

Flood Risk Assessment

Project

**Residential Extension at 17 Morningside
Drive, Manchester, M20 5PQ**

Project Reference

21-1130

Client

For and on Behalf of Bricks and Mortar

Date

November 2021

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Executive Summary

The findings of this report and recommendations are summarised below:

The development is located adjacent to River Mersey and of the following flood risk attributes:

- Flood Zone 2 with an (< 0.1% to 0.55% AEP)
- Low risk at flooding from rivers and sea, although the site is in close proximity to River Mersey
- Very low flood risk from Surface Water
- No risk from infrastructure failure based on normal river levels

Area geology indicates the development may be able to benefit from infiltration and is recommended, subject to site tests.

There are not known historical reports of flooding in the vicinity of this development.

Development proposes to extend an existing residential dwelling utilising space that is currently hard surfaced, serving a garage and driveway to the gable end, and patio to the rear. The proposal does not increase impermeable area entering into the drainage system.

The development will extend from the current dwelling forming and extension to the principal structure. Therefore, existing floor level will need to be maintained across the entire area, and must not be lower.

Flood resilient construction materials and methods should be adopted wherever possible to alleviate and manage flood risk. Guidance is provided in 'Improving the Flood Performance of New Buildings' (May 2007).

The proposal along with recommendations and design approaches aforementioned, is deemed acceptable.

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1. Introduction

1.1. Terms of Reference

- 1.1.1. Holdgate Consulting has been commissioned by Bricks and Pieces to prepare a Flood Risk Assessment (FRA) for the proposed residential extension at 17 Morningside Drive, Manchester, M20 5PQ.
- 1.1.2. This report assesses flood risk at the development site from all potential sources and describes measures adopted to manage such risks where possible. It has been prepared in compliance with current policies and best practices to support planning submission to Manchester LPA.

1.2. Policy Framework and Key Stakeholders

- 1.2.1. The National Planning Policy Framework (NPPF) (February 2019) sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Where these tests are not met, national policy is clear that new development should not be allowed.
- 1.2.2. In areas at risk of flooding or for sites of one hectare (ha) or more, developers must undertake a site-specific flood risk assessment to accompany applications for planning permission (or prior approval for certain types of permitted development).
- 1.2.3. In decision-taking, Local Planning Authorities (LPA) must ensure a sequential approach to site selection and master planning is followed so that a development is, as far as reasonably possible, located where the risk of flooding (from all sources) is lowest, taking account of climate change and the vulnerability of future uses to flood risk.
- 1.2.4. Where development needs to be in locations where there is a risk of flooding, local planning authorities and developers must ensure development is appropriately flood resilient and resistant, safe for its users for the development's lifetime, and will not increase flood risk elsewhere.
- 1.2.5. The Environment Agency (EA) is a statutory consultee on applications where there is a risk of flooding from the sea or main rivers.
- 1.2.6. Lead local flood authorities (unitary authorities or county councils) are responsible for managing local flood risk from ordinary watercourses, surface water or groundwater, and for preparing local flood risk management strategies. Local planning authorities work with Lead Local Flood Authorities (LLFA) to ensure local planning policies are compatible with the local flood risk management strategy.
- 1.2.7. Manchester City Council (MCC) is the lead local flood authority and its strategy for managing local flood risk is set out in Local Flood Risk Management Strategy (March 2014).
- 1.2.8. Where relevant, local planning authorities and developers must also take advice from:

- 1.2.9. Internal drainage boards; to identify the scope of their interests.
- 1.2.10. Sewerage undertakers; to ensure they can assess the impact of new development on their assets and plan any required improvements. United utilities is the local sewerage undertaker.
- 1.2.11. Reservoir undertakers; to avoid an intensification of development within areas at risk from reservoir failure and ensure they can assess the cost implications of any reservoir safety improvements required due to change in land use downstream of their assets.

1.3. Sources of Information

- 1.3.1. This flood risk assessment has been based on the following sources of information:
- DEFRA / EA's LiDAR topographic data (1m resolution);
(<https://environment.data.gov.uk/DefraDataDownload/?Mode=survey>)
 - British Geological Survey's Geoindex Tool;
(<http://mapapps2.bgs.ac.uk/geoindex/home.html>)
 - Cranfield University's soils data
(<http://www.landis.org.uk/soilscapes/>)
 - DEFRA / EA's aquifer and source protection data
(<https://magic.defra.gov.uk/MagicMap.aspx>)
 - British Geological Survey's borehole scans;
(<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>)
 - FEH's catchment data
(<https://fehweb.ceh.ac.uk/>)
 - EA's Flood Map for Planning;
(<https://flood-map-for-planning.service.gov.uk/>)
 - EA's Long Term Flood Risk Information;
(<https://flood-warning-information.service.gov.uk/long-term-flood-risk/map>)
 - MCC's Strategic Flood Risk Assessment (March, 2010);
(https://www.manchester.gov.uk/downloads/download/3871/strategic_flood_risk_assessment-manchester_salford_trafford)
 - MCC's Local Flood Risk Management Strategy (March 2014);
(https://secure.manchester.gov.uk/downloads/download/5603/lfrms_document)
 - EA's detailed flood risk information (Products 4, 5, 6, 7 and 8);
(<https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>)
 - Improving the Flood Performance of New Buildings (May 2007)
<https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/improving-the-flood-performance-of-new-buildings-in-flood-risk-areas>

2. Development Site

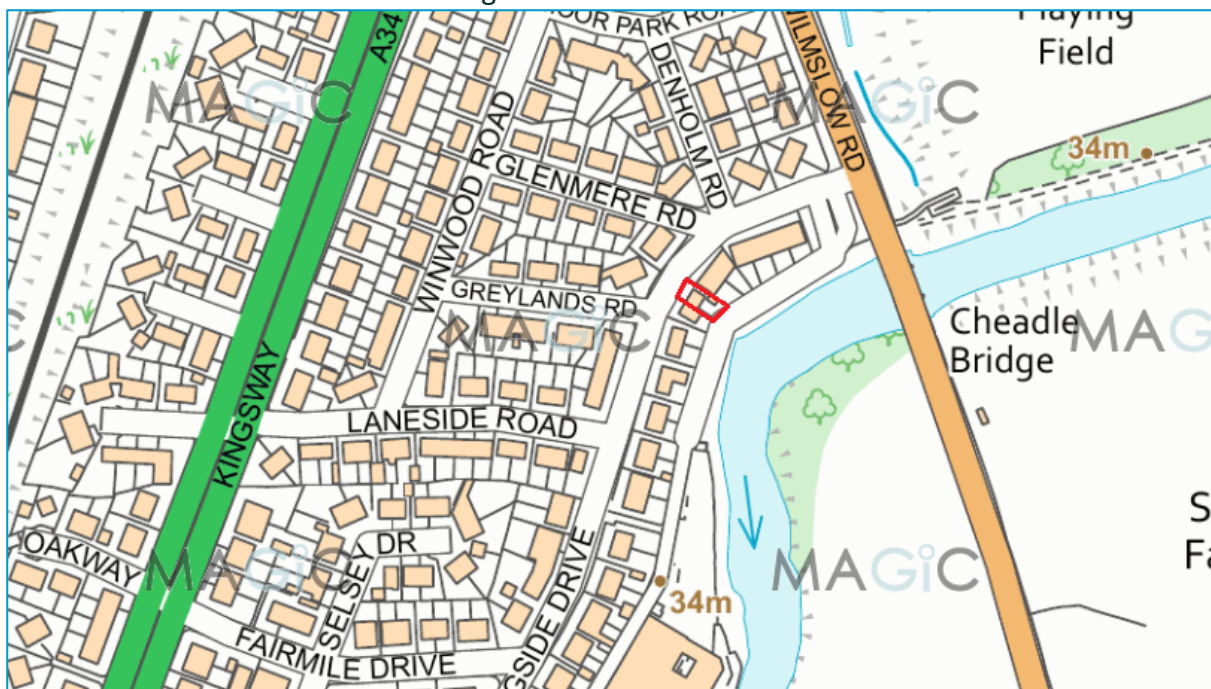
2.1. Location

- 2.1.1. The development site is an existing residential dwelling at 17 Morningside Drive in Manchester, M20 5PQ that is proposing a double storey extension to the rear and gable end.
- 2.1.2. The dwelling is located in a residential area adjacent to River Mersey to the East, residential housing to the near surrounds and Parris Wood High School playing fields to the North.

Table 2.1: Site Location Reference

OS X	OS Y	National Grid Reference	Postcode
385476	389846	SJ 85476 89846	M20 5PQ

Figure 2.1: Site Location Plan



2.2. Topography

- 2.2.1. LIDAR information shows ground levels within the development site range between 34.900m AOD and 35.100m AOD, falling with an average slope of 1:22 towards Morningside Drive to the west, and River Mersey to the east.

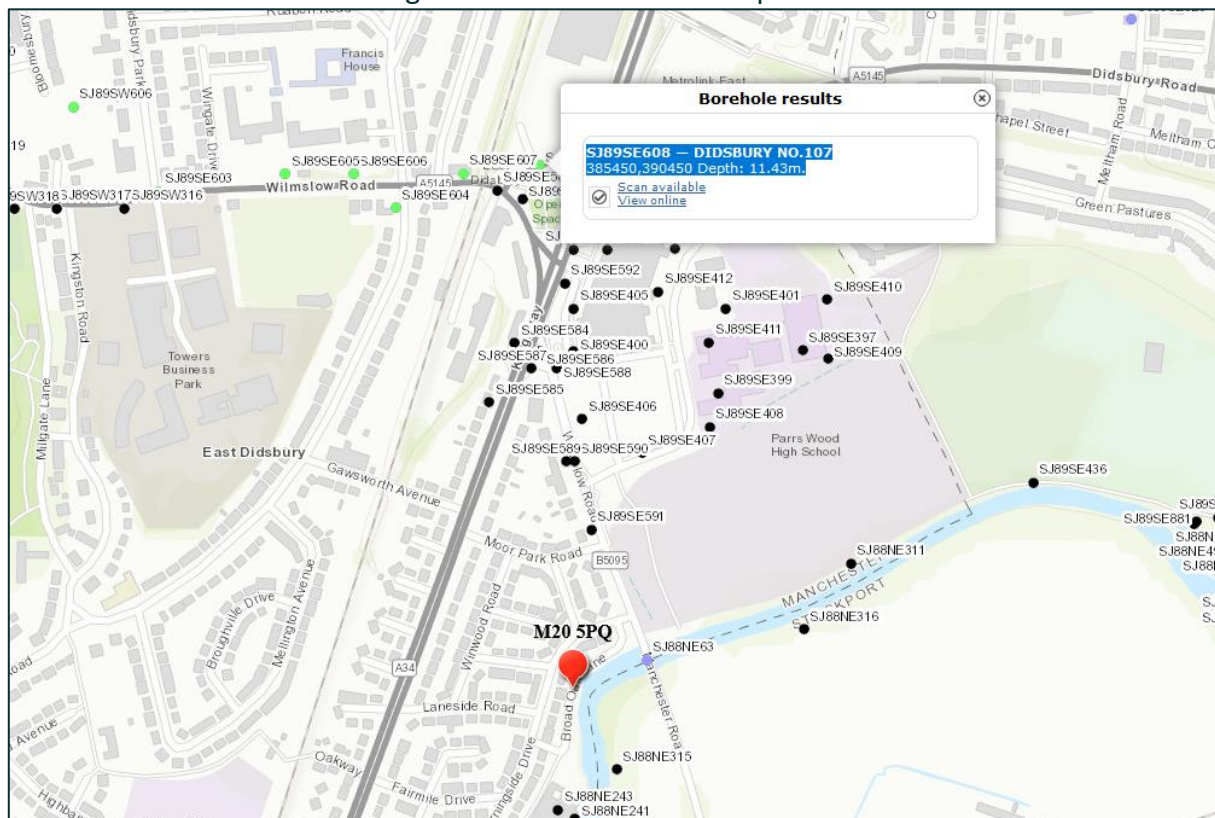
2.3. Hydrology

- 2.3.1. River Mersey flows North-South along the Eastern boundary of the development and carries on in a western direction.

2.4. Geology and Hydrogeology

- 2.4.1. In accordance with BGS' Geoindex, the development site lies on superficial deposits of Sand and Gravel (River Terrace Deposits) underlain by Sandstone bedrock (Wilmslow Sandstone Formation) (Appendix A). Cranfield University's Soilsapes (Appendix A) describes the site's soils as "Slowly permeable seasonally wet acid loamy and clayey soils".
- 2.4.2. In accordance with DEFRA / EA's MAGiC, the site is not in a groundwater source protection zone.
- 2.4.3. There are no recorded boreholes within 100m radius of the site (BGS' Geology of Britain Viewer). However, one borehole log (figure 2.4) for a wider area (500m+) shows gravels and sandstones consistent with the overall ground identification (Appendix A). Ground water was not found to depths of ~10m, although geology should be confirmed at the site.
- 2.4.4. Based on ground geology of the wider area, some infiltration may be possible (subject to site testing) and is recommended.

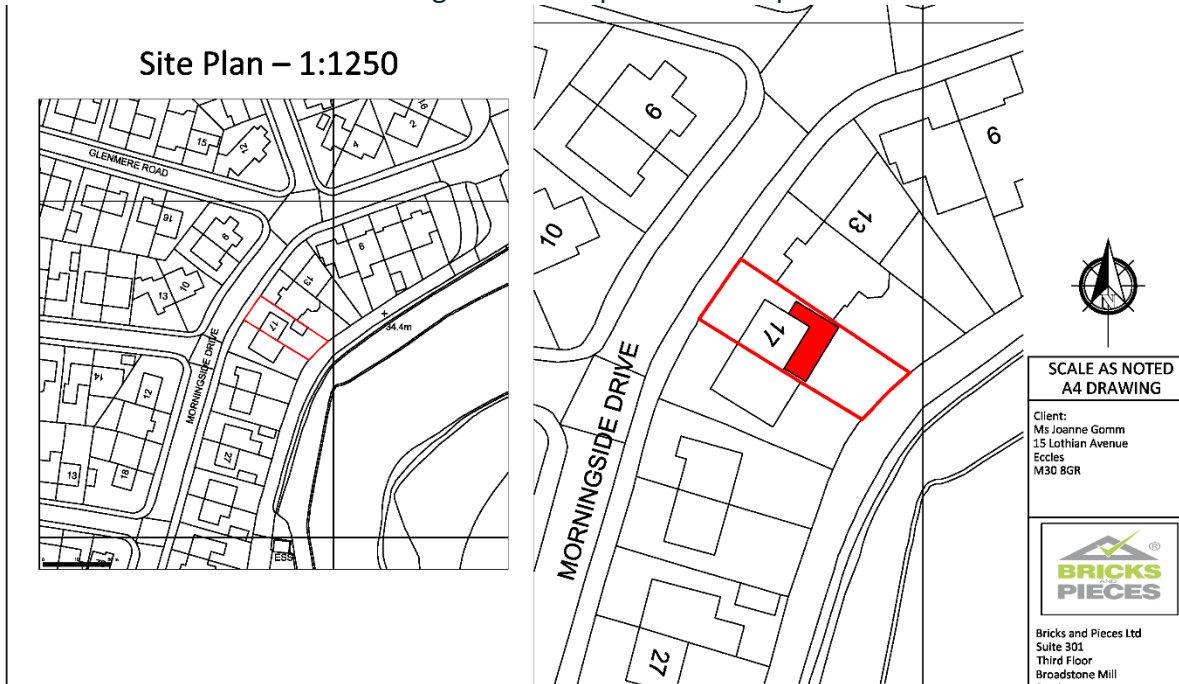
Figure 2.2: BGS Borehole Map View



3. Proposed Development

- 3.1.1. The proposed development comprises 28m² of residential extension which is made up of impermeable surfaces (e.g. roofs). Refer to Appendix C.

Figure 3.1: Proposed Development



4. Flood Risk Assessment

4.1. Overview

- 4.1.1. All potential sources of flood risk at the development site have been assessed based on the information listed in Section 1.3 and are summarised in. The key sources of flood risk to the proposed development are further described in the ensuing sections.

Table 4.1: Potential Sources of Flood Risk

Source	Flood Risk
Fluvial	Low/medium risk in general, but medium to high risk near river Mersey.
Surface Water	Very low risk in general, but low to medium risk along the main overland flow paths.
Groundwater	Undetermined risk. Potential for ground water emergence near the river, where the water table is thought to be naturally high.
Sewers	No risk (no existing sewers crossing the site).
Infrastructure Failure	Very low risk.

4.2. Coastal Flood Risk

- 4.2.1. Coastal flooding occurs when normally dry, low-lying land is flooded by seawater. It usually occurs when storm surges coincide with high astronomical tides and may lead to overtopping or breaching of natural or manmade barriers.
- 4.2.2. Besides posing a direct flood risk to low-lying areas, high sea levels can exacerbate other sources of flood risk by surcharging / locking outfalls, thus preventing the normal discharge of flows or even back flowing into tributary drainage systems.
- 4.2.3. In accordance with the EA's Flood Map for Planning (Appendix A) and most of the development site is in Flood Zone 2 (< 0.1% to 0.5 AEP). However, the site is in close proximity to River Mersey Flood Zone 3 (>0.5% AEP).

Figure 4.1: Flood Map for Planning

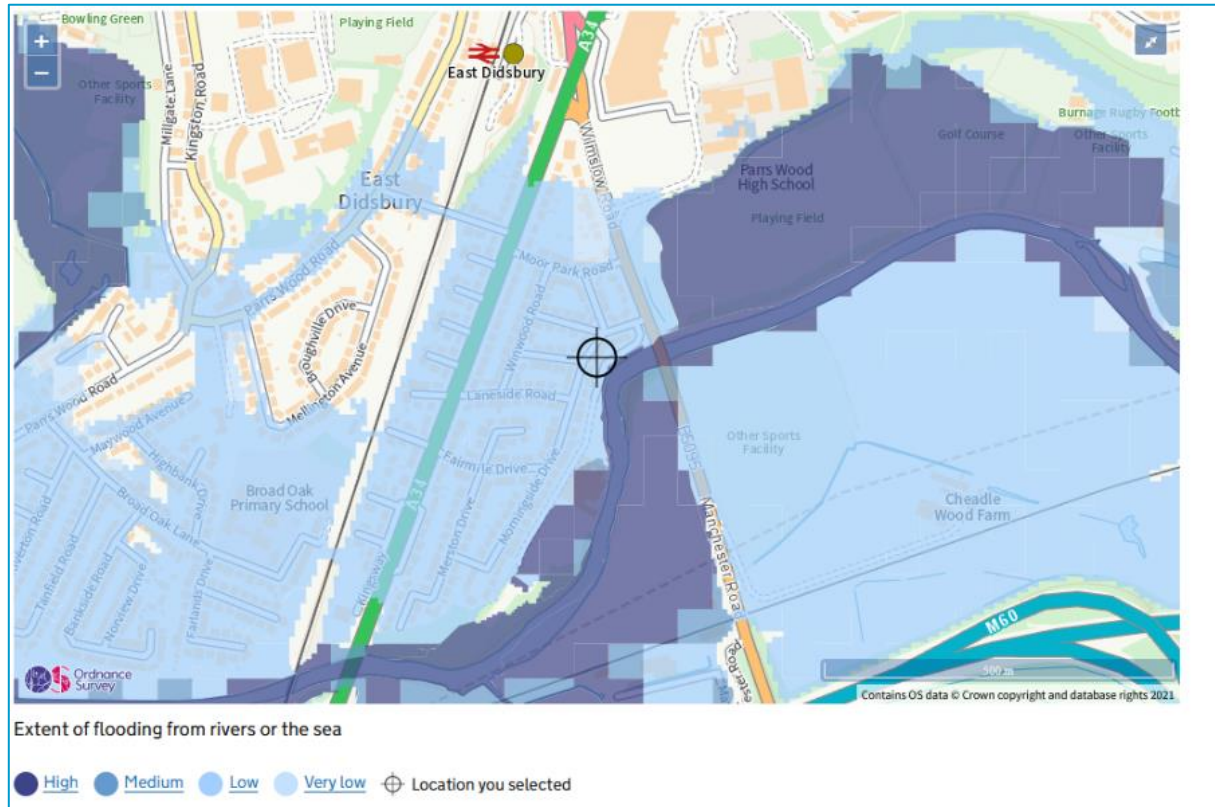


- 4.2.4. MCC Strategic Flood Risk Assessments (SFRA) is based on the EA's Flood Map for Planning and does not provide any additional information regarding coastal flood risk.
- 4.2.5. The EA's historic flood does not report historic flood events at the site.
- 4.2.6. Management measures proposed to manage flood risks are described in Section 5.3.

4.3. **Fluvial Flood Risk**

- 4.3.1. Fluvial flooding occurs when a catchment area receives greater than usual amounts of water (e.g. rainfall or snow melt). When the converging runoff exceeds the conveyance capacity of the receiving channel, water spills onto the surrounding floodplains and fluvial flooding occurs.
- 4.3.2. Fluvial flooding usually occurs hours or days after heavy and / or prolonged rainfall and its effects often last several hours or days.
- 4.3.3. Besides posing a direct flood risk to floodplain areas, high water levels in watercourses can exacerbate other sources of flood risk by surcharging / locking outfalls, thus preventing the normal discharge of flows or even back flowing into tributary drainage systems.
- 4.3.4. In accordance with the EA's Long Term Flood Information (Appendix A), most of the development site lies in low to medium risk of flooding from rivers or seas. However, areas nearer to River Mersey and are high flood risk.

Figure 4.2: Flood Map for Rivers or the Sea



- 4.3.5. The site does not benefit from formal flood defences.
- 4.3.6. Management measures proposed to manage flood risks are described in Section 5.3.

4.4. Surface Water Flood Risk

- 4.4.1. Surface water flooding is a description for excessive overland flows that have yet to enter a natural or manmade receptor (e.g. aquifer, watercourse or sewer). Surface water flooding also occurs when the amount of runoff exceeds the capacity of the collecting system and spills onto overland flow routes.
- 4.4.2. Surface water flooding is usually the result of very intense, short lived rainfall events, but can also occur during milder, longer lived rainfall events, when collecting systems are at capacity or the ground is saturated. It often results in the inundation of low points in the terrain.
- 4.4.3. In accordance with the EA's Long Term Flood Risk Information (Appendix A) the development site is mostly at very low (< 0.1% AEP) risk of surface water flooding. However, areas near prominent overland flow paths are at low (0.1% to 1.0% AEP), medium (1.0% to 3.3% AEP) flood risk

Figure 4.3: Flood Risk from Surface Water



4.4.4. MCC's strategic flood risk assessments are based on the EA's Long Term Flood Risk Information and do not provide any additional information regarding surface water flood risk.

4.4.5. The available information suggests there is very low risk of surface water flooding.

4.4.6. Management measures proposed to manage flood risks are described in Section 5.3.

4.5. Groundwater Flood Risk

4.5.1. Groundwater flooding occurs when the level of water filling the pores and / or cracks in the underlying soil and / or rock (i.e. water table) rises and emerges on the surface. The level of the water table varies seasonally and depends upon long term rainfall, thickness and porosity of the underlying strata and groundwater abstraction.

4.5.2. Groundwater flooding is most common in areas where the underlying bedrock and superficial deposits are very porous, but it can also happen at locations where superficial layers of sand or gravel overlay impermeable bedrock.

4.5.3. Groundwater flooding usually occurs after days or weeks of prolonged rainfall and often lasts for days or weeks, as subsiding of the water table can be a very slow process.

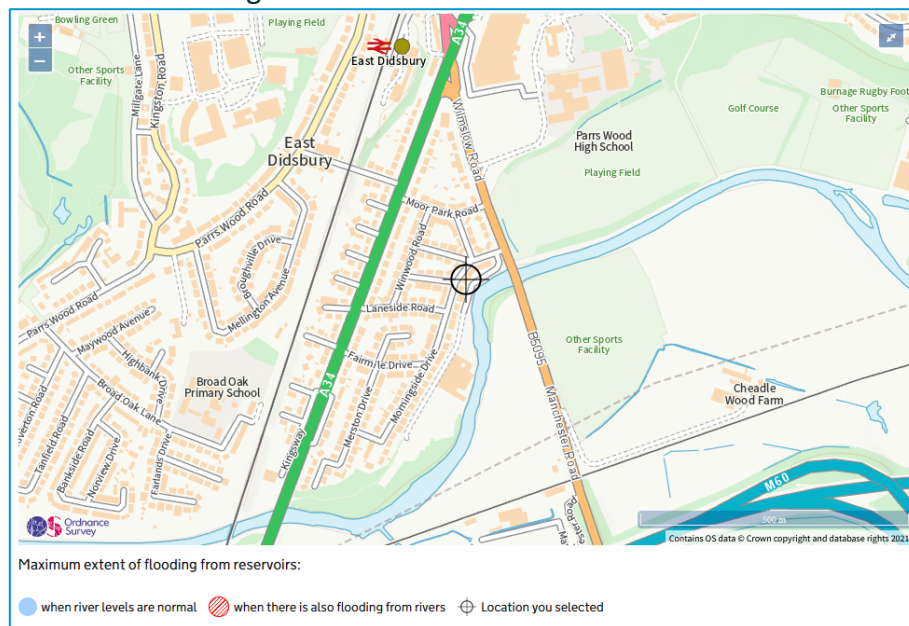
4.5.4. Besides posing a direct flood risk to developments (particularly basements), high water table levels can exacerbate other sources of flood risk by preventing infiltration and / or leaking into drainage systems. In accordance with MCC's strategic flood risk assessments, the development site is in an area no recorded issues of groundwater flooding. There are several recorded incidents of groundwater flooding in in adjacent districts, Salford and Trafford.

4.5.5. Management measures proposed to manage flood risks are described in Section 5.3.

4.6. Infrastructure Failure Flood Risk

- 4.6.1. Infrastructure failure flooding occurs when a feature holding water above natural ground levels (e.g. reservoir or canal) is overtopped or breached. Infrastructure failure flooding is usually the result of extreme events in excess of the high standards of protection usually considered in the design of such structures (namely reservoirs).
- 4.6.2. In accordance with the EA's Long Term Flood Risk Information, the development site is not at risk from reservoirs where rivers are at normal levels.
- 4.6.3. Reservoir failures are extremely rare in the UK, as the Reservoir Act ensures strict inspection and maintenance of all structures above a certain threshold. Structures under the Reservoir Act are also covered by comprehensive emergency plans and warning systems developed in liaison with the relevant civil protection authorities to ensure populations potentially at risk can be safely evacuated in critical situations.

Figure 4.4 Flood Risk from Reservoirs





5. Flood Risk Management

5.1. Flood Levels

- 5.1.1. Recent flood level data could not be sourced at the time writing. However, given no flood events have been reported in MCC's SFRA (see section 4.2), it can be assumed current floor levels of the dwelling are not at immediate risk of flooding. Additionally, the extension will form part of the main dwelling, maintaining existing floor levels.

5.2. Sustainable Drainage Systems (SuDS)

- 5.2.1. Use of soakaways cannot be confirmed without intrusive testing infiltration testing. Based on ground geology of the wider area, some infiltration may be possible and is recommended. It is important to note the need to remove silt from runoff prior to discharge into SUDS features. SuDS such as filter drains, swales are sustainable alternatives to proprietary treatment systems otherwise required to manage silt.
- 5.2.2. Given an existing garage and driveway will be largely replaced by the proposed extension, proposed impermeable area will not be increased.

5.3. Flood Resistance and Resilience

- 5.3.1. Vulnerable developments that cannot be raised above or defended against flood risk will dispose of the following flood resistance and resilience measures:
- 5.3.2. **Flood depth up to 300mm:** buildings will be designed to keep water out as much as possible using low permeability materials and construction (e.g. impermeable concrete) Appendix E.
- 5.3.3. The development site is in an area covered by the EA's flood warning system, which should allow users enough time to deploy flood defences and / or evacuate the site.
- 5.3.4. Safe refuge will be provided in the upper floors of buildings without a permanent safe access / egress route.

5.4. Flood Performance Building Materials

- 5.4.1. Flood performance of residential developments can be achieved by utilising materials resilient to water penetration and resistant to moisture.
- 5.4.2. Improving the Flood Performance of New Buildings (2007) makes a number of recommendations of which a key extracts can be found in appendix E

5.5. Environmental Agency Guidance

- 5.5.1. The EA have additional guidance information for flood action planning
- 5.5.2. A completed personal flood plan with key contact information and EA: 'Would you know what to do in a flood' should be provided to the property occupant(s) upon completing of construction works.



6. Drainage

6.1. Existing Drainage

- 6.1.1. The area of development is currently serving a driveway and garage to the gable end and patio area to the rear. The remainder garden area does not benefit from formal surface water drainage system.
- 6.1.2. Runoff generated within the existing development is intercepted by gullies/drains and sewers and conveyed to the downstream drainage system.

6.2. Proposed Drainage

- 6.2.1. The proposed surface water drainage will be designed in accordance with Building Regulations Part H and in compliance with the NPPF, local requirements and current best practices, to convey runoff from all impermeable areas to the drainage system.
- 6.2.2. *Rainwater downpipes which are currently serving rear and gable end of the property will be repositioned around the proposed extension and connect into existing sewers as per the current arrangement. Additional rainwater pipes and upsized conduits to suit increased roof area to be provided to suit.*

7. Conclusions and Recommendations

The findings of this report and recommendations are summarised below:

- 7.1.1. The development is located adjacent to River Mersey and of the following flood risk attributes:
- Flood Zone 2 with an (< 0.1% to 0.55% AEP)
 - Low risk at flooding from rivers and sea, although the site is in close proximity to River Mersey
 - Very low flood risk from Surface Water
 - No risk from infrastructure failure based on normal river levels
- 7.1.2. Area geology indicates the development may be able to benefit from infiltration and is recommended, subject to site tests.
- 7.1.3. There are not known historical reports of flooding in the vicinity of this development.
- 7.1.4. Development proposes to extend an existing residential dwelling utilising space that is currently hard surfaced, serving a garage and driveway to the gable end, and patio to the rear. The proposal does not increase impermeable area entering into the drainage system.
- 7.1.5. The development will extend from the current dwelling forming and extension to the principal structure. Therefore, existing floor level will need to be maintained across the entire area, and must not be lower.
- 7.1.6. Flood resilient construction materials and methods should be adopted wherever possible to alleviate and manage flood risk. Guidance is provided in 'Improving the Flood Performance of New Buildings' (May 2007).
- 7.1.7. The proposal along with recommendations and design approaches aforementioned, is deemed acceptable.

8. Limitations

- 8.1.1. The information, conclusions and recommendations presented within this report are deemed to be current at the time of issue. No guarantee can be given to the status of this information other than at the time of issuing. Where necessary, the user shall confirm the status of any applicable assessments and consents.
- 8.1.2. This report has been commissioned by Bricks and Pieces. No third party may receive a copy of this report without first obtaining our permission in writing.
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Ref: 21-1130

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Appendix A

KEY STAKEHOLDER CONSULTATION

Flood map for planning

Your reference
21-1130

Location (easting/northing)
385482/389862

Created
24 Nov 2021 15:47

Your selected location is in flood zone 2, an area with a medium probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

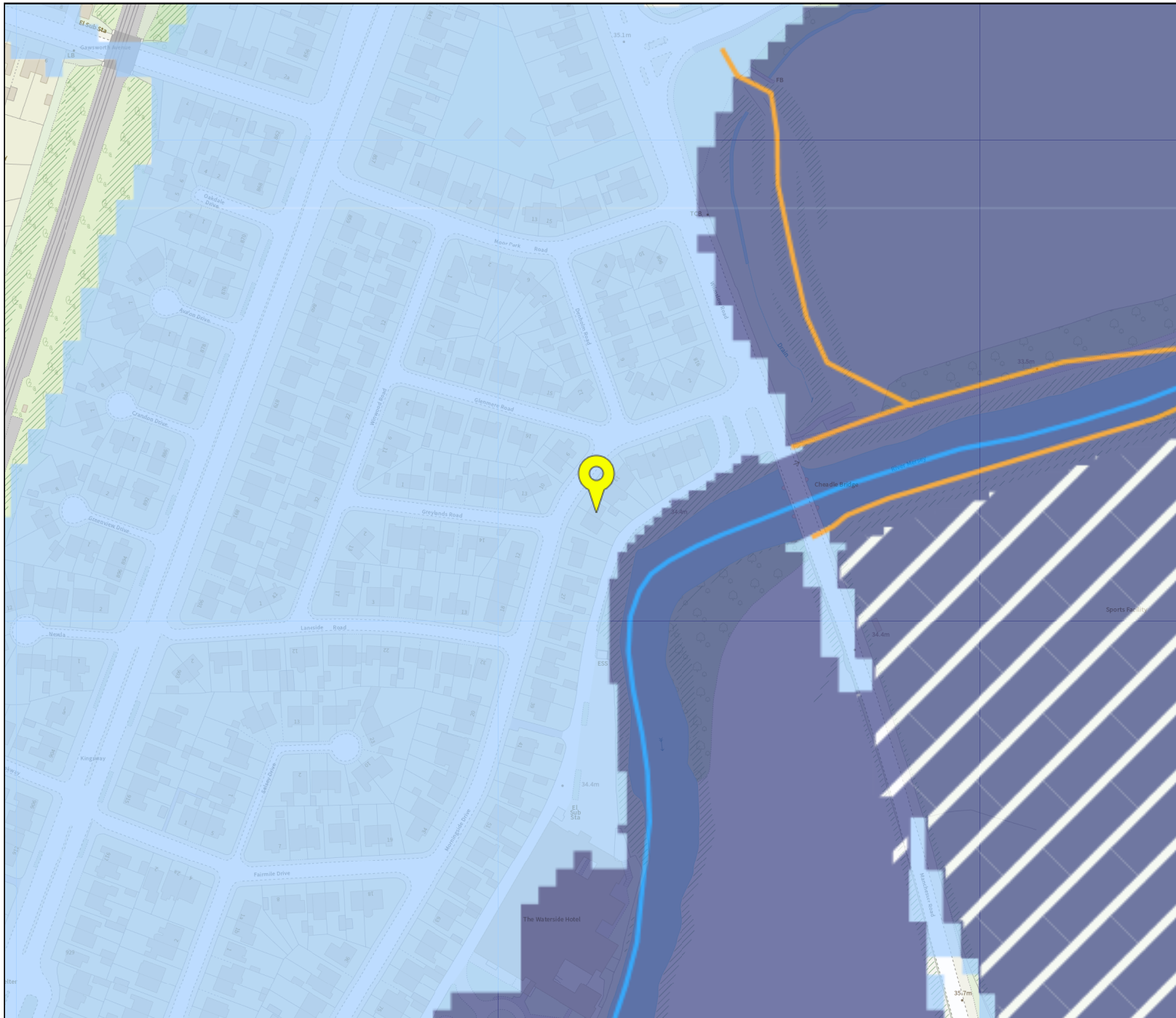
Notes

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

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

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

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

21-1130

Location (easting/northing)

385482/389862

Scale

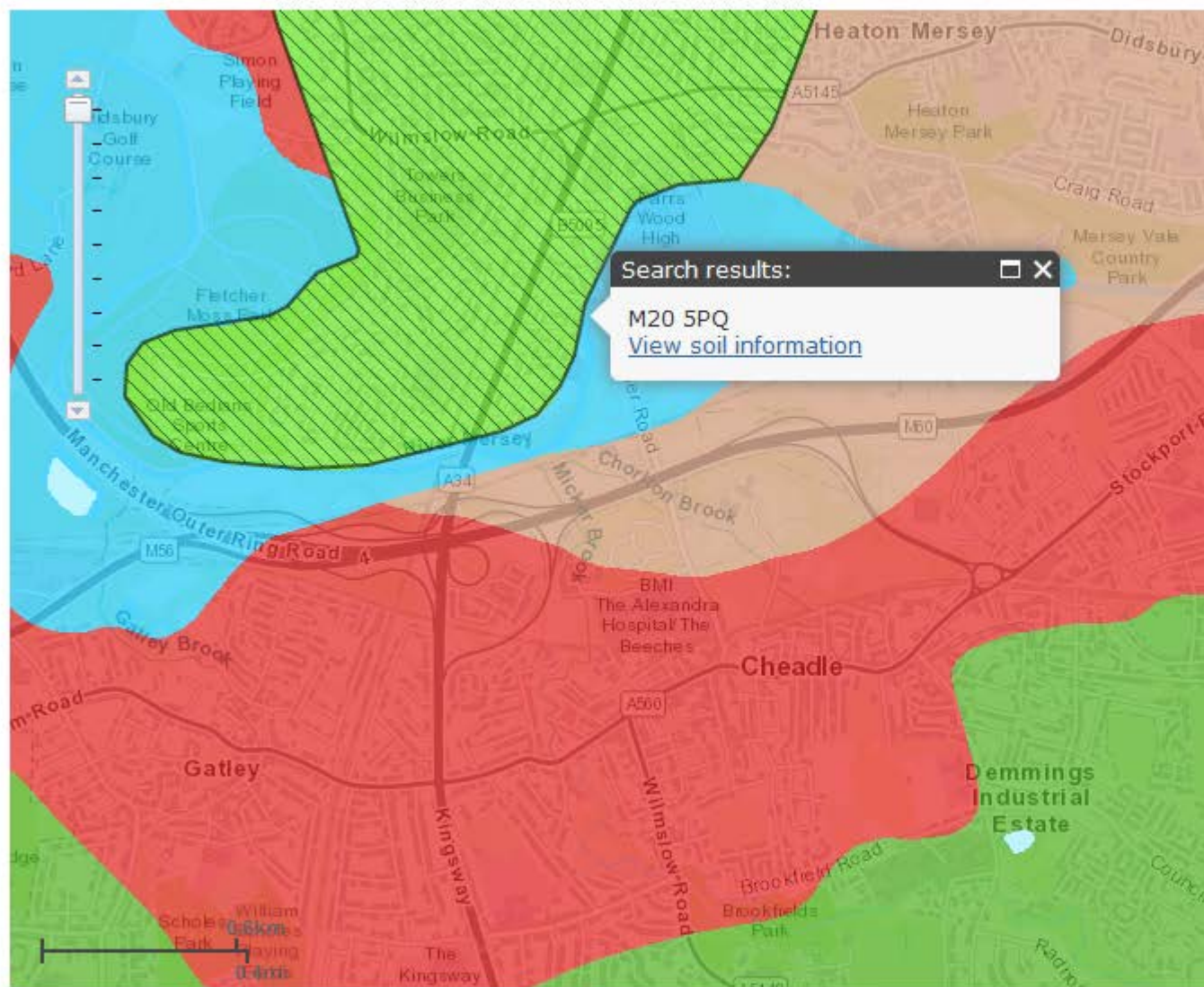
1:2500

Created

24 Nov 2021 15:47

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m



Adjust transparency

Legend

Search

Soil information



Habitats:
Seasonally wet pastures and woodlands

Landcover:
Grassland with some arable and forestry

Carbon:
Medium

Drains to:
Stream network

Water protection:
Main risks are associated with overland flow from compacted or poached fields. Organic slurry, dirty water, fertiliser, pathogens and fine sediment can all move in suspension or solution with overland flow or drain water

General cropping:
Mostly suited to grass production for dairying or beef; some cereal production often for feed. Timeliness of stocking and fieldwork is important, and wet ground conditions should be avoided at the beginning and end of the growing season to prevent damage to soil structure. Land is tile drained and periodic mowing or subsoiling will assist drainage

Geology

Superficial deposits: River Terrace Deposits - Sand and gravel. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.

[More information](#)

Bedrock geology: Wilmslow Sandstone Formation - Sandstone. Sedimentary bedrock formed between 252.2 and 247.1 million years ago during the Triassic period.

[More information](#)

SECTION OF Barchols, No. 106, 107, 108, 109. at City of Manchester.

Maps: One-inch 98. Six-inch 111 S.E.W. County
 Height above O.D. Not given Latitude Longitude
 Communicated by Manchester City Engineer. Date of sinking
 Made by Dip of Strata

		Thickness.		Depth from Surface.	
<u>No. 106. 25 yds. W. of Parr's Wood Lane Rly. Bridge, Wilmslow Road, DIDS BURY.</u>					
F 111 S.E.W. 26 For section see horz. Section No. 809	Sandy soil.	SS 8536	9044	3	6
	Sand & gravel.			9	6
	Brown sand & clay with bands of loamy sand. (Water level at 27 ft.)			15	6
	Sandy loam.			4	-
	Sand & gravel			3	-
	Red sandstone.			1	8
					37 2
<u>No. 107. In Parr's Wood Lane. 65 yds. E. of Rly. Bridge. DIDS BURY.</u>					
G 111 S.E.W. 26 For section see horz. Section No. 809	Granite setts.			-	6
	Made ground.	SS 8545	9045	1	-
	Sand & gravel.			9	6
	Silt.			3	-
	Brown clay.			6	6
	Brown sand. (Water level at 23 ft.)			7	-
	Brown sand with beds of ballast.			8	6
	Soft red sandstone.			1	6
					37 6
<u>No. 108. O.D. in Parr's Wood Lane, 110 yds. east of junction with Wilmslow Road, DIDS BURY.</u>					
H 111 S.E.W. 26 Field slip: 31	Mud & soil			6	-
	Sand & gravel with a little water.			5	-
	Brown sandy clay with bands of loamy sand			21	-
	Sand & gravel, good supply of water.			14	6
	Brown sandy clay, as above.			2	6
	Thin bed sandstone. SS 8555 9048			-	6
	Sand & gravel with pieces of sandstone. (Mud level same as 26 ft. from surface)			4	6
	Sandstone.			2	-
					146 -
<u>No. 109. on L. N.S. Rly. 260 yds. W. of Parr's Wood Lane Bridge, West of Newton Mearns Station.</u>					
I 111 S.E.W. 26 Field slip: 31	Soles	SS 8559	9065	-	9
	Yellow clay (Water level at 5 ft.)			7	-
	Sand & gravel with a little water.			1	9
	Sandy clay. (dry)			10	6
					20 -



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Residential Extension at
17 Morningside Drive
Manchester
M20 5PQ

The Old Hall, 23 Park Road
Bingley
West Yorkshire
BD16 4BQ

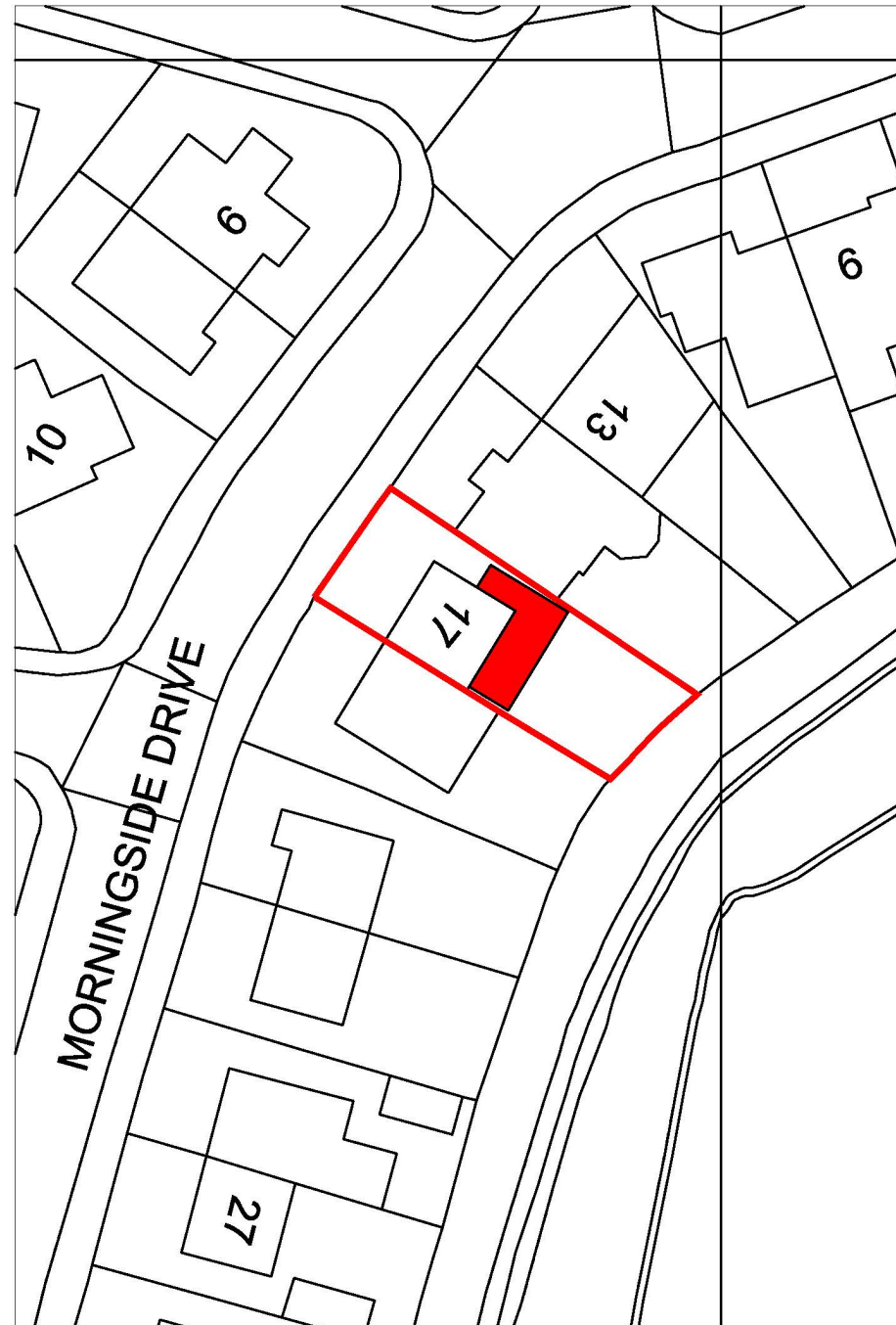
01274 566696
mail@holdgateconsulting.com
holdgateconsulting.com

Appendix B

SITE INFORMATION

Block Plan – 1:500

Site Plan – 1:1250

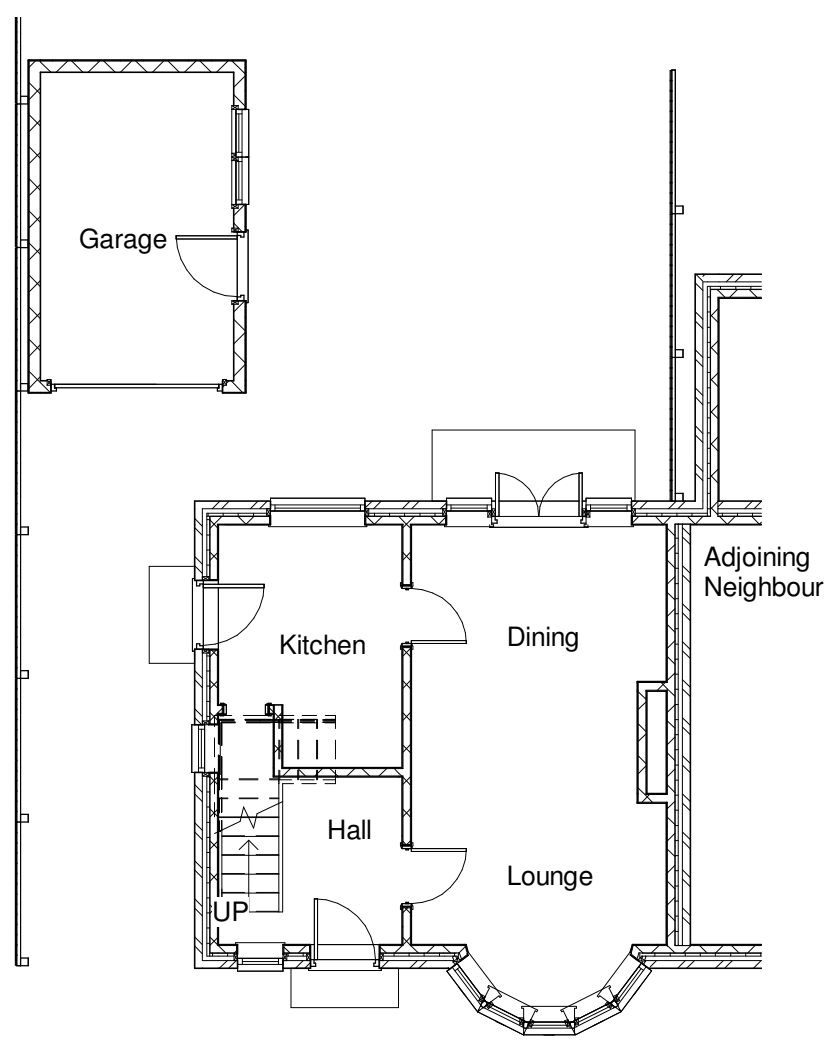


SCALE AS NOTED
A4 DRAWING

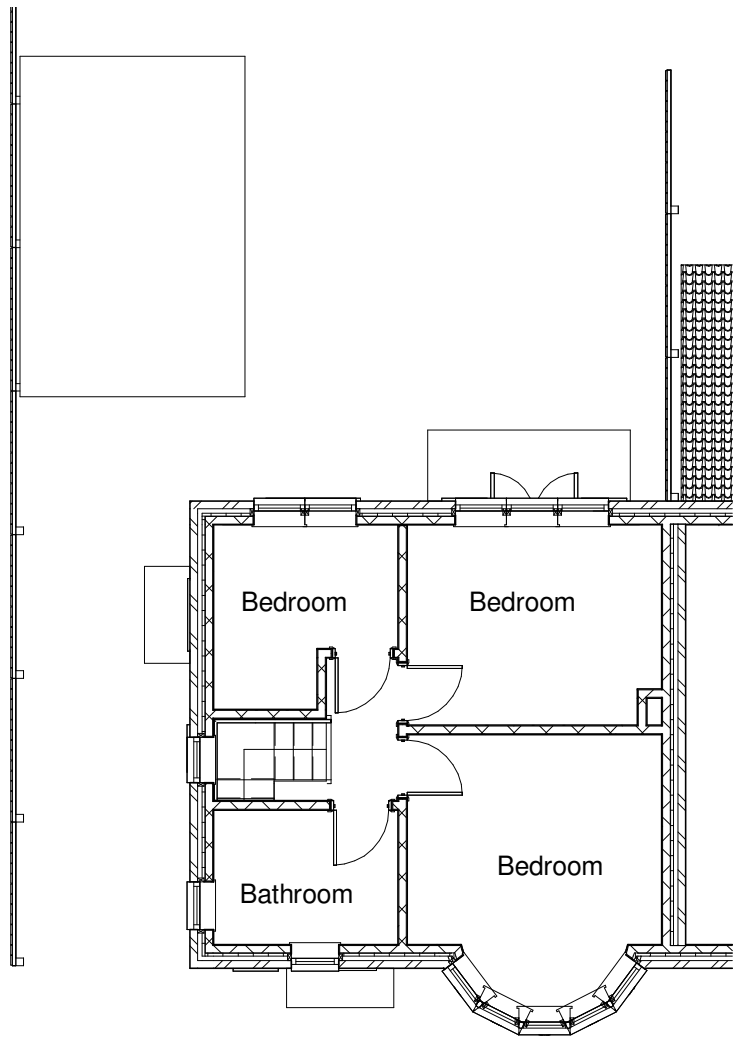
Client:
Ms Joanne Gomm
15 Lothian Avenue
Eccles
M30 8GR



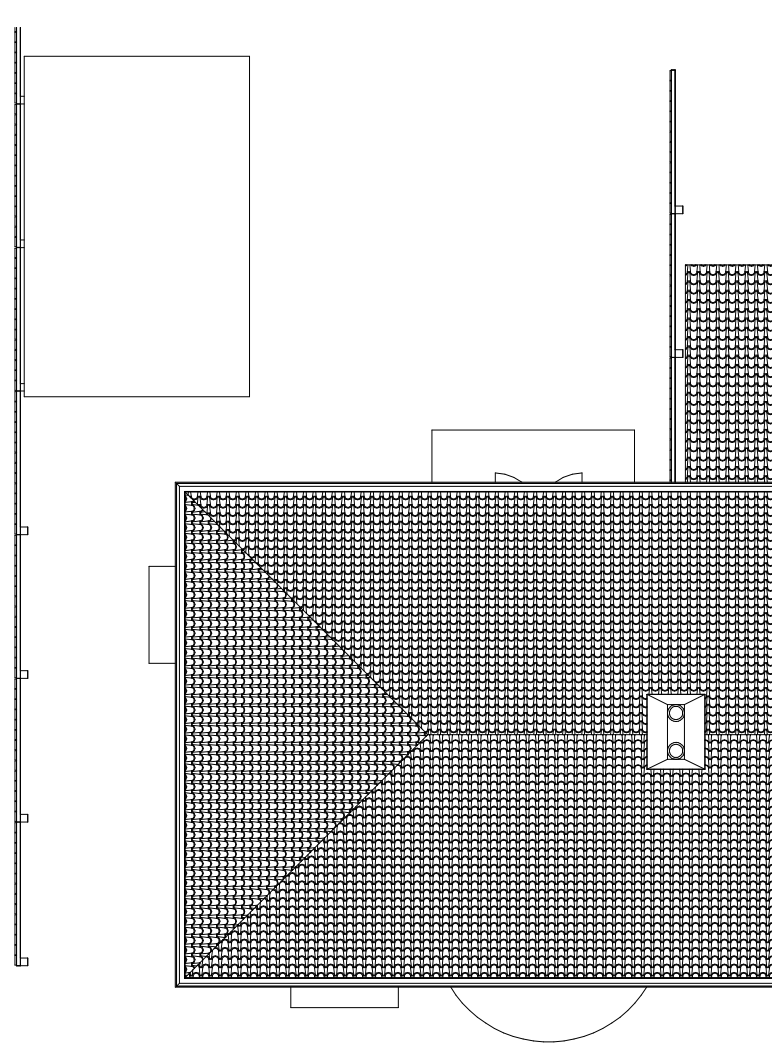
Bricks and Pieces Ltd
Suite 301
Third Floor
Broadstone Mill
Stockport
Cheshire SK5 7DL
Tel: 0161 443 4117



01 Existing Ground Floor Plan
1 : 100



02 Existing First Floor Plan
1 : 100



04 Existing Roof Plan
1 : 100



External View 2.



Existing Rear Elevation
1 : 100



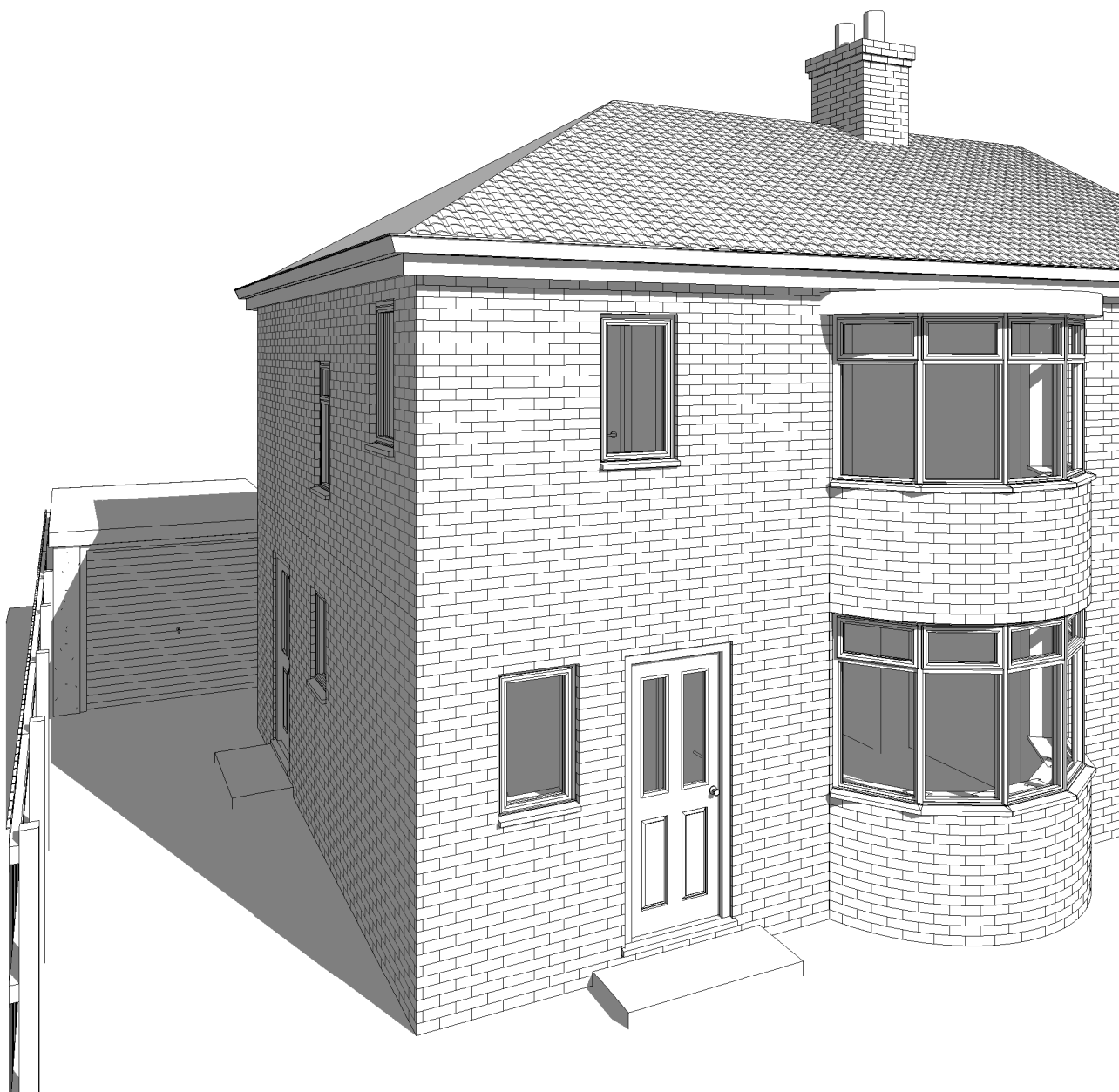
Existing Front Elevation
1 : 100



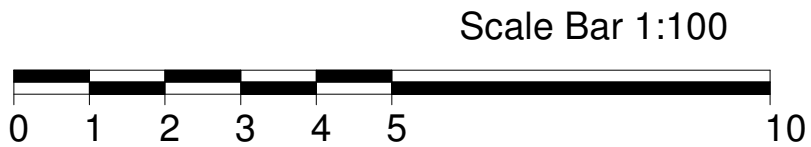
Existing Side Elevation
1 : 100



Existing Side Elevation1
1 : 100



External View 1.



SCALE 1 : 100
A2 DRAWING

Client:
Becca Adson
17 Moringside Drive
Parrswood
Manchester
M20 5PQ



Bricks and Pieces
Suite 301
Broadstone Mill
Broadstone Road
Stockport
SK5 7DL
Tel: 0161 443 4117



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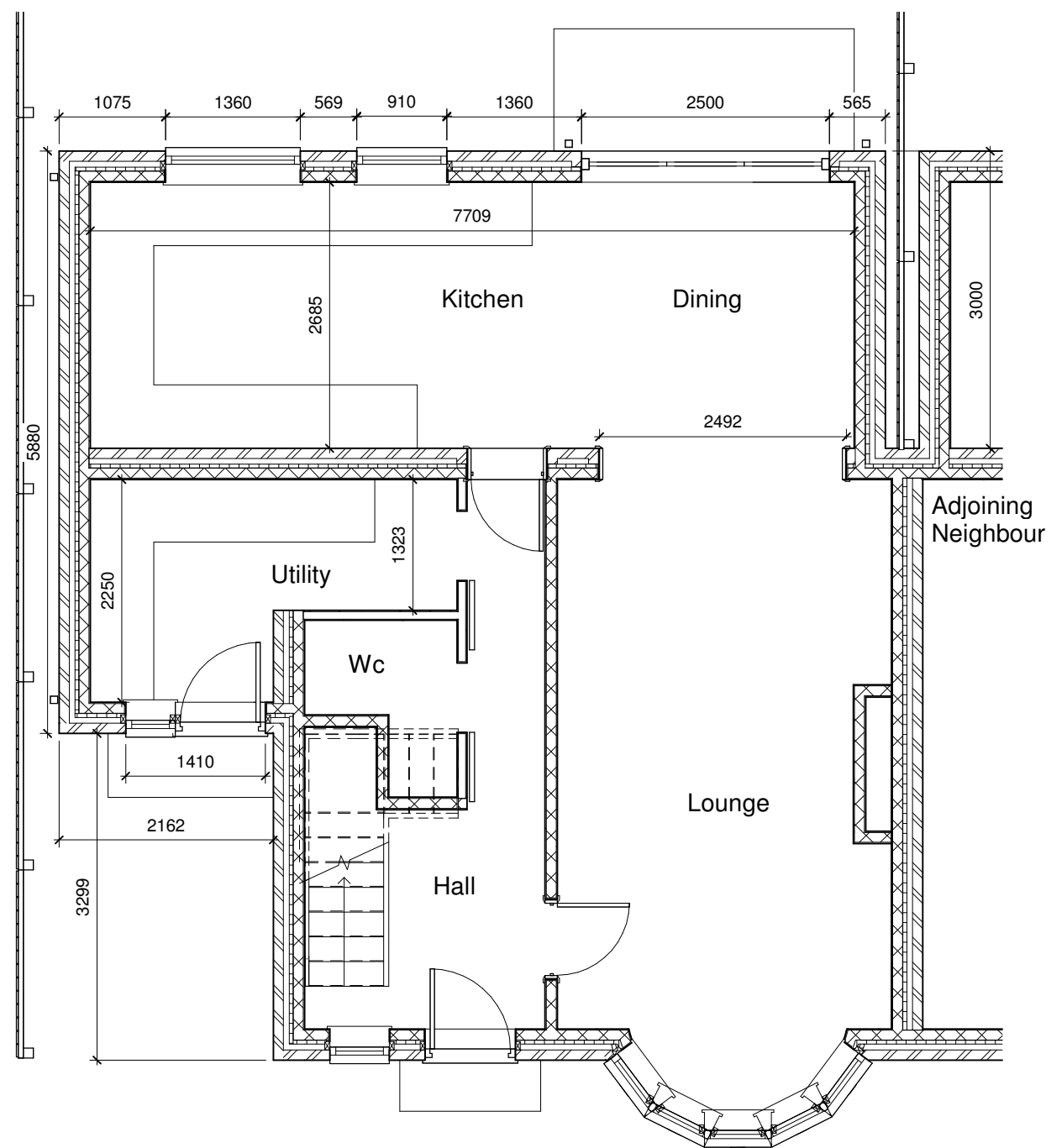
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M20 5PQ

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West Yorkshire
BD16 4BQ

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APPENDIX C

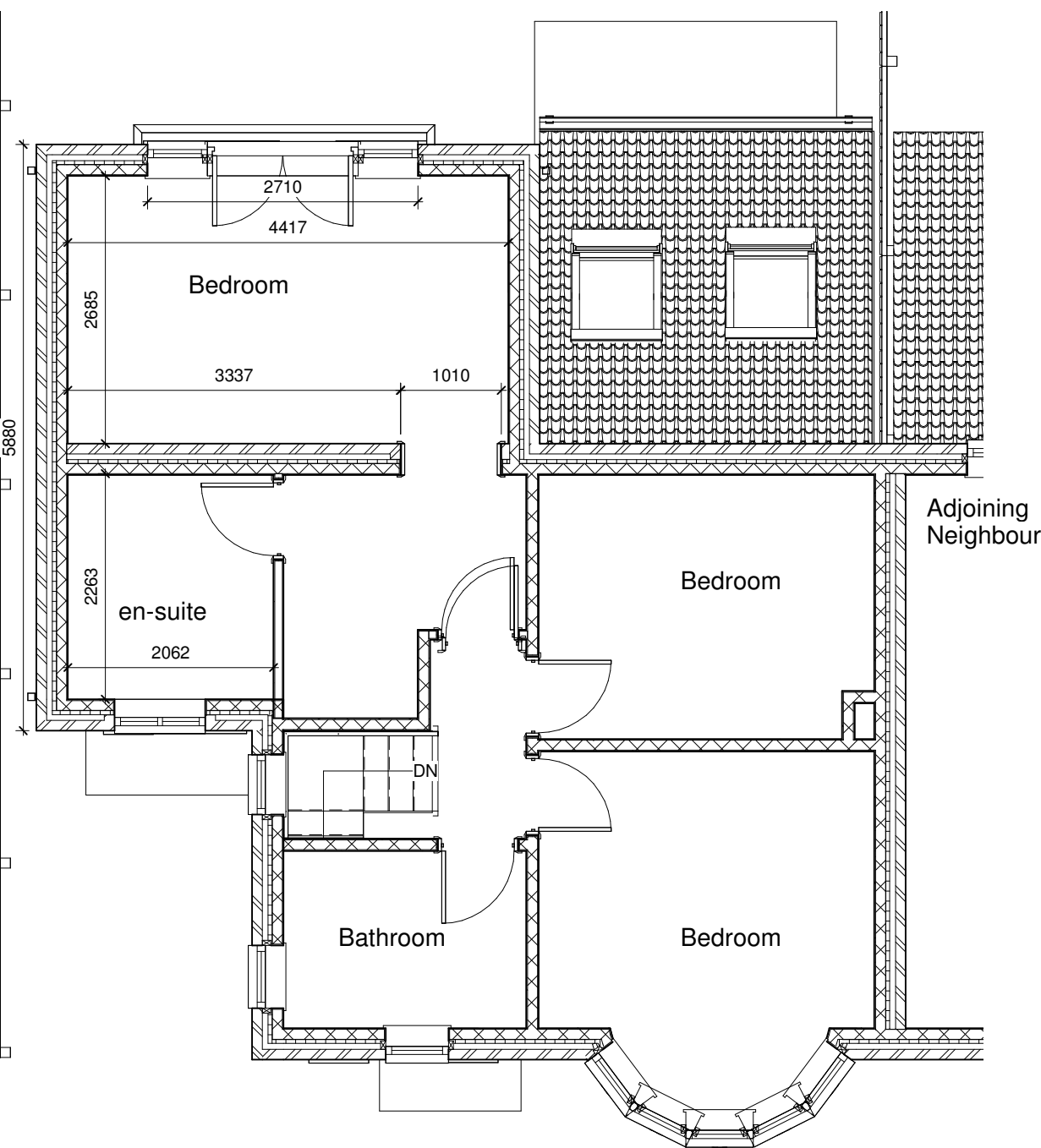
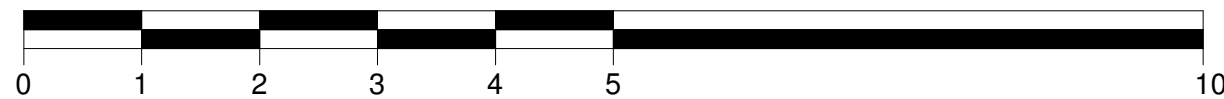
PROPOSED DEVELOPMENT



01 Proposed Ground Floor Plan

1 : 50

Scale Bar 1:50



02 Proposed First Floor Plan

1 : 50



External View 4.

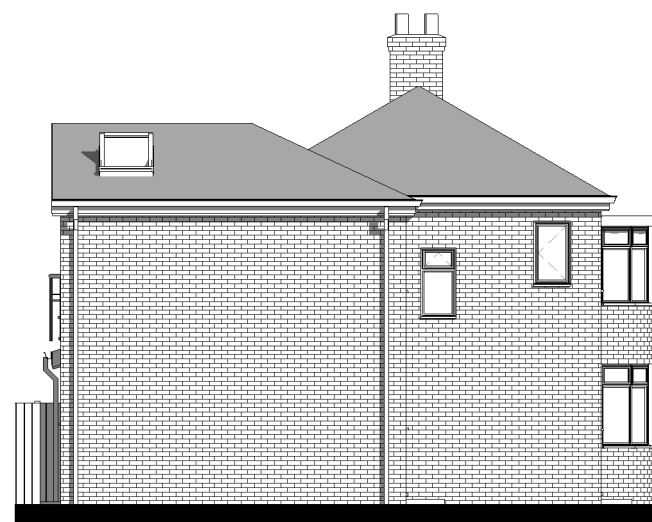


External View 3.



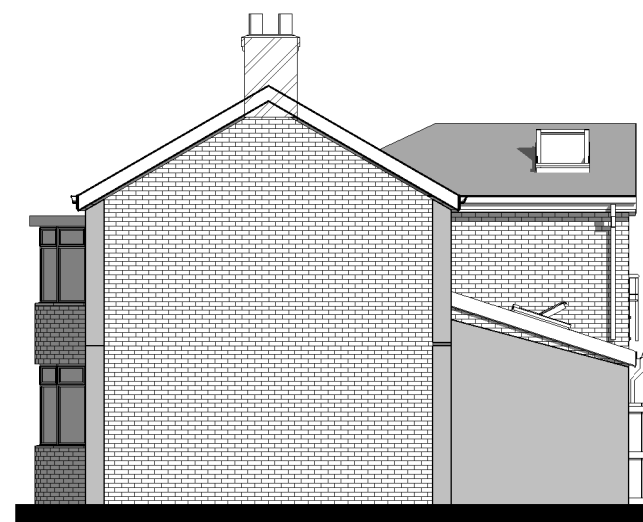
Proposed Rear Elevation

1 : 100



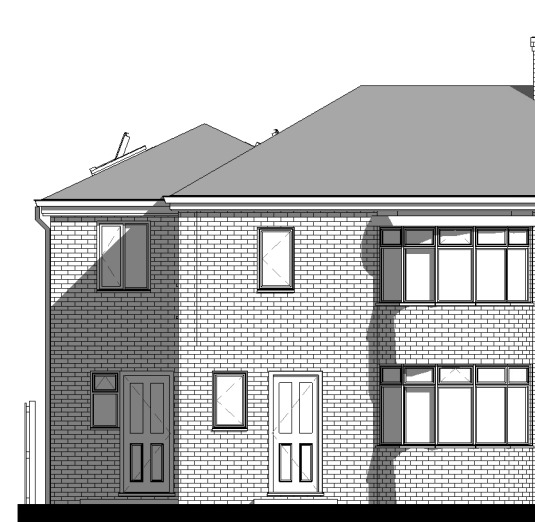
Proposed Side Elevation

1 : 100



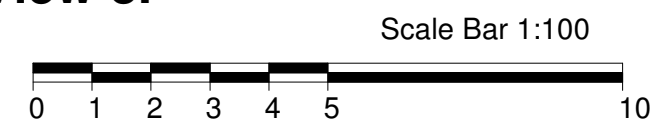
Proposed Side Elevation 1

1 : 100



Proposed Front Elevation

1 : 100



Scale Bar 1:100

SCALE As indicated
A2 DRAWING

Client:
Becca Adson
17 Moriningside Drive
Parrswood
Manchester
M20 5PQ



Bricks and Pieces
Suite 301
Broadstone Mill
Broadstone Road
Stockport
SK5 7DL
Tel: 0161 443 4117



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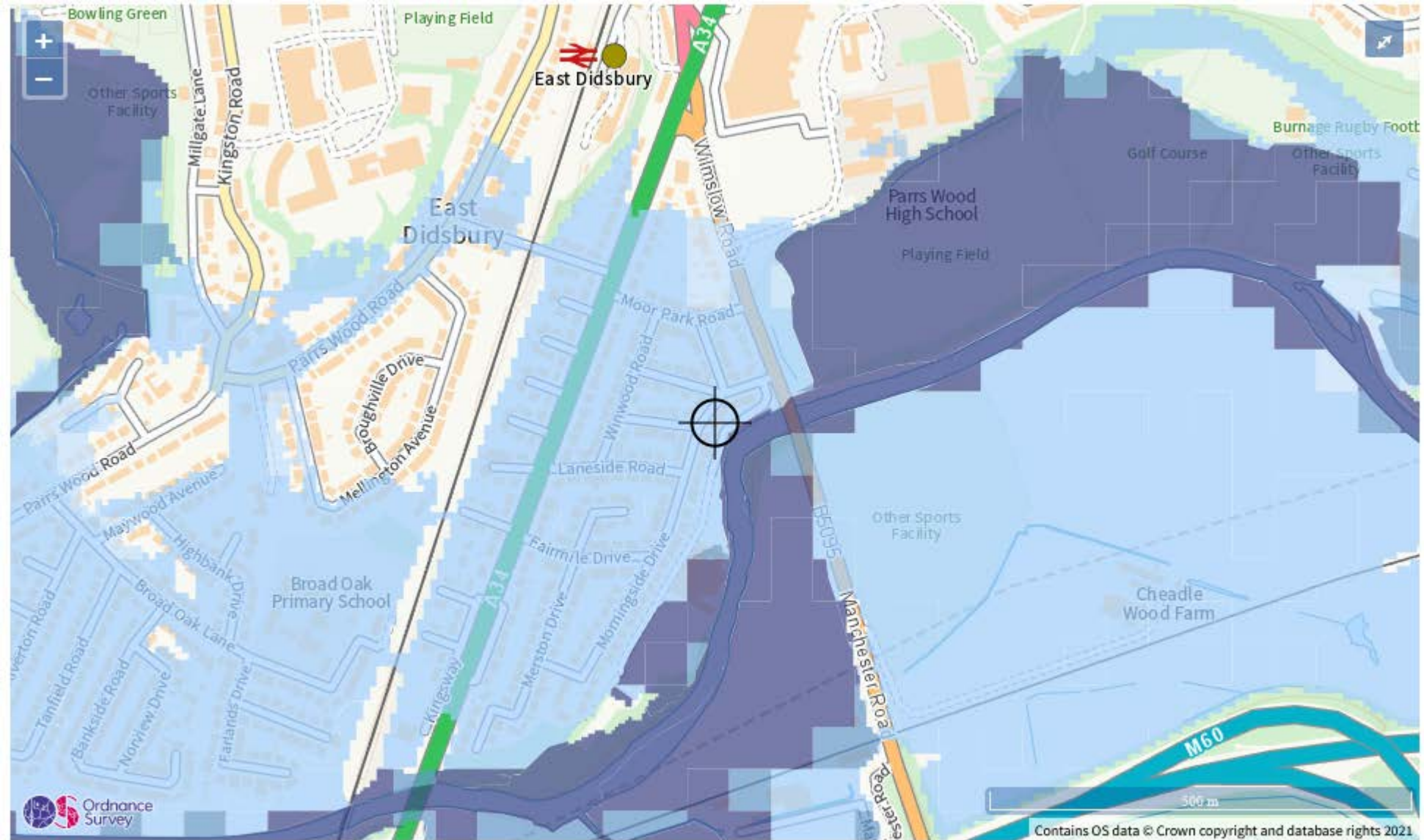
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mail@holdgateconsulting.com
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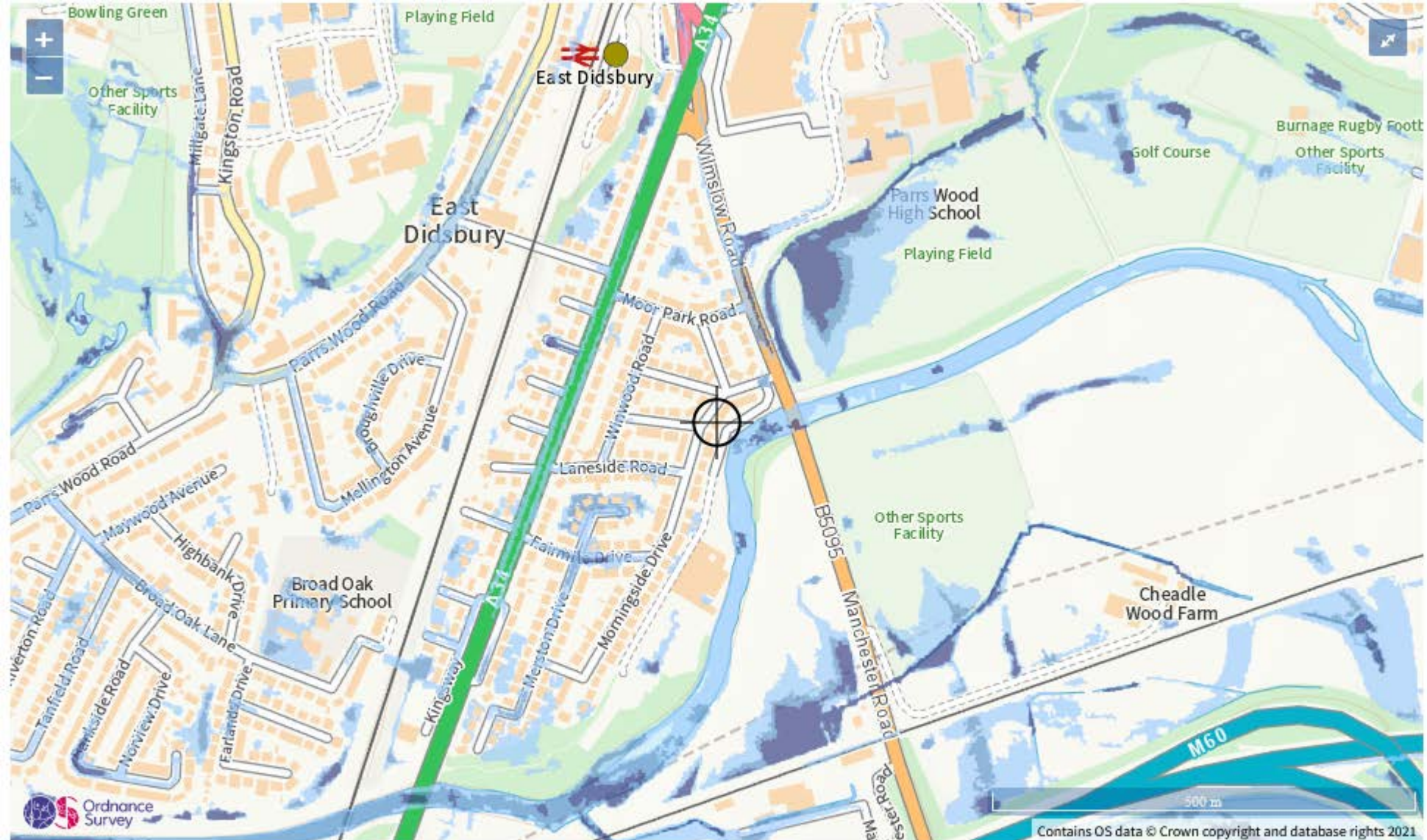
APPENDIX D

FLOOD RISK INFORMATION



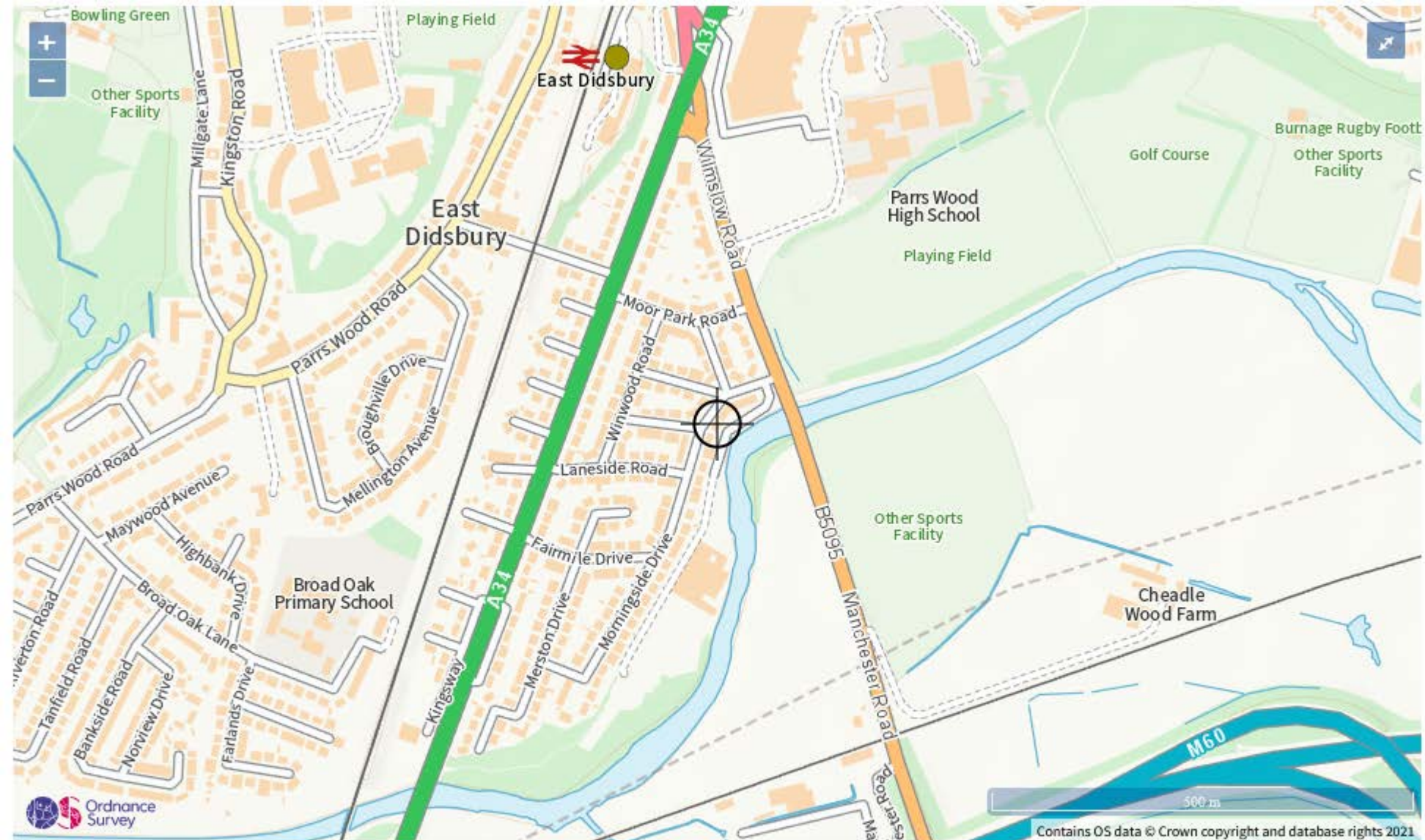
Extent of flooding from rivers or the sea

High **Medium** **Low** **Very low**  Location you selected



Extent of flooding from surface water

High Medium Low Very low Location you selected



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Maximum extent of flooding from reservoirs:

● when river levels are normal
 ▨ when there is also flooding from rivers
 ⊕ Location you selected



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APPENDIX E

FLOOD RISK MANAGEMENT MEASURES

Would you know what to do in a flood?



**FLOOD
ALERT**

PREPARE

- Prepare a bag that includes medicines and insurance documents
- Visit **www.gov.uk/check-flooding**



**FLOOD
WARNING**

ACT

- Turn off gas, water and electricity
- Move things upstairs or to safety
- Move family, pets and car to safety



**SEVERE
FLOOD
WARNING**

SURVIVE

- Call 999 if in immediate danger
- Follow advice from emergency services
- Keep yourself and your family safe

Visit **check-for-flooding.service.gov.uk/plan-ahead-for-flooding**

#PrepareActSurvive

Personal flood plan

Name



Are you signed up to receive flood warnings?

If not call Floodline on 0345 988 1188 to see if your area receives free flood warnings.

☐

Let us know when you've completed your flood plan by calling Floodline on **0345 988 1188**. This will help us learn more about how people are preparing for flooding.

General contact list	Company name	Contact name	Telephone
Floodline	Environment Agency		0345 988 1188
Electricity provider			
Gas provider			
Water company			
Telephone provider			
Insurance company and policy number			
Local council			
Local radio station			
Travel/weather info			

Key locations

Service cut-off	Description of location
Electricity	
Gas	
Water	

Who can help/who can you help?

Relationship	Name	Contact details	How can they/you help?
Relative			
Friend or neighbour			

Be prepared for flooding. Act now

Personal flood plan

What can I do NOW?



Put important documents out of flood risk and protect in polythene

☐

Look at the best way of stopping floodwater entering your property

☐

Find out where you can get sandbags

☐

Identify what you would need to take with you if you had to leave your home

☐

Check your insurance covers you for flooding

☐

Make a flood plan and prepare a flood kit

☐

Identify who can help you/ who you can help

☐

Understand the flood warning codes

☐

What can you do if a flood is expected in your area?

Actions	Location
Home	
• Move furniture and electrical items to safety	
• Put flood boards, polythene and sandbags in place	
• Make a list now of what you can move away from the risk	
• Turn off electricity, water and gas supplies	
• Roll up carpets and rugs	
• Unless you have time to remove them hang curtains over rods	
• Move sentimental items to safety	
• Put important documents in polythene bags and move to safety	
Garden and outside	
• Move your car out of the flood risk area	
• Move any large or loose items or weigh them down	
Business	
• Move important documents, computers and stock	
• Alert staff and request their help	
• Farmers move animals and livestock to safety	
Evacuation - Prepare a flood kit in advance	
• Inform your family or friends that you may need to leave your home	
• Get your flood kit together and include a torch, warm and waterproof clothing, water, food, medication, toys for children and pets, rubber gloves and wellingtons	

There are a range of flood protection products on the market to help you protect your property from flood damage. A directory of these is available from the **National Flood Forum** at www.bluepages.org.uk

Be prepared for flooding. Act now

Table 6.1 Flood resilience characteristics of building materials (based on laboratory testing)

Material	Resilience characteristics*		
	Water penetration	Drying ability	Retention of pre-flood dimensions, integrity
Bricks			
Engineering bricks (Classes A and B)	Good	Good	Good
Facing bricks (pressed)	Medium	Medium	Good
Facing bricks (handmade)	Poor	Poor	Poor
Blocks			
Concrete (3.5N, 7N)	Poor	Medium	Good
Aircrete	Medium	Poor	Good
Timber board			
OSB2, 11mm thick	Medium	Poor	Poor
OSB3, 18mm thick	Medium	Poor	Poor
Gypsum plasterboard			
Gypsum Plasterboard, 9mm thick	Poor	Not assessed	Poor
Mortars			
Below d.p.c. 1:3(cement:sand)	Good	Good	Good
Above d.p.c. 1:6(cement:sand)	Good	Good	Good

* Resilience characteristics are related to the testing carried out and exclude aspects such as ability to withstand freeze/thaw cycles, cleanability and mould growth

Table 6.2 Flood resilience characteristics of walls (based on laboratory testing)

Material	Resilience characteristics*		
	Water penetration	Drying Ability	Retention of pre-flood dimensions, integrity
External face			
Engineering bricks (Classes A and B)	Good	Good	Good
Facing bricks (pressed)	Medium	Medium	Good
Internal face			
Concrete blocks	Poor	Medium	Good
Aircrete	Medium	Poor	Good
Cavity insulation			
Mineral fibre	Poor	Poor	Poor
Blown-in expanded mica	Poor	Poor	Poor
Rigid PU foam	Medium	Medium	Good
Render/Plaster			
Cement render – external	Good	Good	Good
Cement/lime render – external	Good	Good	Good
Gypsum Plasterboard	Poor	Not assessed	Poor
Lime plaster (young)	Poor	Not assessed	Poor

* Resilience characteristics are related to the testing carried out and exclude aspects such as ability to withstand freeze/thaw cycles, cleanability and mould growth