DYSE
STRUCTURAL ENGINEERS

276 Yew Tree Road, Manchester. Flood Risk Assessment and Below Ground Drainage Strategy

Ref: LM23160-DYSE-XX-ZZ-RP-C-0001

Rev: P01

Date: 14/11/2023

Client: Ian and Jason McCorkells

Document Control

Originator: Paul Graveney CEng MICE

Date: 14/11/2023

Checker: Jonny Yusuf MEng CEng MIStructE

Date: 14/11/2023

Approver: Jonny Yusuf MEng CEng MIStructE

Date: 14/11/2023

Rev	Issue	Date	Originator	Checker	Approver
P01	First Issue	14/11/2023	PG	JDY	JDY

DYSE Ltd
studio@dyse.com
www.dyse.com

©Copyright 2023 DYSE Ltd.

DYSE Ltd. is a Private Limited Company registered in England and Wales No. 10984286 Registered Office First Floor, 79 Thomas Street, Manchester, M4 1LQ

This document has been prepared on behalf of DYSE Ltd. No individual is personally liable for its content. By receiving this document, the client of DYSE Ltd. or any third party relying on it accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence).

This document has been prepared on behalf of, and for the private and confidential use of the client of DYSE Ltd. This document should not be reproduced in whole or in part or relied upon by third parties without express authority of DYSE Ltd.

Contents

1 Introduction

2 Existing site

3 Planning Policy & Consultation

4 Definition of Flood Hazard

5 Assessment of Flood Risk on Proposed Development

6 Drainage requirements

7 Surface water strategy

8 Foul water strategy

9 Management Measures, Off Site Impacts & Residual Risk

Appendices

Appendix A - Architectural Plans

Appendix B - Environment Agency Flood Data

1 Introduction

This document provides an assessment of the flood risk and an outline strategy for the provision of drainage for a proposed residential property constructed next to 276 Yew Tree Road, Withington, Manchester, M14 6BT.

The report has been commissioned to identify any flood related issues associated with the proposed development and any likely constraints that could be imposed, plus to consider the drainage strategy for it. The following issues have been suggested by the Environment Agency (EA), Manchester City Council (MCC) as Lead Local Flood Authority (LLFA) and United Utilities (UU), and subsequently addressed within this report.

- Identify available data relating to flood risk at the site.
- Determine whether the site is at risk from flooding from all sources, including from breach or overtopping of any existing flood defences, surface water flooding and/or ground water flooding.
- Identify available data relating to drainage at the existing site, including historical discharges.
- Consider the flood risk from all other sources.
- Determine the current surface water drainage regime and assess any potential increase in surface water runoff as a result of the proposed development.
- Discuss Sustainable Drainage Systems (SuDS) as an option for reducing surface water flood risk.
- Devise an appropriate outline surface water drainage strategy (including calculation where appropriate) to deal with any potential increase in surface water runoff and include for climate change.
- Consider the recommendations of the Manchester City Council Strategic Flood Risk Assessment (SFRA).
- Assess mitigation measures & off-site impacts and define any residual risks.

The proposed drainage network developed from the drainage strategy must be capable of operating as required during storm events that allow for climate change over the anticipated lifespan of the development.

Developments of this type are generally required to manage surface water run off for a 1 in 100-year storm event. The peak rainfall intensity that is used to test the system performance must be increased by 45% to account for climate change.

Figure 1 Location Plan - Taken from Google Maps (2022)

2 Existing site

2.1 Site location

The current site is irregular in plan footprint and is located at 276 Yew Tree Road, Withington, Manchester, M14 6BT. The current residential property sits within the district of Withington, with Mauldeth Road junction located 100m to the south.

2.2 Overview

2.3 Existing site features

The current site encompasses a semi-detached residential property with detached garage and external paved areas. The general area is largely residential, with housing on all sides of the proposed development site.

2.4 Topography

No topographical survey has been undertaken at the site. A review of the United Utilities manhole cover level located to the south east of the site would indicate the current property to hold a finished floor level of circa 34.25m AOD.

2.5 Geology

2.5.1 Geological survey

Review of readily available British Geological Survey records indicate the following stratigraphy:

- Superficial deposits: Till, Devensian – Diamicton, generally encompassing silts and clays.
- Bedrock: Wilmslow Sandstone Formation

2.5.2 Ground investigations

No formal Phase 2 intrusive site investigation has been completed at the site to confirm the final ground conditions and infiltration rates.

2.6 Hydrological features

The culverted Cringle Brook watercourse is located some 10m beyond the north and north western boundaries within 3rd party land, flowing in a westerly direction.

2.7 Existing site drainage

Immediately to the south of the site and flowing in an easterly direction within a narrow 'Ginnel' is a 225mm diameter combined water sewer that outfalls to a larger 450mm diameter combined sewer in Yew Tree Road. There are no surface water sewers identified in close proximity.

The existing drainage serving the property is identified to outfall unrestricted to the 225mm diameter combined water sewer.

2.8 Known issues

DYSE have not been made aware of any known drainage issues on the site.

3 Planning Policy & Consultation

3.1 Planning policy framework

The flood maps provided by the Environment Agency (EA) locate a small area within the eastern side of the red line boundary within Flood Zone 3, i.e. land assessed as having greater than a 1 in 100 (1.0%) annual probability of fluvial flooding in any year. This is due to the surcharging of the culverted Cringle Brook, flowing west beyond the northern boundary of the site. The remaining area including the property is located within Flood Zone 2, i.e. land assessed as having less than a 1 in 100 (1.0%) but greater than a 1 in 1000 (0.1%) annual probability of fluvial flooding in any year. As a requirement of the NPPF (2021), Annex D, the proposed development should satisfy the requirements of the Sequential Test and where applicable the Exception Test.

<u>Sequential Test:</u>

Under the NPPF (2021), Zone 2 is defined as low probability flood risk. The proposal is for a new residential dwelling with driveway and external parking, which in line with Table 2 is classified as 'More Vulnerable'.

Placing both these criteria into Table 3 (Flood Risk Vulnerability and Flood Zone 'Compatibility'), More Vulnerable development in Flood Zone 2 determines that 'Development is Appropriate'.

<u>Exception Test:</u>

As the Sequential test is passed, the Exception test is therefore not required.

3.2 Strategic flood risk assessment (SFRA)

Manchester City Council in partnership with Salford 7 Trafford Councils, produced the Level 2 Strategic Flood Risk Assessment (SFRA) in 2011. The purpose of the SFRA is to assess and map all known sources of flood risk including fluvial, surface water, sewer, groundwater and all impounded water bodies, taking into account future climate change predictions.

A summary of the main elements from the SFRA are detailed below. The full report can be obtained from the Manchester City Council website.

- SFRA provides a detailed understanding of flood risks across the borough from all sources.
- Flood maps indicate that the site is at high risk of tidal flooding, though in a defended area.
- Sequential and Exception tests to be undertaken where required.
- Current Surface Water flood maps indicate the site to be at low risk from surface water flooding. This information is taken from a number of sources.
- Policies to reduce surface water discharges from new development will help to reduce localised flooding with wider catchment studies (Surface Water Management Plans) an essential tool in reducing the overall flood risk. Local policy asks for a 50% reducing in existing brownfield runoff rates.
- No recorded groundwater flood incidences.
- Development should be designed so that there is no flooding to the development in

a 1 in 30-year event and so that there is no property flooding in a 1 in 100 year plus climate change event.

- For all sites, development proposals should look at opportunities to incorporate SuDS to reduce the risk of surface water flooding.

3.3 Statutory Authority Correspondence

Environment Agency

DYSE have requested the latest EA flood levels for the culverted Cringle Brook via a Product 4 request application. Refer to Appendix D for further details on the flood data received.

4 Definition of Flood Hazard

4.1 Sources of Information

The NPPF (2021) requires the developer to consider the impact of runoff generated by the proposed development onto the downstream catchment, and to assess the risk of runoff from the surrounding district impacting on the development's footprint. Further, the report is to consider flood risk from all other sources. The following section defines the flood risk receptors and anticipated flood risk.

Source of Information	Details
Environment Agency	From EA website and Product 4 Flood Data
United Utilities	Sewer Records
Historic Maps	From various websites
Manchester CC SFRA	Report & Various Maps

Table 2: Sources of information used in the identification of flood risk

4.2 Flooding from the Sea (Tidal)

There is currently no flood risk identified on the Environment Agency flood maps for the site and it is therefore regarded to be at very low risk from tidal flooding.

4.3 Flooding from Rivers (Fluvial)

The closest identified watercourse to the site is the culverted Cringle Brook, located some 10m beyond the north western boundary.

Figure 2 below locates the site on the Environment Agency's indicative floodplain map, with the eastern side of the red line boundary within Flood Zone 3, i.e. land assessed as having greater than a 1 in 100 (1.0%) annual probability of fluvial flooding in any year. The remaining area including the proposed property is located within Flood Zone 2, i.e. land assessed as having less than a 1 in 100 (1.0%) but greater than a 1 in 1000 (0.1%) annual probability of fluvial flooding in any year. In light of this risk from fluvial flood water, further consideration and assessment of the EA's flood level data and minimum finished floor levels is required. Refer to Section 5 for details.

Figure 2: The EA's Indicative Floodplain Map

4.4 Flooding from Land (Overland Flow)

The EA descriptions for the High, Medium and Low risk scenarios for surface water flooding are as follows:

- High risk means that each year this area has a chance of flooding of greater than 3.3%.
- Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%.
- Low risk means that each year this area has a chance of flooding of between 0.1% and 1%.
- Very Low risk means that each year this area has a chance of flooding of less than 0.1%.

There is a moderate fall in the area in a westerly direction. Any overland flow from the north and west is prevented from reaching the site due to the raised kerbing of the adopted highways and the highway gullies directing any water to the below ground drainage networks. The proposed building is also elevated above highways and surrounding land ensuring there is no risk of overland flow from all directions. In light of this there is limited risk of overland flows causing any flood risk to the new residential dwelling.

A review of the EA surface water flood maps (Figure 3 below) shows that the site is classified as at 'very low risk'. Furthermore, there are no existing surface water flow routes through the site that would need to be maintained. Therefore, based on this assessment, the site can be considered at low risk from surface water flooding.

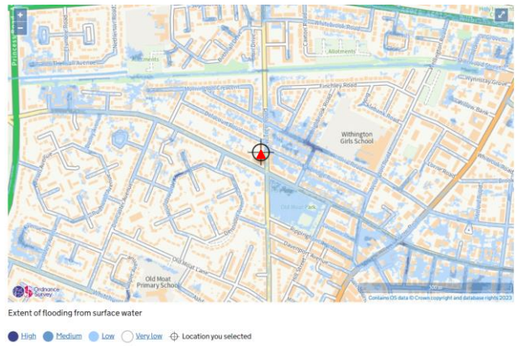


Figure 3: The EA's Indicative Surface Water Flood Map

4.5 Flooding from Sewers and Private Drainage

The United Utilities (UU) sewer records have been reviewed and confirm there are no sewers crossing the development site. Immediately to the south of the site and flowing in an easterly direction within a narrow 'Ginnel' is a 225mm diameter combined water sewer that outfalls to a larger 450mm diameter combined sewer in Yew Tree Road.

The existing drainage serving the property is identified to outfall unrestricted to the 225mm diameter combined water sewer.

All new drainage will be private, maintained by the property owner and designed in line with their approved guidance. Further details can be found in Section 6.

Based on the available information, the risk to the site from sewers is diminished to acceptable levels and considered to be low.

4.6 Flooding from Groundwater

According to the Manchester City Council SFRA, it states that it does not consider groundwater flooding to be a significant issue in its administrative boundary, as there is no historic evidence to suggest that groundwater flooding is an issue worth further investigation.

At the time of writing no specific intrusive phase 2 site investigation has been carried out at the site.

Based on the current information it can be assumed that the site is at a low risk of groundwater flooding.

4.7 Reservoir Flooding

Reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Environment Agency is the enforcement authority and ensures that reservoirs are inspected regularly, and essential safety work is carried out.

The Long-Term Flood Risk Assessment (Flood Risk from Reservoirs) map shows the largest area that might be flooded if a reservoir were to fail and release the water it holds.

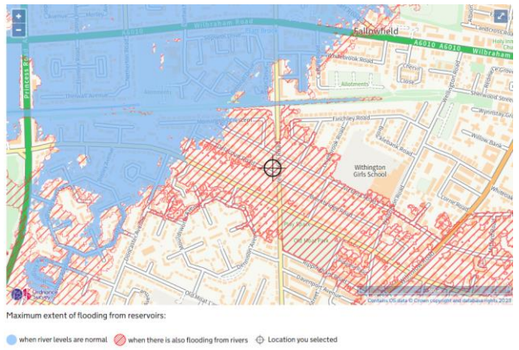


Figure 4: Long Term Flood Risk Assessment Map – Flood Risk from Reservoirs

The site is located outside of the maximum extent of flooding from a reservoir. These maps are also worst-case scenarios and given the unlikelihood that such an event would ever occur there is no further investigation required.

4.8 Flooding from Artificial Sources

The site is not at risk of flooding from any other sources.

5 Assessment of Flood Risk on Proposed Development

5.1 Summary

As discussed in Section 4, the development site has been categorised in accordance with the SFRA and EA Flood Maps as being located adjacent to a high-risk area from fluvial flooding. This is related to flooding from the culverted Cringle Brook. As such further assessment is required.

Other flood risk sources such as tidal, groundwater, sewer and overland flows have been considered and have been found a low risk to the site.

5.2 Flooding from Cringle Brook

The EA have been consulted via a Product 4 request application and have provided the latest modelling information from the Cringle Brook Study (2017) adjacent the site.

Table 3 below outlines the 2d defended modelled levels at node 5, located outside the proposed dwelling.

Node Ref:	1 in 100 year (1% AEP) Defended	1 in 100 year + 35% CC (1% + 35% AEP) Defended	1 in 1000 year (0.1% AEP)
5	34.10m AOD	34.12m AOD	34.20m AOD

Table 3: Cringle Brook Peak Flood Levels

The proposed finished floor level of the new residential development building is to be set at 34.25m AOD. This level is fixed as it needs to mimic the levels of the retained of No. 276, which it ties into. This level is 0.13m above the 1 in 100 year + 35% climate change event level and 0.05m above the 1 in 1000-year flood level. In light of this it is clear that the development building is situated outside of a flood generator from the potential surcharging of the culverted Cringle Brook, and thus at low risk.

Should a flood event of a significant magnitude occur, then the residents can safely egress to the south of the site along Yew Tree Road, which has increased ground levels.

As the development building is located within Flood Zone 2, flood compensation is not required.

5.3 Flood Risk Mitigation Measures

Reviewing the EA data confirms that these flood events will not impact the proposed residential dwelling, such that it would remain within medium-risk Flood Zone 2. However, the lower lying surrounding ground levels would be at risk for flooding.

<u>Safety of People within the Buildings</u>

Although the flood risk is considered to be very low, in the case of this development the EA and Manchester CC aims to provide a minimum two hours' notice of flooding, day or night through the Floodline Warnings Direct (FWD) Service, to enable people to take necessary action to protect themselves and their properties. This will take the form of automated phone calls and for the residents to log onto the EA website when there is potential for water levels to rise.

Once a flood warning has been received, the occupiers will have the opportunity to either stay in their property or to egress from the building to higher ground levels to the north of the site. If required, a full and detailed flood evacuation plan and strategy will be prepared and provided to the owners in advance of occupation of the dwelling should it be required.

Safety of the Building

A residual risk to building services still remains for the extreme flood event. Although not essential for this development as the building levels are raised above the peak flood levels, the new development may wish to include flood resistant and resilient construction methods up to the 1 in 1000-year event. We have therefore suggested measures that may be beneficial to incorporate into the design, particularly where it may be a relatively simple change to the design but could have a significant impact on providing more resilience to flood water. We have provided a summary of potential mitigation measures. The requirements for Flood Resilient construction will be confirmed and refined at the detailed design stage, however typical flood resilient construction measures can include: The following typical flood resilient measures are suggested but not essential:

- Non-return valves on drains and other pipes entering/exiting the building below the flood level.
- Placing of sensitive power and data equipment above the predicted flood level.
- In the event of a flood, the gas service shall be isolated at the emergency isolation control valve and only be turned on following a complete inspection by a Corgi registered engineer.
- Incoming cold-water mains to be fitted with a double check valve directly after the mains stop cock. In the event of flooding, water taps should not be used until told to do so by the local water authority.

The above measures are considered relatively simple techniques to provide extra protection for the proposed development if required.

6 Drainage requirements

6.1 National Planning Policy Framework Guidance

National Planning Policy Framework Guidance states 'Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:

1. into the ground (infiltration).
2. to a surface water body;
3. to a surface water sewer;
4. to another drainage system;
5. to a combined sewer.

Particular types of sustainable drainage systems may not be practicable in all locations.'

6.2 Statutory undertaker's requirements

The statutory undertaker for the area is United Utilities. Although a formal predevelopment enquiry has not been submitted, it would be anticipated that the following would be requested:

1. foul flows will be permitted to be discharged into the public combined sewer unrestricted.
2. A connection agreement will be required prior to installation of the private drainage network and connection into a sewerage network.
3. The SuDS hierarchal approach should be considered and explored prior to any application to connect to a public sewerage system.
4. There is no legal duty to accept highway drainage from new developments into the public sewerage system. However, in some cases highway drainage will be considered as part of the overall attenuated surface water drainage strategy.

If evidence is provided that confirms infiltration is not feasible then UU will accept a surface water discharge rate from the site not exceeding 5l/s to the adjacent combined public sewer.

6.3 Use of SuDS

The SuDS philosophy for any development site is the promotion of prevention, source control and site control techniques.

The following design philosophy is typically followed for this scheme:

- Restrict, where possible, all development run off.
- Prevention measures in the form of water butts to the rear rainwater pipes.
- Source control by the use of permeable surfacing to the front driveway.
- Site control in the potential form of a small attenuation tank with restricted outflows.
- Aim to limit, where possible, the impermeable fraction of the development.

6.4 The Non-Statutory Technical Standards for SuDS

It is best practice to develop drainage strategies to the DEFRA document 'The Non-Statutory Technical Standards for SuDS'.

The DEFRA document advises the following with respect to 'Peak Flow Control' and 'Volume Control':

- **S3** *For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100-year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.*
- **S5** Where reasonably practicable, for *developments which have been previously developed, 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 must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume for the development site prior to redevelopment for that event.*

6.5 C753 SuDS manual

6.5.1 Volume control

Two options are considered for volumetric control in extreme rainfall events (1 in 100-year storm events) in 3.3.1 of the SuDS manual.

Previously developed sites

For previously developed sites, the surface water management system should be designed so that the volume of surface water runoff discharged from the site for the 1 in 100-year 6-hour storm event is kept as close to greenfield conditions as possible.

6.5.2 Peak run off control

Section 3.3.2 of the SuDS manual also considers options for controlling peak run off rates.

Previously developed sites

For previously developed sites, site runoff rates should be reduced to greenfield rates wherever possible. Betterment of at least 50% should be considered as a minimum requirement and strong consideration should still be given to controlling volumes of runoff to greenfield equivalents.

6.6 North West SuDS Pro-Forma

The North West SuDS Pro-forma, endorsed and recommended for use by North West Regional Flood and Coastal Committee and United Utilities has been reviewed. This document states that the capacity of SuDS must provide effective drainage for the development taking account of the likely impacts of climate change.

6.7 Climate Change

In May 2022, the Environment Agency released updated climate change allowances for peak rainfall intensities which should be applied to new developments. Rather than nationwide allowances, each area will have its own peak rainfall allowances. In the case of the Manchester area, this is the Upper Mersey Management Catchment peak rainfall allowances.

Based on the nature of the development, a lifespan in excess of 100 years is anticipated. Therefore, the potential climate change allowance for the 2070's ranges between 30% for the central allowance and 45% for the upper end allowance. As such, an allowance of 45% for climate change on peak rainfall intensity will be included in calculations.

6.8 Environment agency

Rainfall runoff management for developments report SC030219 states in section 3.3 that 'small sites would require impractically small controls to achieve the required flow rates where these are calculated to be less than 5l/s and therefore in this case a minimum flow of 5l/s is used'.

7 Surface water strategy

7.1 Existing runoff rates

The proposed dwelling replaces an existing garage and hard paved area that discharges unrestricted to the adjacent combined water sewer therefore brownfield Runoff Rates would be applied as defined in the table below and based on an area of 0.006ha.

Storm Event	Peak Flow Rates
1:1 (30mm/hr)	0.5l/s
1:30 (65mm/hr)	1.1l/s
1:100 (95mm/hr)	1.6l/s

7.2 Site assessment for SuDS

Current policy and best practice encourage the use of SuDS and in particular, infiltration systems. SuDS techniques are not suitable for all sites; therefore, an assessment of the site is required so that SuDS limitations can be determined. Green SuDS are particularly favoured by Local Authorities.

The below table considers the use of Green SuDS in a dense urban environment.

Consideration of SuDS within the constraints of a dense urban environment	
Element	**Viability**
Green roofs rather than standard roof construction.	Within the scope of the scheme, the use of green roofs is not deemed viable for the pitched roof areas owing to the difficulties with maintenance access.
Runoff harvesting in tanks for non-potable use.	Water butt to be located at the base of the rear RWP to be used by the property owner for local irrigation and watering.
Landscape irrigation and urban horticulture.	NA – not relevant in the context of a single residential dwelling.
Use of permeable surfaces and/or sub-bases.	Permeable surfacing to be incorporated to the front driveway.
Use of bioretention systems, open water amenity features and tree pits.	NA – not relevant in the context of a single residential dwelling.
Inclusion of tree pits, landscaping planters, rain gardens, bioretention systems or swales provide storage and treatment of runoff.	NA – not relevant in the context of a single residential dwelling.
Front or back gardens to be designed as bioretention planters to capture roof runoff or configured to include rainwater harvesting systems.	NA – not relevant in the context of a single residential dwelling.
Soakaway options to enable the runoff to infiltrate to the underlying sub strata	Based on assessment of the local site condition, the underlying ground is anticipated to be cohesive and thus not suitable for infiltration-based options.
Flow control devices and attenuation measures included to store water and/or provide treatment in confined spaces.	Flow control to limit the peak run off with a small attenuation tank used to retain the peak flows.

7.3 Site assessment for discharge

Options for managing surface water are considered below in order of preference until a viable solution is found.

1. into the ground (infiltration); Based on the anticipated ground conditions, the clay sub strata would not be suitable for the discharge of surface water to ground.
2. to a surface water body; no watercourse is accessible from the redeveloped site.
3. to a surface water sewer; No surface water sewers in close proximity
4. to a combined sewer; discharge to the adjacent combined sewer at a restricted flow rate of 5l/s.

7.4 Peak runoff and volume control

Owing to the anticipated poor permeability of the site and other limited options discussed in Section 7.3, the surface water runoff will outfall to the combined sewer via the existing connection from No. 276 at a peak rate not exceeding 5l/s. As the area is small at 60m^2, attenuation measures would not be necessary.

Peak Flow Rate	5.0l/s
Required attenuation	n/a

7.5 Outline proposal

From the above considerations, it is proposed to discharge surface water to the combined sewer at a restricted rate.

7.5.1 Design basis

SuDS (attenuation) components will be designed not to cause above ground flooring to the site in a 1:100-year storm event and to empty to half depth of storage within a 24-hour period.

An allowance of 45% for increases due to climate change will be adopted within the design.

7.5.2 Overland flows

When storm events exceed 1:100 year + 40% allowance for climate change, this will result in overland flows. Given the topography of the site and the elevated level of the house, the water will be retained in the garden area.

7.5.3 Adoption

All the surface water drainage proposed will be private and the responsibility of the landowner. It is not proposed to offer any surface water drainage for adoption.

7.5.4 SuDS management and maintenance

A SuDS management and maintenance plan is summarised on the drainage drawings. This will be included in the As Built information for the completed dwelling.

8 Foul water strategy

8.1 General

There are no adopted sewers in close proximity to the sit boundary.

8.2 Outline proposal

It is proposed to provide a new private foul water network to serve the SVP drop locations.

This private gravity-based drainage network will connect to the combined public sewer via the existing connection from No. 276.

8.3 Development impact

The construction of the new dwelling will not result in any increase on the sewerage undertakers combined sewerage network.

8.4 Adoption

The foul water drainage strategy will remain private.

9 Management Measures, Off Site Impacts & Residual Risk

9.1 Flood Risk Management Measures

The proposed FFL for the development building will be set at a minimum of 30.25m AOD to mimic the retained adjacent property and be located above the peak 1 in 100-year plus 35% climate change level and the 1 in 1000-year flood level to reduce the flood risk from the surcharging of the culverted Cringle Brook.

Access and egress arrangements to and from the new development should exceedance flooding occur will be via the adjoining highway networks to the south of the site where higher ground can be found.

Due to the potential flood risk, it is recommended that the occupiers of the new building register on the EA's flood warning service.

The surface water drainage strategy for the redeveloped site will be to outfall the water to the combined sewer at restricted rates. The new surface water networks will be designed in line with current British Standard guidance up to the 100-year storm return period including an allowance for climate change.

The use of SUDS in the form of prevention, source control and site control measures will help to minimise the flood risk impact to the surrounding watercourses.

There will be a maintenance and management plan prepared in respect of the final development. This will include the required maintenance regime for the on-site drains and drainage facilities such as the channels, gullies, pipes, manholes and all SuDS facilities. The owner will be responsible for site cleanliness, gully emptying and drain cleansing to ensure that the surface water drainage system will always operate at its maximum efficiency.

Should any flooding occur from the new drains it will be directed away from the new building to the garden and woodland areas.

9.2 Offsite Impacts

The new development does not impair the hydraulic continuity of any watercourse and the current "local hydraulics" of distributing watercourses / outfalls. The Development footprint does not cross or cover any existing or declared future catchment flood defences. Consequently, the applicant does not propose to augment or compromise the current catchment defences.

Surface water runoff will reduce from the pre-development regime and utilises SuDS solutions to satisfy the site constraints.

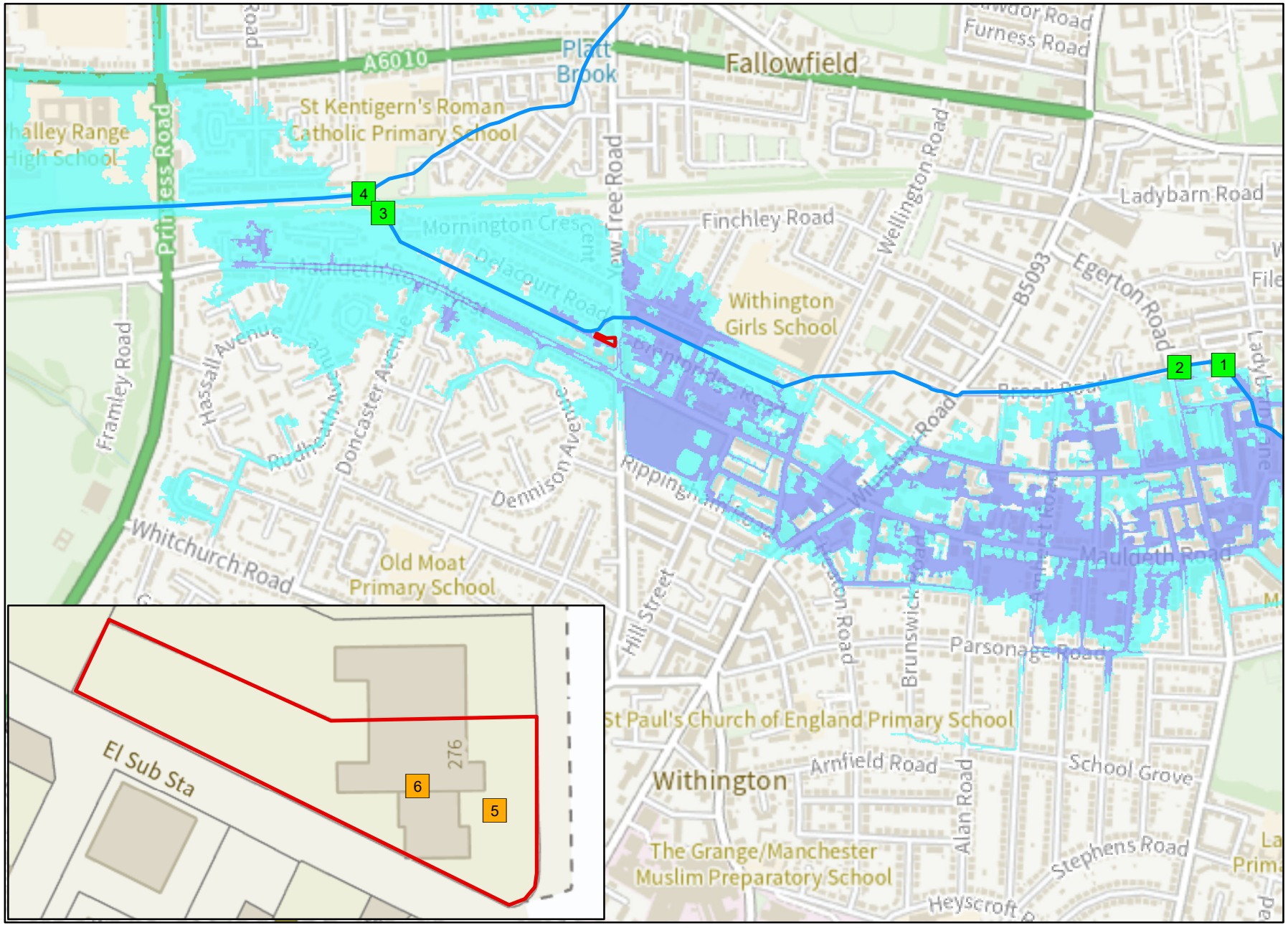
As there is no flood displacement or increased rate of runoff as part of this proposal into the adjacent combined sewer, the proposed development will therefore not increase flood risk onto its locality.

9.3 Residual Risk

With careful design of the drainage elements as described above there will be no residual flood-related risks that will remain after the development has been completed.

Appendix A - Architectural Plans

Detailed Flood Map Centred on Yew Tree Road, Manchester, M14 6BT.
Created 08/11/2023 [GMMC332996SW]



Environment Agency

1:10,001

N

Legend

- Site Location
- Model Measurements
- 2D Levels
- Main River
- Flood Zone 3
- Flood Zone 2

© Environment Agency copyright and database rights 2023. All rights reserved. © Crown Copyright and database rights 2023. Ordnance Survey licence number 100024198.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

					Undefended																																					
Map Reference	Model Node Reference	Easting	Northing	Data	50 % AEP (1 in 2 year)	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)	4 % AEP (1 in 25 year)	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% increase in flow
1	ea013_023B_CRN01_16330	385830	393541	Modelled Water Level (m aoDN)	37.88	38.09	38.52	38.54	38.54	38.55	38.55	38.55	38.57	38.57	38.61	38.58	38.64	38.68
				Modelled Flow (cumecs)	3.03	3.69	4.28	4.38	4.38	4.40	4.41	4.42	4.44	4.44	4.45	4.44	4.48	4.50
2	ea013_023B_CRN01_1551x	385744	393536	Modelled Water Level (m aoDN)	37.83	38.02	38.43	38.45	38.45	38.47	38.47	38.47	38.49	38.50	38.53	38.46	38.56	38.61
				Modelled Flow (cumecs)	3.03	3.69	4.27	4.37	4.38	4.40	4.41	4.41	4.44	4.44	4.44	4.47	4.49	4.49
3	ea013_023B_CRN01_0050d	384279	393820	Modelled Water Level (m aoDN)	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85
				Modelled Flow (cumecs)	3.03	3.69	4.28	4.38	4.38	4.40	4.41	4.41	4.44	4.44	4.45	4.44	4.48	4.50
4	ea013_023B_CRN01_0000	384241	393858	Modelled Water Level (m aoDN)	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85
				Modelled Flow (cumecs)	3.02	3.68	3.96	3.96	3.96	3.96	3.96	3.97	3.97	3.97	3.97	4.24	4.75	4.75

					Defended																																					
Map Reference	Model Node Reference	Easting	Northing	Data	50 % AEP (1 in 2 year)	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)	4 % AEP (1 in 25 year)	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% increase in flow
1	ea013_023B_CRN01_16330	385830	393541	Modelled Water Level (m aoDN)	37.88	38.09	38.52	38.54	38.54	38.55	38.55	38.55	38.57	38.57	38.61	38.58	38.64	38.68
				Modelled Flow (cumecs)	3.03	3.69	4.28	4.38	4.38	4.40	4.41	4.42	4.44	4.44	4.45	4.44	4.48	4.50
2	ea013_023B_CRN01_1551x	385744	393536	Modelled Water Level (m aoDN)	37.83	38.02	38.43	38.45	38.45	38.47	38.47	38.47	38.49	38.50	38.53	38.46	38.56	38.61
				Modelled Flow (cumecs)	3.03	3.69	4.27	4.37	4.38	4.40	4.41	4.42	4.44	4.44	4.44	4.47	4.49	4.49
3	ea013_023B_CRN01_0050d	384279	393820	Modelled Water Level (m aoDN)	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85
				Modelled Flow (cumecs)	3.03	3.69	4.28	4.38	4.38	4.40	4.41	4.41	4.44	4.44	4.45	4.44	4.48	4.50
4	ea013_023B_CRN01_0000	384241	393858	Modelled Water Level (m aoDN)	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85	31.85
				Modelled Flow (cumecs)	3.02	3.68	3.96	3.96	3.96	3.96	3.96	3.97	3.97	3.97	3.97	4.24	4.75	4.75

					Undefended																																					
Map Reference	Model Node Reference	Easting	Northing	Data	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% increase in flow
5	2D Inlets	384705	393581	Modelled Water Level (m aoDN)	34.10	34.10	34.10	34.12	34.12	34.14	34.11	34.20	34.24
6		384699	393563	Modelled Water Level (m aoDN)					34.10	34.11		34.15	34.20

					Defended																																					
Map Reference	Model Node Reference	Easting	Northing	Data	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% increase in flow
5	2D Inlets	384705	393581	Modelled Water Level (m aoDN)	34.10	34.10	34.10	34.12	34.12	34.14	34.11	34.20	34.24
6		384699	393563	Modelled Water Level (m aoDN)					34.10	34.11		34.15	34.20

Model data taken from Cringle Brook 2017

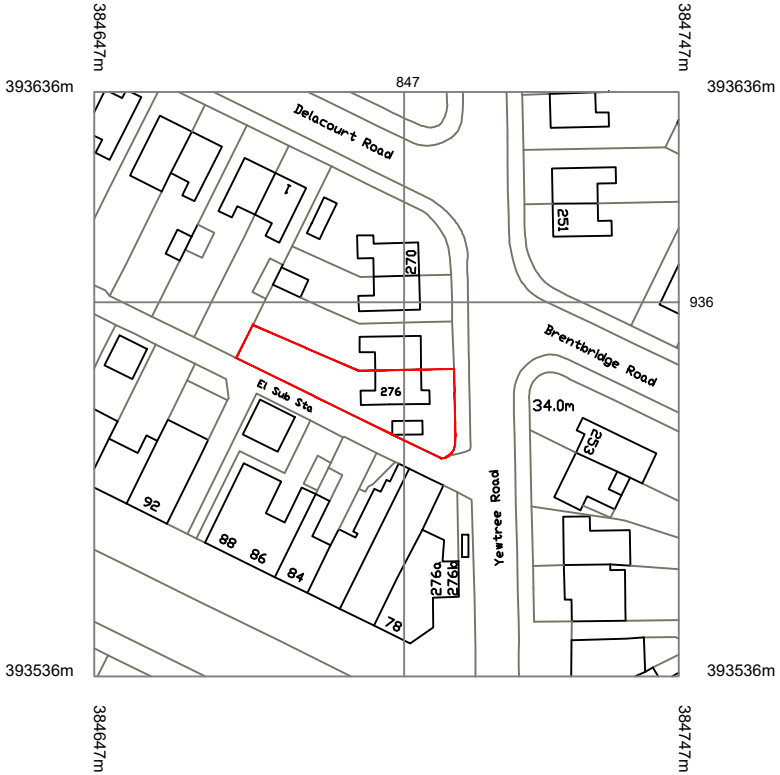
AEP - Annual Exceedence Probability

m aoDN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

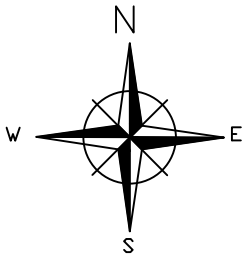
Notes: *Climate Change Scenario -30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

Appendix B - Environment Agency Flood Data



20 0 20 40 60 80 100

Metres



MAYDEAN DESIGN

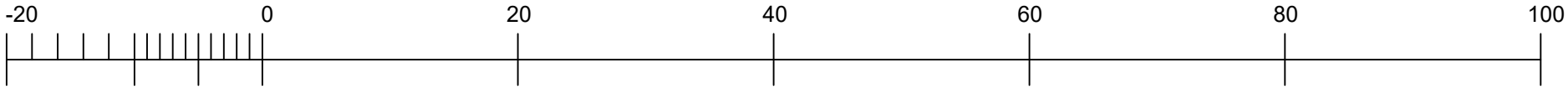
Park Lane Business Centre,
78 Park Lane,
Poynton,
Stockport.
SK12 1RE.

Tel: 01625 875778

info@maydeandesign.co.uk
www.maydeandesign.co.uk

Architecture Ltd

CLIENT:	Mr J McCorkell
CONTRACT:	276 YEWTREE ROAD, MANCHESTER.
DRAWING:	LOCATION PLAN
SCALE:	1:1250 @A4



METRES @ 1:500

NO TREES WILL BE AFFECTED BY THE DEVELOPMENT
NO TREES HAVE PRESERVATION ORDERS ON SURROUNDING THE PROPERTY
NO PUBLIC RIGHTS OF WAY OR CROSSINGS EXISTS WITHIN OR ADJACENT THE SITE

EXTENT OF 276 YEWTREE ROAD, MANCHESTER.

EXTENT OF NEW SEMI–DETACHED DWELLING

PARKING SPACES OFF YEWTREE ROAD, MANCHESTER

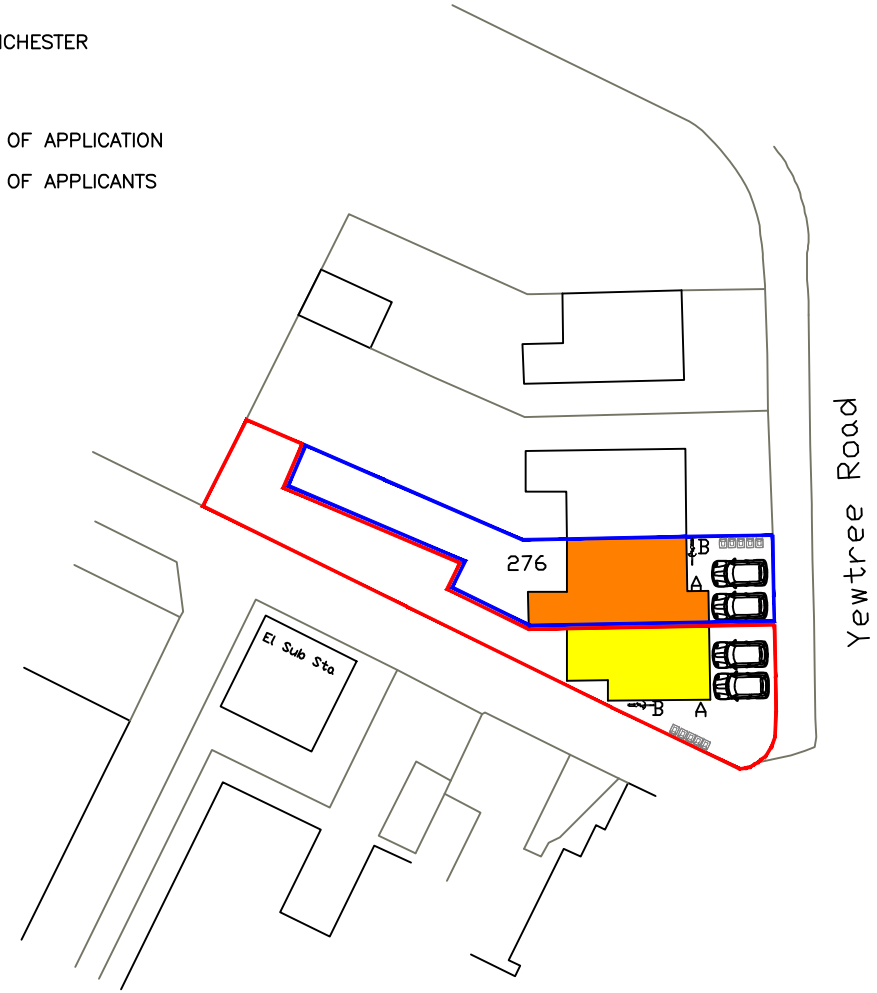
RECYCLING BINS

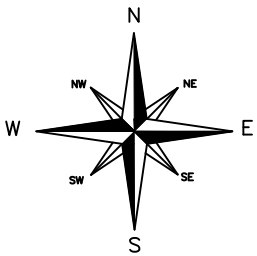
BOUNDARY LINE OF APPLICATION

BOUNDARY LINE OF APPLICANTS OWNERSHIP

A – LOCATION OF ELECTRICAL CHARGING POINTS

B – LOCATION OF CYCLE RACKS





Client
Mr J McCorkel

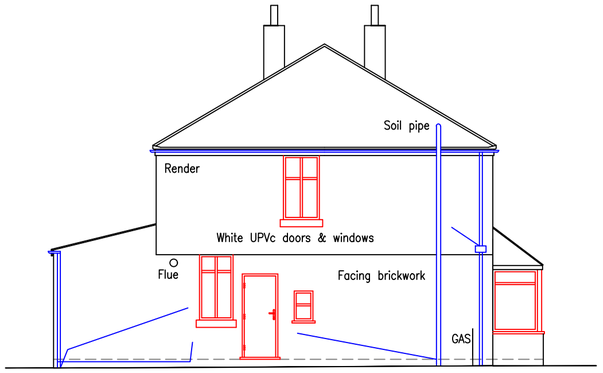
Contract
276 YEWTREE ROAD, MANCHESTER.

Drawing
BLOCK PLAN

Maydean Design
Architecture Ltd
Park Lane Business Centre,
78 Park Lane,
Poynton,
Stockport.
SK12 1RE.
Tel: 01625 875778
info@maydeandesign.co.uk
www.maydeandesign.co.uk

Scale **1:500 @ A4**

FRONT ELEVATION



SIDE ELEVATION

REAR ELEVATION

Notes:

All dimensions in mm unless otherwise specified.

All levels to be checked on site.

Do not scale off this drawing.

All component sizes and references to be checked prior to ordering of materials.

Positions of existing drainage runs to be confirmed prior to proceeding and drains checked as necessary.

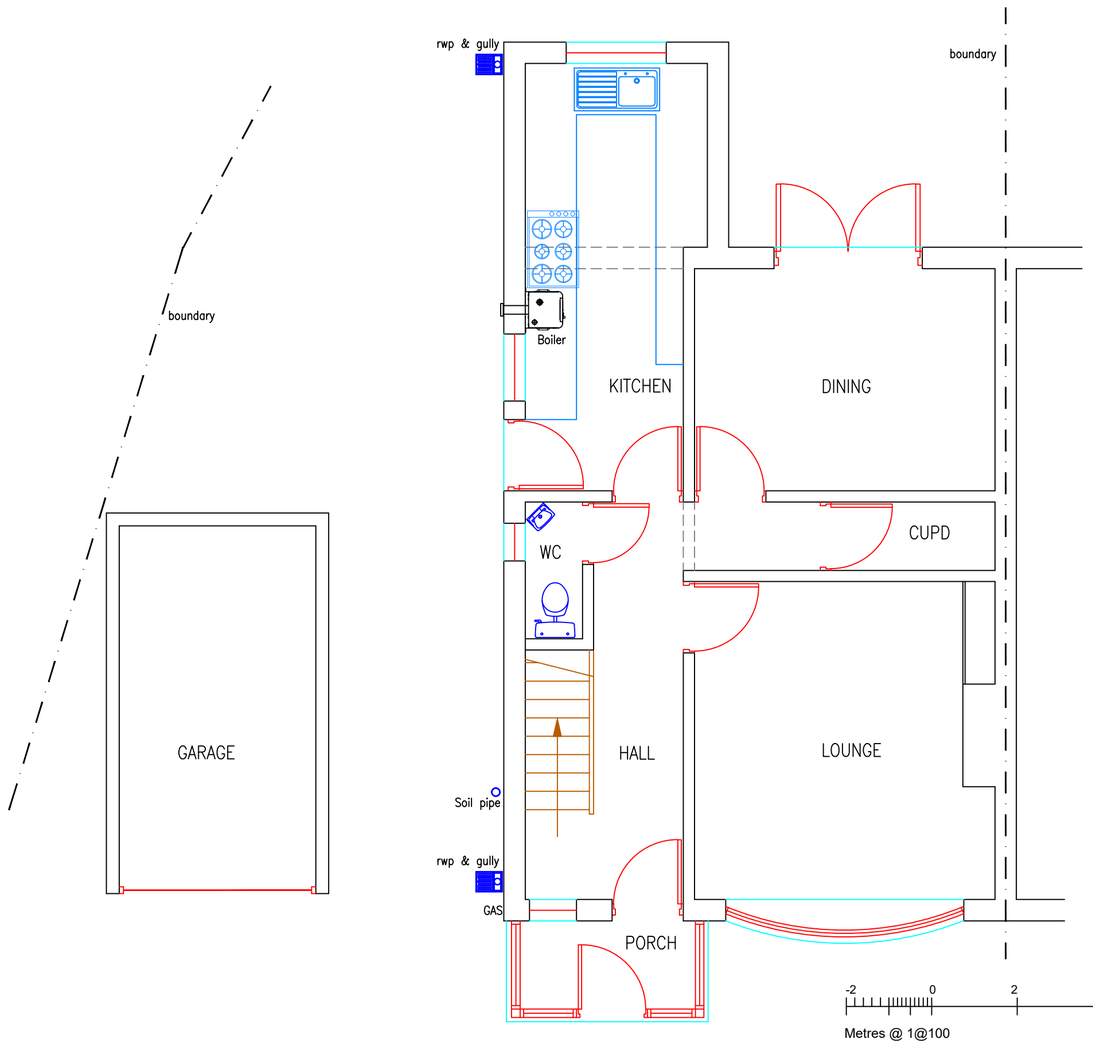
All relevant boundary positions to be checked prior to proceeding and it is the clients responsibility to to ensure that all land, upon which building is to take place is indeed within their ownership and not subject to any restrictions or covenants.

It is the direct responsibility of the client to obtain permission from their neighbours if the proposed works are covered by the Party Wall Act 1996. eg. Excavation within 3.0m, excavation within 6.0m if undermining the neighbours foundation, party wall.

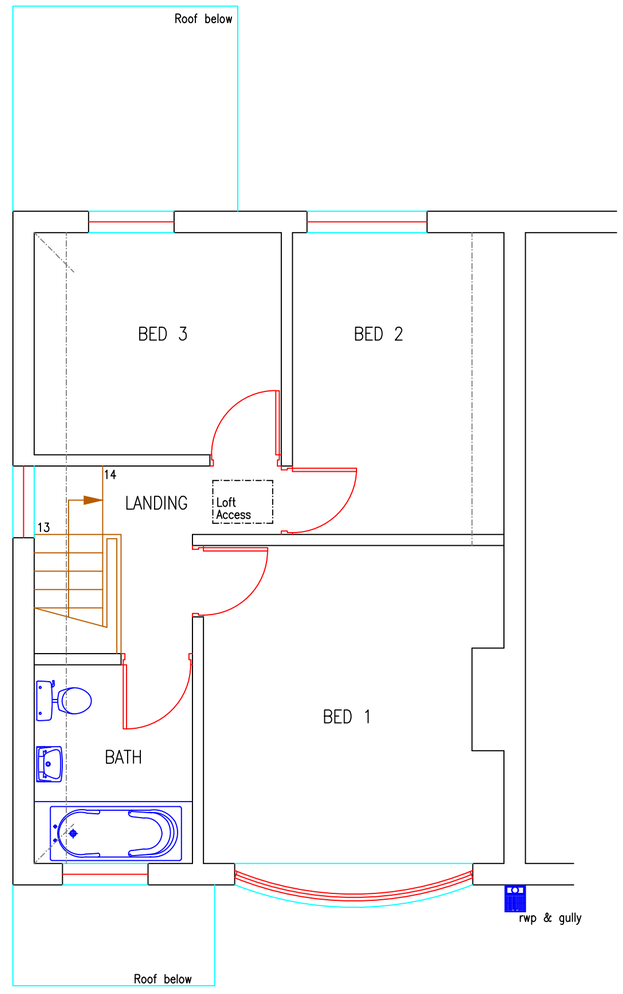
This drawing remains the property of Maydean Design (Architecture) Limited and cannot be copied without consent.

Maydean Design (Architecture) Limited instruction does not include for any site supervision/inspections of the client's chosen building contractor/specialist contractor.

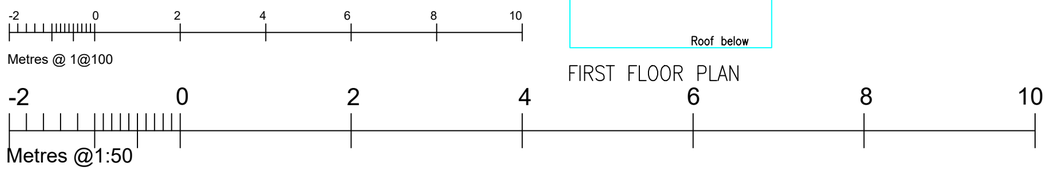
The suitability of any existing structure and stability of such is taken to be structural sound for purpose. The drawing does not constitute a structural appraisal of the existing building/associated structure.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



Rev	Description	Date	By	Chk

Status — Purpose for Issue

Survey	■	Planning	□	Bld. Regs	□	PURPOSE
Construction	□	Tender	□	As Built	□	

Client

Mr J McCorkell

Contract

276 YEWTREE ROAD, MANCHESTER.

Drawing

EXISTING PLANS & ELEVATIONS

MAYDEAN DESIGN
Architecture Ltd

Park Lane Business Centre,
78 Park Lane,
Poynton,
Stockport,
SK12 1RE.

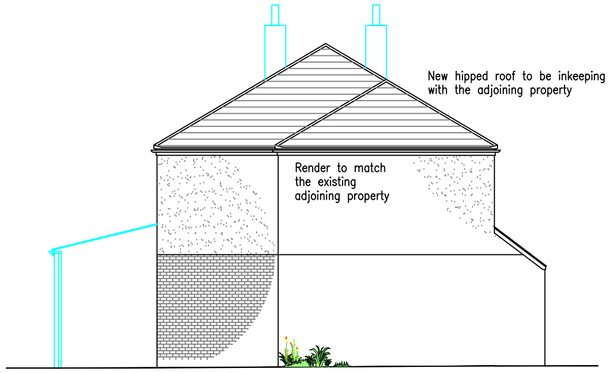
Tel: 01625 875778

info@maydeandesign.co.uk
www.maydeandesign.co.uk

SCAN ME

Drawing No.	1819/A/001	Revision	
Scale	1:50~1:100	Date	08/2023
Drawn	MLJ	Sheet	A2@1:50

FRONT ELEVATION



SIDE ELEVATION

REAR ELEVATION

Notes:

All dimensions in mm unless otherwise specified.

All levels to be checked on site.

Do not scale off this drawing.

All component sizes and references to be checked prior to ordering of materials.

Positions of existing drainage runs to be confirmed prior to proceeding and drains checked as necessary.

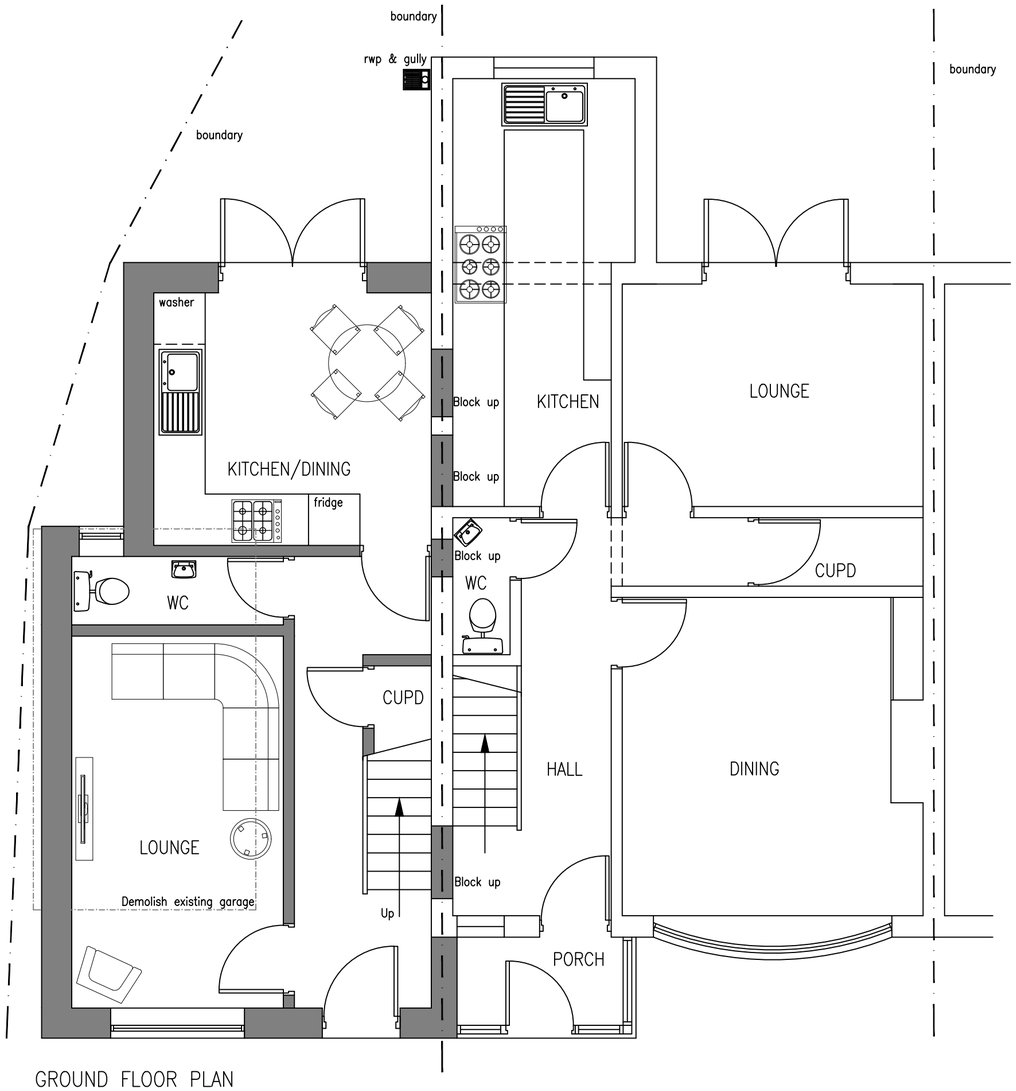
All relevant boundary positions to be checked prior to proceeding and it is the clients responsibility to to ensure that all land, upon which building is to take place is indeed within their ownership and not subject to any restrictions or covenants.

It is the direct responsibility of the client to obtain permission from their neighbours if the proposed works are covered by the Party Wall Act 1996. eg. Excavation within 3.0m, excavation within 6.0m if undermining the neighbours foundation, party wall.

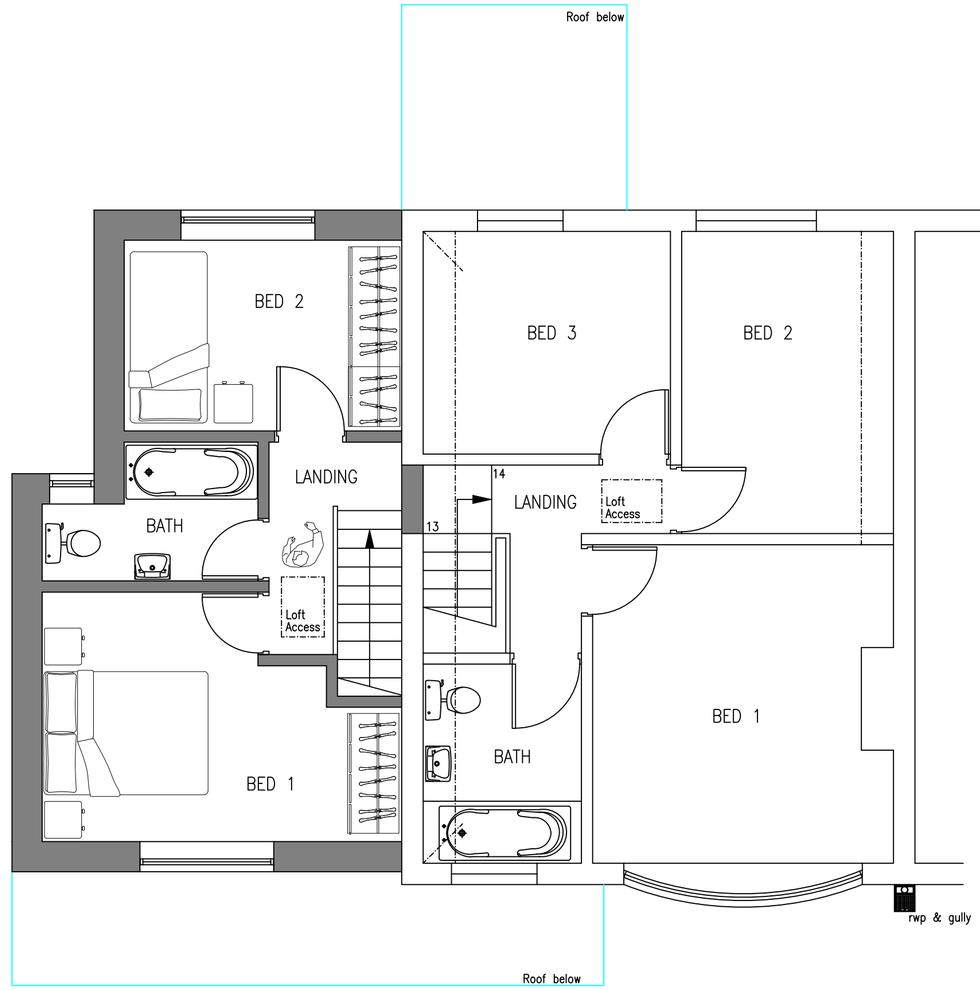
This drawing remains the property of Maydean Design (Architecture) Limited and cannot be copied without consent.

Maydean Design (Architecture) Limited instruction does not include for any site supervision/inspections of the client's chosen building contractor/specialist contractor.

The suitability of any existing structure and stability of such is taken to be structural sound for purpose. The drawing does not constitute a structural appraisal of the existing building/associated structure.



GROUND FLOOR PLAN



FIRST FLOOR PLAN

Rev	Description	Date	By	Chk

Status — Purpose for Issue

Survey	☐	Planning	☒	Bld. Regs	☐
Construction	☐	Tender	☐	As Built	☐

PURPOSE

Client

Mr J McCorkell

Contract

276 YEWTREE ROAD, MANCHESTER.
PROPOSED ATTACHED NEW DWELLING

Drawing

PROPOSED PLANS & ELEVATIONS

MAYDEAN DESIGN
Architecture Ltd

Park Lane Business Centre,
78 Park Lane,
Poynton,
Stockport.
SK12 1RE.

Tel: 01625 875778

info@maydeandesign.co.uk
www.maydeandesign.co.uk

SCAN ME

Drawing No.	1819/P/001	Revision	
Scale	1:50~1:100	Date	08/2023
Drawn	MLJ	Sheet	A2@1:50