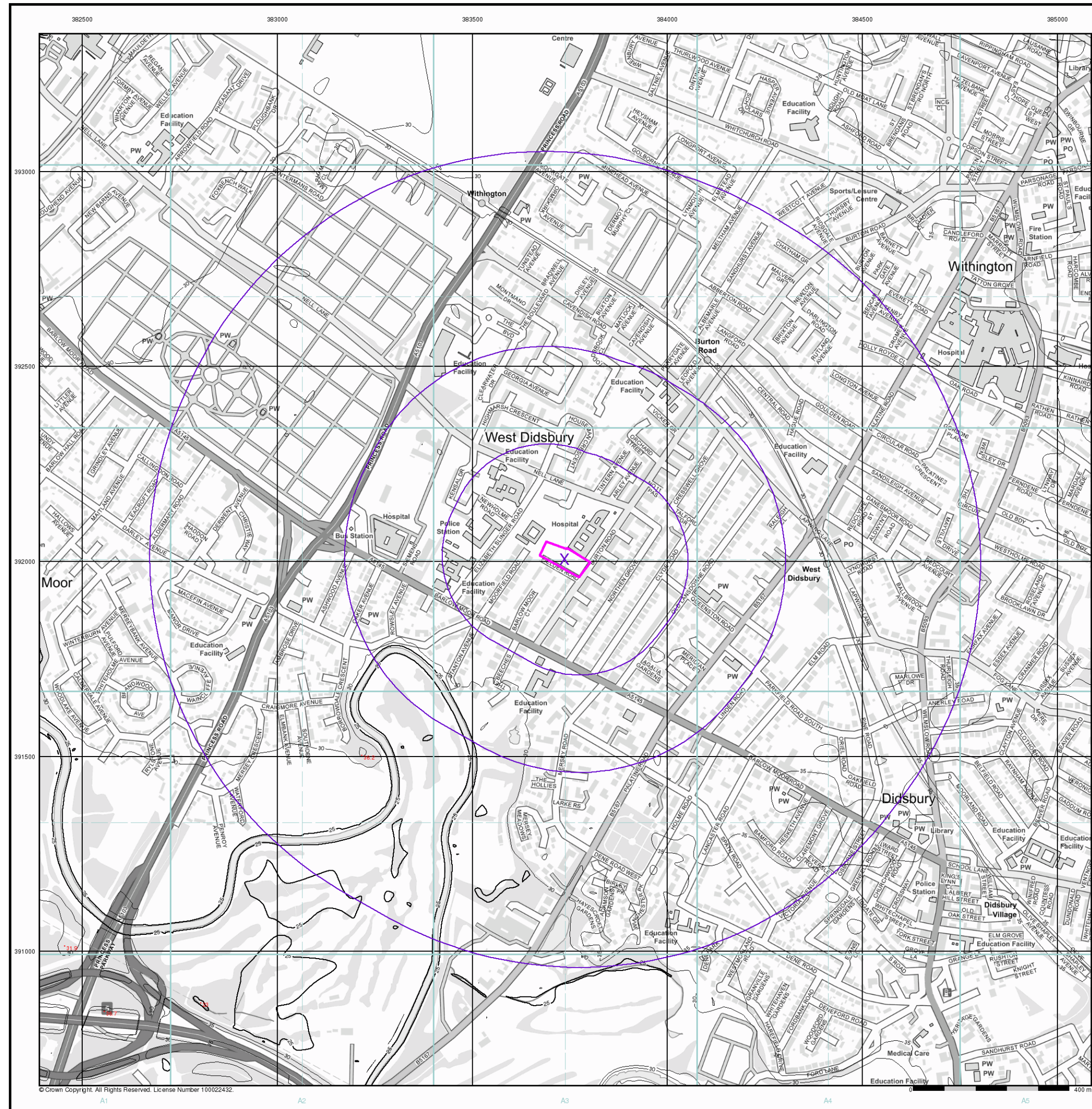


Order Details

Order Number: 309147548_1_1
Customer Ref: 900 - Withington
National Grid Reference: 383740, 392010
Slice: A
Site Area (Ha): 0.57
Search Buffer (m): 1000

Site Details

Site at 383740, 392010



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EA/NRW Historic Flood Map (1:10,000)

General

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

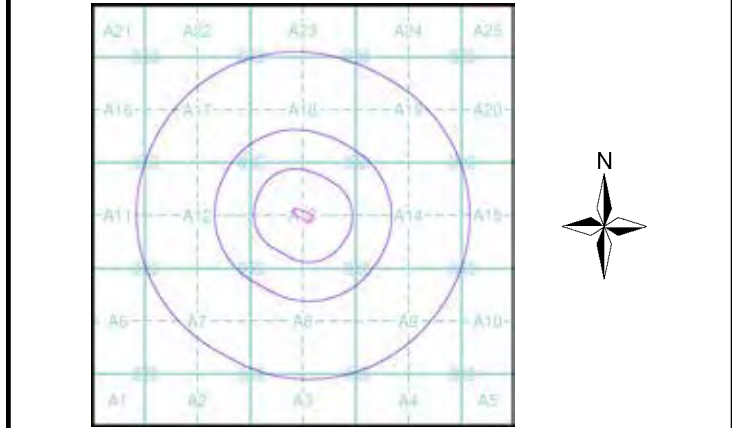
Historic Flood Events Data

- | | |
|--|---------------------------------------|
| Channel Capacity Exceeded (no raised defences) | Obstruction/Blockage - Culvert |
| Channel Capacity Exceeded /Surface Water | Obstruction/Blockage - Debris Screen |
| Groundwater/High Water Table | Operational Failure/Breach of Defence |
| Local Drainage/Surface Water | Other |
| Mechanical Failure | Overtopping of Defences |
| Obstruction/Blockage - Bridge | Surface Water |
| Obstruction/Blockage - Channel | Unknown |
| Historical Flood Liabilities | |

Contours (height in metres)

- Standard Contour 105
- Master Contour 100
- Spot Height 167.8
- MLW Mean Low Water
- MHW Mean High Water

EA/NRW Historic Flood Map - Slice A



Order Details

- Order Number: 309147548_1_1
- Customer Ref: 900 - Withington
- National Grid Reference: 383740, 392010
- Slice: A
- Site Area (Ha): 0.57
- Search Buffer (m): 1000

Site Details

Site at 383740, 392010