THE BAND STAND, MANCHESTER

FLOOD RISK ASSESSMENT

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The Band Stand, Manchester

Flood Risk Assessment

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The Band Stand, Manchester

Flood Risk Assessment

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The Band Stand, Manchester

Flood Risk Assessment

1.0 INTRODUCTION

This flood risk assessment has been prepared on behalf of Peacock + Smith in connection with a planning application for the construction of new residential housing of 30 properties at Hyde Park, Manchester. The proposed site currently consists of an outdoor car sales lot and is located along Wall Way, Manchester, M18 7LJ.

This FRA has been prepared in accordance with the general requirements of the National Planning Policy Framework and the associated Planning Practice Guidance, both published by the Department for Communities and Local Government. This involves the identification of flood risk to new development(s) on the site, the possible effect of this development on flood risk elsewhere and the investigation of the impact on the development as a result of increased sea levels, fluvial flows and larger pluvial events due to increased impermeable areas and climate change.

The purpose of this report is to present a site-specific assessment of flood risk based on available information, to identify relevant flood levels affecting the site with respect to a particular probability of flooding. The flood levels identified are dependent on the correctness of the current conditions, as stated in this report and the prediction of future climatic conditions implicit in the National Planning Policy Framework.

For any size of storm event, the procedure will always yield a probability that the event will occur in any year, albeit the probability is smaller for larger events. The predicted storm event has a probability of occurrence in any year and the derived flood level has an associated probability of exceedance. This means that there is always a risk that property flooding could occur one or more times in any year.

Therefore, this report should not be interpreted or relied upon as providing a guarantee against flooding. There is always a residual risk that flooding will occur and it is not possible to predict a zero risk of flooding.

In accordance with National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance, flood risk must be assessed for all sources including tidal (from the sea), fluvial (from rivers), pluvial (from land), groundwater, sewer and artificial water bodies (e.g., reservoirs, canals, major water supply infrastructure etc.). More specifically, the development of any site must be carried out in such a way as to mitigate any potential flood risk, both on and off site from all sources of flooding.

The other purpose of this report is to present the surface water and foul water outline drainage strategies for the site which have been developed by the Alan Johnston Partnership. To demonstrate how the specific drainage requirements are to be met, the report should be read in conjunction with the relevant drawings and supporting information, included within the appendices.

The drainage strategies outlined within this report, have been prepared in accordance with BS EN 752:2017 (Drain and sewer systems outside buildings), Manchester's Local Flood Risk Management Strategy, Building Regulations Approved Document H (Drainage and waste disposal), the Planning Practice Guidance and the National Planning Policy Framework document (Department for Communities and Local Government, December 2024).

The site is located within Flood Zone 1, with a total site area under 1.0ha. Despite this, the area is within a critical drainage as therefore, in accordance with DEFRA guidance, a full Flood Risk Assessment (FRA) is required.

2.0 SITE DESCRIPTION

The proposed development currently consists of an outdoor car sales lot and the remains of a demolished restaurant within the site boundary. The National Grid reference for the proposed development site is SJ 89361 95957.

The location of the existing site is illustrated in Appendix A and the extent of the area to which the application relates is also shown on the existing aerial photo, which is attached in Appendix B. The proposed development site covers a total area of 0.626ha and is currently a brownfield site.

The site is bounded to the north by existing green space, to the east by a reservoir, to the south by Wall Way and to the west by a Holiday Inn car park. The site generally falls from west to east with levels falling from 79.42mAOD in on the western boundary to 75.18mAOD in the north-east corner of the site towards the Gorton Lower Reservoir. An aerial photo is included in Appendix B to illustrate the site at the present day and the topo and utility survey is included in Appendix C.

2.1 Geology

A site investigation conducted by our geotechnics team took borehole logs at multiple points throughout the proposed site. These indicated made ground to depths of around 0.80m below ground level, underlain by medium strength clay and gravel, indicating that the deposits are that of Devensian till. Borehole logs were not taken beyond 3.40m below ground level.

This is supported by the information taken from the British Geological Survey (BGS) 1:50,000 Bedrock geology maps. These show that the site has superficial deposits comprising of Devensian till deposits, with the bedrock reported to be of the Chester Formation comprising of siltstone, mudstone and sandstone.

2.2 Hydrogeology

The Environment Agency groundwater maps show that the superficial deposits are classified as a Secondary undifferentiated aquifer. These are defined as aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the

rock type. These have only a minor value. The bedrock is classified as a Principal Aquifer, defined as areas that provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands.

The Environment Agency groundwater maps also indicate that the development site is not situated within a groundwater Source Protection Zone (SPZ).

2.3 Hydrology

The site is located within Flood Zone 1 which is categorized by the Environment Agency as land assessed as having less than a 1 in 1,000 annual probability of river flooding (1% - 0.1%). Therefore, the site is an area identified by the Environment Agency as at low risk of flooding from rivers and streams.

3.0 PROPOSED DEVELOPMENT

The proposed development consists of the construction of a new residential scheme with 30 new dwellings, This will also include car parking spaces, highways and associated green spaces.

To enable a viable scheme, the proposed site levels are constrained by the existing highway to the south of the site, car park to the west and green spaces to the north and the reservoir to the east. Therefore, site levels are likely to remain similar to the existing. The proposed site plan is attached in Appendix D.

4.0 PLANNING POLICY

The National Planning Policy Framework (NPPF) sets out the Government's policy on meeting the challenges of climate change, flooding and coastal change. The NPPF states that:

"Planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impact of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development. Local planning authorities should adopt proactive strategies to mitigate and adapt to climate change taking full account of flood risk, coastal change and water supply and demand consideration."

This Flood Risk Assessment proposes recommendations to facilitate the proposed development so that it takes into account flood risk at all stages of the development.

4.1 Sequential and Exception Test

Based on the sites location in Flood Zone 1, the development is deemed appropriate according to NPPF therefore the development is appropriately situated and the Sequential Test is not required.

4.2 Exception Test

NPPF classifies the development (Residential) as 'More Vulnerable' but as the site is located within Flood Zone 1 the Exception Test is not required.

5.0 FORMS OF FLOODING

The National Planning Policy Framework requires all forms of flooding to be considered.

5.1 Flooding from Rivers

The Flood Risk map is included as Appendix E.
As can be seen from the Flood Risk map, the entire site is located within Flood Zone 1 and therefore, the site is located in Flood Zone 1 with a chance of flooding of less than 0.1% (or 1 in 1000).

The nearest designated main river is the Gore Brook, which is located 50m north of the site. Despite this, the site is located in Flood Zone 1 and therefore the risk of flooding to the new development from rivers is considered to be low.

5.2 Flooding from Sea

The site is not at risk of flooding from the sea. The lowest level of the site is approximately 75.180mAOD, i.e., well above tidal flood levels.

5.3 Flooding from Land

Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in local flooding. The Surface Water Flooding map is included in Appendix E. It can be seen from the map that the entire site is classified as having a low or very low risk of surface water flooding.

Therefore, the risk of flooding from overland flows due to surface water flooding is considered to be low and as such the overall site is considered to be at low risk of flooding from surface water/surrounding land.

5.4 Flooding from Groundwater

As outlined in Section 2.1, borehole logs were taken at multiple points through the site. Small pockets of groundwater were found around 1.0m below ground level. Based on information from previous sites and the fact that groundwater was found infrequently, it is highly likely that this is perched groundwater.

However, given the presence of perched groundwater, some minor flood mitigation measures should be implemented across the site to mitigate the minor risk of groundwater flooding. The mitigation measures should include the external ground levels should fall away from the proposed building and the proposed finished floor level of the building is set no lower than the existing site levels.

As such, due to the proposed mitigation measures and the fact that the site investigation report indicates that the groundwater encountered is likely a perched water table, the site is considered to be at low risk of flooding from groundwater.

5.5 Flooding from Sewers

A record of Public Sewers surrounding and serving the development site has been obtained from United Utilities and this is included in Appendix G. As can be seen from the United Utilities sewer map, there are no public sewers within the site boundary. The only public sewer located near the site boundary is the 225mm diameter foul water sewer, which is located south of site along Wall Way.

There has currently been no private sewers located within the site boundary though this will need to be confirmed prior to construction. Should any sewers be found, it is likely that these sewers are inactive as the building they were potentially serving has been demolished.

Due to the lack of public sewers within the proposed site, the fact that the proposed drainage networks for the site will be suitably designed and the fact that the surrounding public sewers are maintained by United Utilities, leads to the conclusion that the site itself is considered to have a low risk of flooding from sewers.

5.6 Flooding from Reservoirs, Canals and Other Artificial Sources

The Reservoir Flood Risk map is included in Appendix E and the closest reservoir is the Gorton Lower Reservoir which is located 35m east of the site. With the reservoir being this close, there are large parts of the site considered to be at risk of flooding. As such, mitigation methods will need to be implemented into the drainage and level design to eliminate any potential risk. This will include ensuring site levels are above peak flood levels and the drainage network has the capacity to drain any flooding.

5.7 Flood Mitigation Measures

As outlined above the only flood mitigation measures required for the proposed site are associated with flooding from the reservoir and possible groundwater. These are summarised below:

- Further liaising with the LLFA and working with historic flood data to ensure our design is sufficient to prevent any flooding.
- The external ground levels should fall away from the proposed building.
- Proposed building finished floor level to be higher than the peak flood levels.

6.0 PROPOSED DEVELOPMENT

6.1 Effect of Proposed Development

As previously outlined in Section 2.0, the existing site covers a total area of 0.626ha and is a brownfield site. The pre and post development impermeable areas for the 0.626ha development area have been assessed and are indicated on the attached drawing in Appendix F.

The comparison between the pre and post development impermeable areas is also summarised in the table below.

Total Development Site Area (ha)	Existing Impermeable Area (ha)	Proposed Impermeable Area (ha)
0.626	0.328	0.388

Therefore, the changes to the existing site will increase the volume of impermeable areas and as such, the proposed development will lead to an increase in the;

- Volume of surface water ponding on the site
- Volume of surface water runoff leaving the site or discharging into surrounding areas
- Peak discharge rate from the site.

Accordingly, site-wide drainage systems are required to drain the foul and surface water flows arising from the proposed development. Where possible, any existing drainage networks should be utilised. Appropriate design and construction of these systems as set out in Section 5.3 should ensure that there is no increase in offsite flood risk that would otherwise impact downstream areas.

6.2 Existing Drainage Systems

As can be seen in the public sewer maps, attached in Appendix G, there are no public sewers located within the site boundary. The nearest public sewer is a 225mm diameter foul water sewer south of site within Wall Way. The sewer maps also indicate surface and combined water sewers within the area but nothing close enough to our site that would warrant any consideration.

At the time of this report being issued, there is no information available in regards to existing private sewers located within the site boundary. However, given there are still hard standing car park areas on site as well as the remains of an old restaurant, it is highly likely that there are some remaining private sewers on site. This has been further confirmed by manhole covers being identified on both the topographic survey and evidence of drainage collection features on site.

Further CCTV surveys should be carried out to confirm the extent and layout of the existing private sewers. Should any of these sewers prove to provide an already existing outfall for the site then the drainage network should be resigned to utilise this outfall. Based on the

proposed site layout being notably different from the existing site layout, it is anticipated that the majority of the on site sewers are to be abandoned.

6.3 Proposed Drainage Strategy

As outlined above in Section 5.1, site-wide drainage systems are required to drain the foul and surface water flows arising from the proposed development. The proposed drainage systems must ensure that there is no increase in offsite flood risk that would otherwise impact downstream areas.

6.3.1 Surface Water Drainage

The Building Regulations - Approved Document H (2015) details a hierarchy of potential methods for disposing of surface water as shown below in order of preference:

- Discharge via infiltration
- Discharge to watercourse
- Discharge to surface water sewer
- Discharge to combined water sewer

Considering the hierarchy above, the surface water network for the proposed site should infiltrate where possible.

A site investigation conducted by our geotechnics team took borehole logs at multiple points throughout the proposed site. Each of them indicating made ground on the surface underlain by clay between 1.00m and 3.00m below ground level. The impermeable ground indicates that infiltration is not possible and as such can be ruled out as feasible. In Appendix K, an assessment of infiltration testing is listed, showing no infiltration of water.

As the possibility of infiltration has been ruled out by a site investigation, the intention for the development would be to discharge to waterbody. The nearest waterbody is the Gorton Lower Reservoir, which is located 35m east of site. Given how relatively close the reservoir is and the lack of public surface water sewers around the site, it would be deemed appropriate to outfall into the waterbody. This point of discharge has also been recommended by United Utilities, in the pre development advice (App H).

Further discussions with the LLFA and EA are required to confirm the suitability of this connection as well as acquiring the relevant third party permissions to build the connection. If the third party agreement cannot be reach, an alternative outfall should be sought. There may also be additional water quality requirements which will affect the final design. If further site investigations show any existing outfalls into the reservoir, the drainage should be redesigned to utilise this outfall. As this will reduce the amount of construction required and remove any potential risk associated with building a new outfall pipeline and headwall into a reservoir. This point of outfall is preferred by United Utilities as shown in the pre-development response in Appendix H.

While every effort to utilise any suitable existing systems should be made, the drainage systems should be designed to suit the proposed site layout and topography which aims to provide an efficient design.

In line with the Design and Construction Guidance (DCG), the requirements for the design of a new surface water drainage systems are as follows:

- Below ground piped drainage to be sized to accommodate the 1 in 2 year (50% AEP) design storm without surcharge.
- System to be designed not to flood any part of the site in a 1 in 30 year (3% AEP) design storm.
- For events in exceedance of the 1 in 30 year design storm and up to and including the 1 in 100 year event, site drainage and topography should be designed where practicable to route surface water run-off away from buildings to safe above-ground storage areas on site, thereby preventing this run-off from leaving the site and increasing flood risk elsewhere.

For each design case described above, the design storm is the critical storm duration for the site conditions. In the 1 in 100 year design storm, a 45% increase in the peak rainfall intensity is applied, to allow for the estimated worst case impacts of climate change.

This is in accordance with the Manchester City Councils Local Flood Risk Management Strategy (LFRMS), which updates previous climate change allowances outlined in the National Planning Policy Framework.

In line with common practice, it is proposed the surface water discharge from the proposed development should mimic that from the existing site.

Although the existing site would be classified as a brownfield site, as the network is out falling into a waterbody it is anticipated that additional flow restrictions will be required. Therefore the current network has been designed to mimic existing greenfield flow rates. Further discussions with the LLFA and any relevant bodies will be required to confirm the maximum allocated flow rate.

An assessment of the existing surface water run-off from the greenfield site has been completed using the ICP SuDS method within Micro Drainage. Using the total site area of 0.626ha, the existing greenfield run-off rates were calculated. The greenfield runoff assessment is attached in Appendix I and the results summarised within the table below.

Rainfall Return Period (years)	Existing Greenfield Runoff Rate (L/s)
1 Year	4.6
Qbar (2 Year)	5.3
30 year	8.3
100 year	9.5

Given the minimal greenfield discharge rates associated with the development area, it is envisaged that very small orifice dimeters would be required to achieve these discharge

rates. Therefore, it is anticipated that larger discharge restrictions are required to reduce the risk of blockages and therefore the maintenance burden, resulting from the small orifice diameters.

While the Design and Construction Guidance (DCG), indicates that a 50mm orifice diameter may be utilised on sites where the design of the upstream system prevents debris entering the system. However, the only applicable debris prevention that can be applied to the runoff from the roof areas is to install catchpits upstream of the flow control. Therefore, the Design and Construction Guidance (DCG), indicates that a minimum opening size of 100mm diameter is more applicable to this development.

As such, it is proposed to restrict the surface water runoff to a maximum discharge restriction of 5.3 L/s for all rainfall events up to and including the 1 in 100 year +45% climate change event, in compliance with the Greenfield Qbar rate and this will provide a minimum of a 100mm diameter orifice size.

Therefore, the maximum surface water discharge rate for the site should be 5.3 L/s. As such, the surface water drainage system is to be designed to restrict the discharge to 5.3 L/s, for all rainfall events up to and including a 1 in 100 year return period + 45% climate change design storm.

As seen in the Outline Drainage Strategy Drawing attached in Appendix J, the attenuation storage will be provided in the form of oversized pipework and a cellular attenuation tank, the granular drainage blanket below the areas of permeable paving and also the surface water drainage network itself, with a vortex flow control device used to restrict the discharge rate to the required 5.3 L/s discharge rate, indicated above.

The surface water drainage calculations have also been included within Appendix J and as can be seen the proposed surface water drainage and attenuation storage prevent any flooding for all rainfall events up to and including the 1 in 100 year + 45% climate change event and also meet the discharge restriction above. This is summarised in the table below.

Rainfall Return Period (years)	Existing Greenfield Runoff Rate (L/s)	Proposed Calculated Discharge Rate (L/s)
1 year	4.6	3.0
2 year (Qbar)	5.3	3.0
30 year	8.3	4.1
100 year	9.5	5.1

As can be seen from the Drainage Strategy Drawing attached in Appendix J, the surface water drainage collects the runoff from the site area via permeable paving, linear drainage channels and rainwater downpipes and conveys the surface water runoff to the north-east of the proposed site.

Here the surface water runoff is restricted to a maximum discharge rate of 5.3 L/s, via a flow control device prior to discharging into the Gorton Lower Reservoir. The surcharged runoff is attenuated with the proposed granular drainage blanket below the areas of permeable paving and also within a below ground cellular attenuation tank.

The surface water drainage calculations, attached in Appendix J, also indicate that the maximum discharge rate of 5.3 L/s is achieved for all rainfall events up to and including the 1 in 100 year +45% climate change event and that the granular drainage blanket below the areas of permeable paving, the below cellular attenuation tank and proposed surface water drainage network itself prevent any flooding from the system, for all rainfall events up to and including the 1 in 100 year +45% climate change event.

6.3.2 SuDS Summary

As outlined within the summary table below, all SuDS techniques have been considered for this development;

SuDS Technique	Suitable for This Development?	Reasoning
Green Roof	✗	Not suitable due to lack of available roof area.
Rainwater Harvesting	✗	Impractical due to lack of demand for greywater.
Basins & Ponds	✗	Unsuitable due to lack of available space.
Filter Strips & Swales	✗	Unsuitable due to infiltration being unsuitable and lack of available space.
Infiltration Techniques	✗	Unsuitable due to infiltration being unsuitable.
Permeable Surfaces	✓	Unsuitable due to infiltration being unsuitable but non-infiltration permeable paving included where possible.
Tanked/Piped Systems	✓	Suitable and incorporated.

Green roof areas have been considered but due to numerous reasons, such as; areas of plant and equipment on the roof areas maintenance access and lack of suitable roof areas, the use of green roofs has been discounted.

Rainwater harvesting was also considered but due to a lack of greywater demand, it has been deemed as impractical to include a rainwater harvesting system.

Due to the lack of space available across the site, the use of basins and ponds to attenuate the surcharged surface water runoff has been discounted. The use of filter drains/strips and swales have also been considered but due infiltration being unsuitable and the lack of available space across the site, these SuDS techniques have also been deemed as unsuitable.

As previously discussed in Section 5.3.1 infiltration is not feasible across the site and therefore the use of infiltration SuDS techniques is not possible. However, the use of non-infiltration permeable surfaces such as permeable paving has been incorporated, where possible.

Finally, the use of oversized pipe networks and below ground attenuation tanks have been deemed as a suitable solution to attenuate the surcharged surface water runoff and as such have been incorporated within the design.

6.3.3 Water Quality Assessment

Managing the water quality of the surface water runoff from the proposed development is important to ensure that the receiving surface waters or groundwater are well protected. Generally, this can be achieved through the use of well-designed SuDS systems which provide treatment and pollution removal to the surface water runoff.

Standard S3 of the Statutory National Standards for Sustainable Drainage Systems (2018) details the water quality management and addresses the drainage design requirements to minimise the potential pollution risk.

As the proposed development consists of roof areas, residential car park with infrequent use (< 300 traffic movements/day), in accordance within Table G3.2 of the Statutory National Standards for Sustainable Drainage Systems (2018) the pollution hazard level is low and as such the simple index approach can be used to assess the treatment requirements for the low risk of pollution.

The simple index approach is outlined within Chapter 26 of CIRIA Report C753 - The SuDS Manual. Therefore, using Table 26.2 and applying the proposed site description above, results in the pollution hazard indices being; TSS - 0.5, Metals - 0.4 and Hydrocarbons - 0.4.

Assessing this against Table 26.3 of CIRIA Report C753 - The SuDS Manual using the proposed areas of non-infiltration permeable paving, results in the mitigation indices being greater than the pollution hazard indices identified above. The use of the non-infiltration permeable paving results in mitigation indices of; TSS - 0.7, Metals - 0.6 and Hydrocarbons - 0.7, which is sufficient on its own.

Therefore, as the mitigation indices are equal to or greater than each of the pollution hazard indices, the use of the non-infiltration permeable paving is deemed acceptable from a pollution mitigation perspective and as such complies with the water quality requirements of Standard S3 of the Statutory National Standards for Sustainable Drainage Systems (2018).

6.3.4 Foul Water Drainage

Foul water drainage disposal is set out in Part H of the Building Regulations in order of priority the preferred methods are;

1. Public sewer
2. Septic tank
3. Cesspool

The foul water system shall be designed in accordance with;

- BS EN 752:2017 (Drain and sewer systems outside buildings)
- Design and Construction Guidance (DCG)
- National Planning Policy Framework document (Department for Communities and Local Government, December 2024).
- Planning Practice Guidance
- BS EN 12056-2:2000 (Drainage systems inside buildings)
- Building Regulations Approved Document H, Drainage and waste disposal. (Office of the Deputy Prime Minister, December 2015).

As can be seen in the Drainage Strategy Drawing, attached in Appendix J, the proposed foul water drainage will collect the foul runoff from the proposed development and convey it to the south of the proposed site. From here it will discharge into the existing foul water public sewer along Wall Way. The United Utilities sewer map shows Manhole 3901 adjacent to site which will provide an appropriate connection point. This has also been recommended by United Utilities in their pre development response within Appendix H.

The existing drainage system immediately to the south of the site offers a prominent point of connection, as it likely previously captured Foul flows from the Bandstand Pub. The F.W will discharge into this drainage system, if it can be proven as connecting to the sewer system along Wall Way.

It is envisaged that the foul drainage will discharge at unrestricted rates into the existing public foul water sewer. A section 106/104 application will be required to connect into the public sewer.

7.0 FUTURE MANAGEMENT & MAINTENANCE

The proposed drainage solution uses SUDS techniques in accordance with the CIRIA SUDS Manual C753. The surface water run-off from the proposed development is restricted using a vortex flow control device and the attenuated run-off is stored using a below ground cellular attenuation tank and permeable paving.

It is envisaged that the following components have been or will be included within the drainage strategy for the proposed development:

- Inspection chambers, manholes and catchpits.
- Pipes.
- Drainage channels and gullies.
- Vortex flow control device.
- Cellular attenuation tank.
- Permeable paving.

A suitable maintenance strategy should be adopted to ensure the drainage network is cleaned regularly and the routine maintenance and cleansing regime should be documented.

It is assumed that the proposed drainage will remain private and therefore maintenance of the surface and foul water drainage systems will be the responsibility of Peacock + Smith or an on-site facilities management team, employed by Peacock + Smith.

As such, the maintenance of the specified SuDS and a copy of the final construction drainage layout, should be included within the developments Operation and Maintenance Manual and should be detailed in accordance with the CIRIA SuDS Manual C753, as per the operation and maintenance guidance outlined below.

7.1 General Maintenance & Inspection Requirements

- No work shall be carried out on the drainage system without permission from a nominated person, who has access to information/a working knowledge of the system.
- Maintenance/inspection work shall be carried out in a safe/planned manner.
- All work is to be carried out by competent persons suitably trained and equipped in accordance with current statutory safe working policies.
- Entry into confined spaces shall be kept to a minimum and be restricted to suitably qualified/equipped persons working in accordance with current statutory safe working policies.
- Drainage systems shall be inspected on a regular basis or should any problems be suspected. Any debris/defects discovered shall be recorded and a programme of cleaning/ repair initiated. Urgent repairs/cleaning shall be actioned as soon as practicable.
- It is recommended that the drainage system is inspected as a minimum twice a year, with the system also being inspected after any major storm event.
- Clearing of the drainage system can be achieved by a number of methods depending on the nature of the work;
    - Rodding - Manual/Mechanical with flexible rods.

- Jetting - High pressure water jetting.
- Plunging.

7.2 Inspection Chambers, Manholes and Catchpits

The appropriate health and safety equipment must be used when accessing manholes/catchpits. Confined space certificates must be held by any personnel entering a manhole and the appropriate permits should be obtained from the Maintenance Manager prior to any access. The following operations should be carried out annually.

- Covers of inspection chambers and manholes shall be removed and the sides, benchings and channels cleared.
- Accumulated deposits of silt in inspection chambers, catchpits and manholes shall be removed. Any traps shall then be plunged and thoroughly flushed out with clean water. This should be completed in Autumn, after leaf fall.
- Main and branch drains shall be cleared as required and afterwards be flushed with clean water. Any obstructions found shall be removed and not flushed down the system.
- Covers of inspection chambers, manholes and catchpits shall be replaced, bedded in suitable grease or other sealing material as required and bolted/locked down as appropriate. Missing bolts and broken items shall be replaced in accordance with the manufacturer's details.

7.3 Pipes

Regular inspection and maintenance are important to identify areas which may have become obstructed/clogged and may not be draining correctly, as failure to do so would expose the development to a greater level of flood risk.

Pipes are proprietary products and therefore the materials used can vary across the site. As such, where used the manufacturer's recommendations should be followed. Access for maintenance of the pipes is provided through inspection chambers and manholes. The Pipes are proprietary products and therefore the materials used can vary across the site.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect for evidence of poor operation via water levels. If required take remedial action.	Monthly for 3 months, then six-monthly intervals. Also, 48 hours after large storms.
	Check and remove large debris and/or vegetation growth near pipe runs.	Monthly or as required.
Remedial Actions	Rod through poorly performing runs as initial remediation.	As required.
	If continued poor performance jet and CCTV survey poorly performing runs.	As required.
	Seek advice as to remediation techniques suitable for the type of performance issue.	As required, if above actions do not improve performance.
Monitoring	Initial Inspection should be provided as post construction CCTV survey.	N/A
	Inspect/check all inlets, outlets and overflows to ensure they are in good condition and operating as designed.	Monthly for 3 months, then six-monthly intervals. Also, 48 hours after large storms.

As such, where used the manufacturer's recommendations should be followed. Access for maintenance of the pipes is provided through inspection chambers and manholes. The below table sets out the maintenance schedule for the pipe components of the proposed drainage systems.

7.4 Drainage Channels and Gullies

Channels and gullies should be inspected and cleaned in accordance with the manufacturer's details. Channel units can be cleaned through the use of a high-pressure hose; this can be fed into the channel system through access units strategically placed along the channel run. The throat section of channel units should be kept clear at all times to ensure uninterrupted flow of surface water into the drainage channel and any debris within the throat should be removed.

Locking bolts should be replaced and sufficiently tightened, taking care that the bolt heads do not stand above the top surface of the cover or grate. If covers are allowed to move within their frame, this may cause damage to the frame or seating. The below stable sets out the maintenance schedule for the drainage channel and gullies components of the proposed drainage systems.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Litter and debris removal.	Monthly or as required.
	Check and remove large debris and/or vegetation growth near pipe runs.	Monthly or as required.
	Inspect for evidence of poor operation and/or weed growth. If required take remedial action. Inspect silt accumulation rates and establish appropriate brushing frequencies.	Monthly for 3 months, then six-monthly intervals. Also, 48 hours after large storms.
Remedial Actions	Inspect access/outlet boxes and rod through poorly performing channels and outlets as initial remediation.	As required.
	Seek advice as to remediation techniques suitable for the type of performance issue.	As required, if above actions do not improve performance.
Monitoring	Initial Inspection including channel outlet boxes and gully sumps.	Monthly for 3 months, then six-monthly intervals. Also, 48 hours after large storms.

7.5 Vortex Flow Control Device

Regular inspection and maintenance is important to identify if the vortex flow control device has become obstructed/clogged and may not be functioning correctly, as failure to do so would expose the development to a greater level of flood risk.

Vortex flow control devices are proprietary products and therefore can vary from manufacturer to manufacturer. As such, where used the manufacturer's recommendations should be followed.

- Normally, little maintenance is required as there are generally a vortex flow control device has no moving parts.
- If blockages occur they tend to do so at the intake of the vortex flow control device.
- Vortex flow control devices are generally fitted with a pivoting by-pass door, which allows the manhole chamber to be drained down should blockages occur.
- The smaller type conical units, below the minimum recommended size, are also supplied with rodding facilities or vortex suppressor pipes as standard.
- Following installation of the vortex flow control device it is vitally important that any extraneous material i.e. Building materials are removed from the unit and the chamber.
- After the system is made live, it is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. Units should also be inspected within 48 hours after large storms.

7.6 Cellular Attenuation Tank

Regular inspection and maintenance is important to identify if the inlets/outlets have become obstructed/clogged and may not be functioning correctly, as failure to do so would expose the development to a greater level of flood risk.

The maintenance requirements for cellular attenuation tanks are outlined within Table 21.3 of the CIRIA SUDS Manual C753. An extract of that table is given below to set out the maintenance schedule for the cellular attenuation tank component of the proposed drainage systems.

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

7.7 Permeable Paving

The maintenance requirements for permeable paving is covered under the previous pavements section within the CIRIA SUDS Manual C753. As such, the maintenance requirements for permeable paving are outlined within Table 20.15 of the CIRIA SUDS Manual C753. An extract of that table is given below to set out the maintenance schedule for the permeable/porous tarmac component of the proposed drainage systems.

TABLE 20.15 Operation and maintenance requirements for pervious pavements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

It should be noted that the Main Contractor should provide a Verification Report, including photographic evidence, to demonstrate that the drainage has been constructed as per the design drawings. As-built drawings should as be supplied by the Main Contractor, where the construction of the drainage varies from the design construction status drawings.

8.0 CONCLUSIONS

- Even though the site is located within Flood Zone 1 but and the site area is less than 1.0ha, a Flood Risk Assessment is required due to the site being located in a critical drainage area.

- The site investigation report indicates that the underlying strata consists of impermeable clays. Therefore, due to the underlying impermeable strata, infiltration is not suitable for the proposed development.

- As the possibility of infiltration has been ruled, the intention for the development would be to discharge to waterbody. The nearest waterbody is the Gorton Lower Reservoir, which is located approximately 35m east of the site. Because of the short distance between the reservoir and site and the lack of public surface or combined water sewer near site, discharging to waterbody has been deemed practical.

- Even though the existing site is currently a brownfield site, the LLFA will likely require the proposed surface water runoff rates to be restricted to as close as reasonably practicable to the existing greenfield run off rates given the network is out falling into a waterbody.

- Given the minimal greenfield discharge rates associated with the small development area, very small orifice dimeters would be required to achieve the minimal discharge rates. Therefore, it is anticipated that larger discharge restrictions are required to reduce the risk of blockages and therefore the maintenance burden, resulting from the small orifice dimeters.

- While the Design and Construction Guidance (DCG), indicates that a 50mm orifice may be utilised on sites where the design of the upstream system prevents debris entering the system. Given the only applicable debris prevention that can be applied to the runoff from the roof areas is to install catchpits upstream of the flow control and the fact that there are linear drainage channels being used, the DCG, indicates that a minimum orifice diameter of 100mm is more applicable to this development.

- The proposed surface water drainage collects the runoff from the site area via permeable paving, linear drainage channels and rainwater downpipes and conveys the surface water runoff to the north-east of the proposed site. Here it will be restricted prior to discharging into the Gorton Lower Reservoir via a new headwall.

- Using a vortex flow control device, the surface water discharge is to be restricted to the maximum discharge rate of 5.3 L/s, for all rainfall events up to and including the 100 year + 45% climate change design storm.

- The surcharged runoff is to be stored using a below ground cellular attenuation tank, the granular drainage blanket below the areas of permeable paving and the proposed surface water drainage network itself. The surface water drainage network prevents any flooding for all rainfall events up to and including the 1 in 100 year + 45% climate change rainfall event.

- Further detailed discussions with the Lead Local Flood Authority and United Utilities should be completed to ensure agreement of the surface water discharge rate and the overall approach.

- The proposed foul water drainage will collect the foul runoff from the proposed building and convey it to the south the proposed site, where it discharges into the existing drainage system serving the previously development, then discharging into the existing 225 public foul water sewer, located along Wall Way. It is envisaged that the foul drainage will discharge at unrestricted rates into the existing public combined water sewer. A Section 106/104 agreement with United Utilities will be required to ensure agreement of the proposed foul water connection to the public drainage.

- Further detailed discussions with the Lead Local Flood Authority, the EA and United Utilities should be completed to ensure agreement of the foul water drainage strategy.

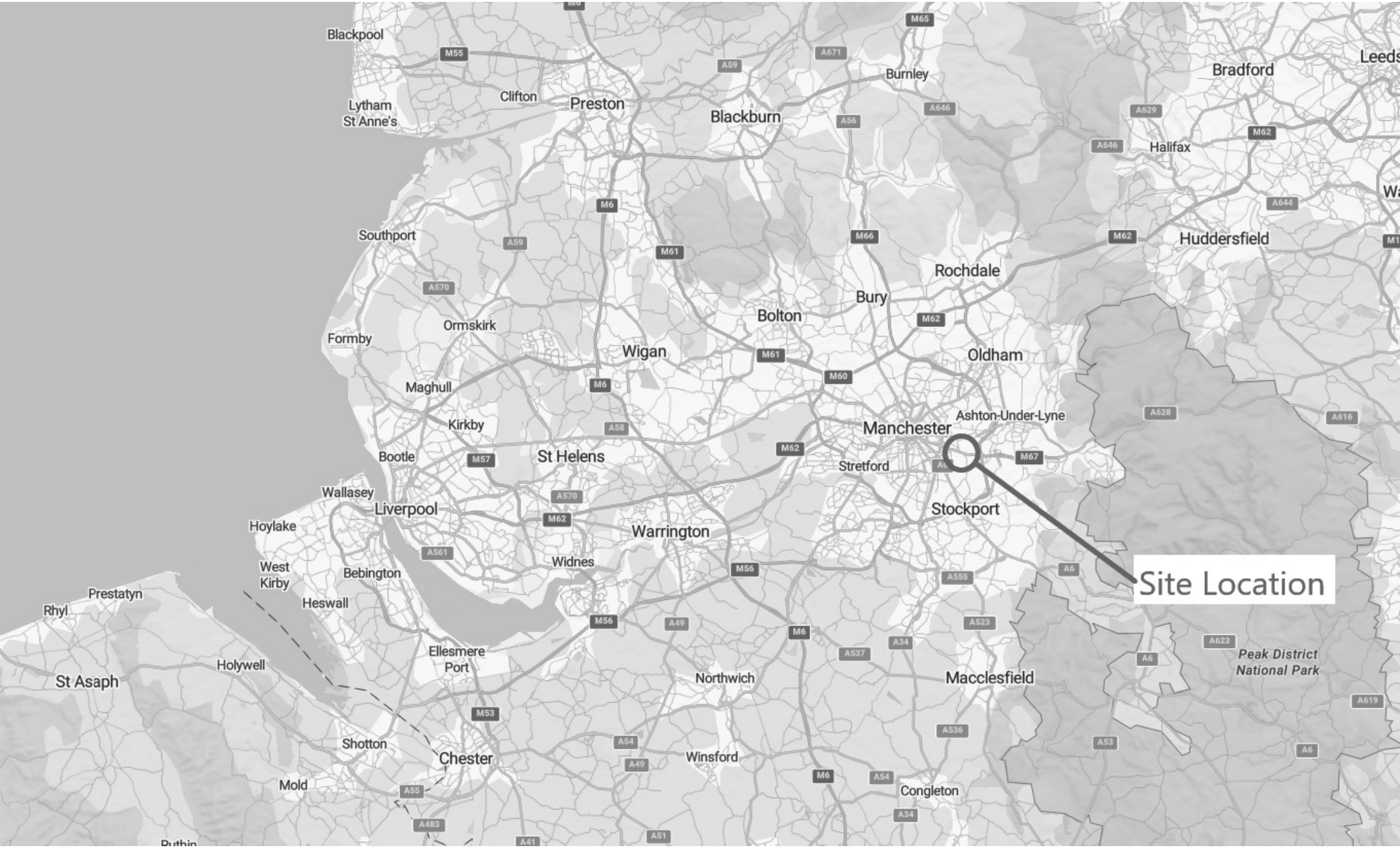
9.0 RECOMMENDATIONS

- CCTV surveys should confirm the location, levels and other details of the existing public and private drainage and should also confirm any existing connections from the existing private drainage into the existing public drainage.

- Third party agreements should be agreed prior to the confirmation that the proposed surface water headwall into the Gorton Lower Reservoir is a suitable outfall point.

- The extent of required mitigation methods should be further explored to ensure that the site is safe from all forms of flooding.

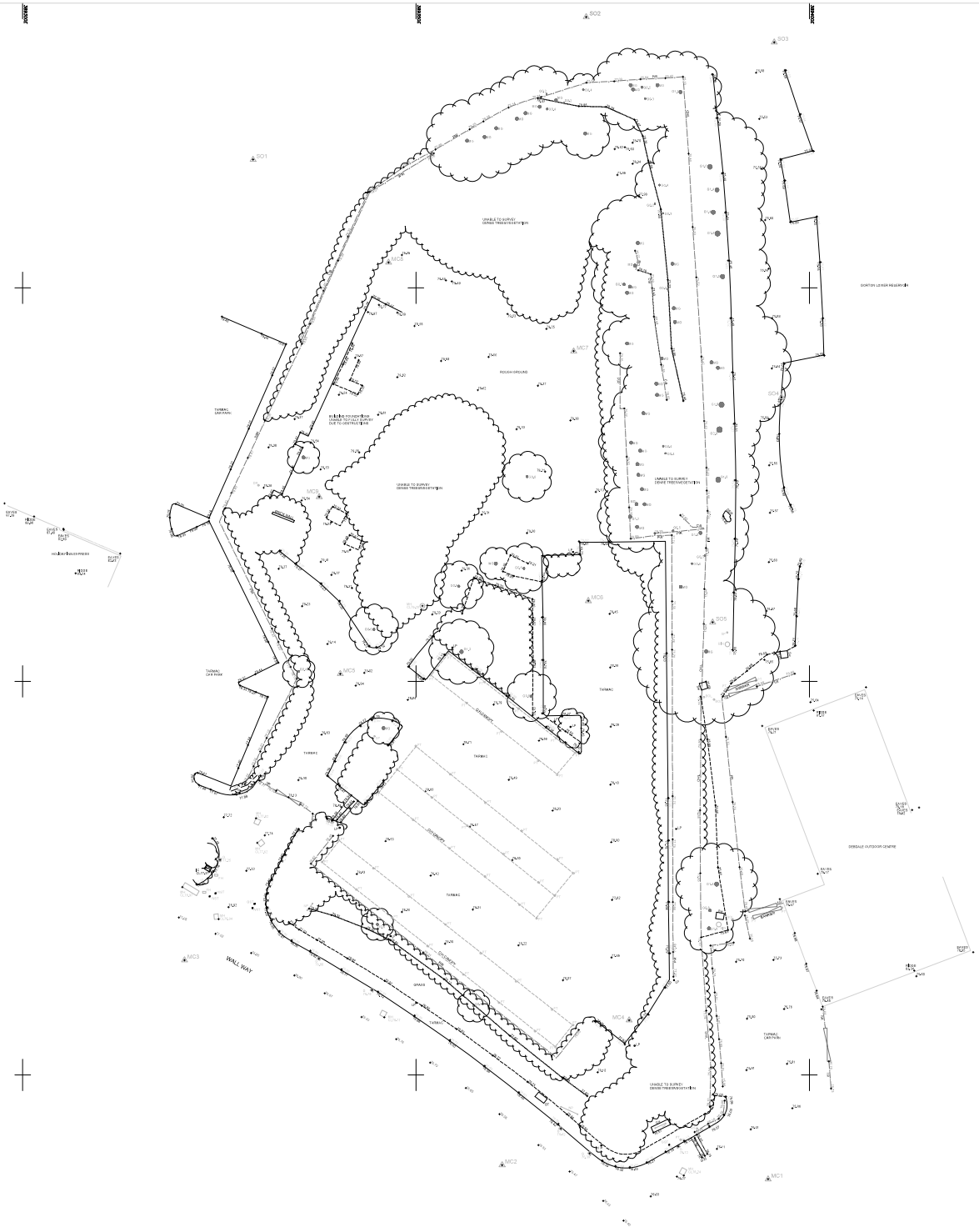
Appendix A – Site Location Plan


Blackpool
Lytham St Anne's
Clifton
Preston
Blackburn
Burnley
Bradford
Leeds
Halifax
Southport
Ormskirk
Formby
Maghull
Kirkby
Bootle
St Helens
Wigan
Bolton
Rochdale
Bury
Oldham
Huddersfield
Manchester
Ashton-Under-Lyne
Stretford
Stockport
Wallasey
Liverpool
Hoylake
Warrington
Widnes
West Kirby
Bebington
Heswall
Prestatyn
Rhyl
Holywell
St Asaph
Ellesmere Port
Northwich
Macclesfield
Peak District National Park
Shotton
Chester
Mold
Winsford
Congleton
Site Location
M55
M6
M61
M66
M65
M62
M60
M57
M56
M53
M67
A59
A671
A646
A56
A629
A644
A570
A58
A561
A49
A555
A523
A537
A34
A623
A619
A536
A54
A53
A483
A55
A41
A51

Appendix B – Aerial Photo


The Vale Cottage
Gorton Heritage Trail
Gorton Heritage Trail
Tan Yard Brow
Gore Brook Fountain
Fallowfield Loop
Holiday Inn Car Park
Recently viewed
Hyde Road Aggregates
Manchesteryorkstone
Former Hyde Road railway station
Tan Yard Brow
A57
Far Ln
Hyde Rd
Gratrix St
Willow Ave
PureGym Manchester Debdale
Fallowfield Loop
Debdale Outdoor Centre
Recently viewed
Manchester Trafalgar Sea and Royal Marines Cadets
Wall Way
McDonald's
Fast food
InstaVolt Charging Station
Hyde Rd
Kuttanad Taste Kerala Restaurant Manchester
Kerala
Friendship Ave
Thornwood Ave
Wall Way
Sandheys Grove
Fallowfield Loop

Appendix C – Topographic Survey



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N

Note:
The survey is plotted on a plane local Grid. Orientation to National Grid. All levels relate to Ordnance Datum, achieved using the OS National GPS Network.

Survey Control Markers established for Mapping purposes only and should not be used for Construction without the written approval of Survey Operations Ltd.

Unable to survey site fully without extensive site clearance.

SURVEY STATIONS

Name	Eastings	Northings	Height
MC1	388394.76	396886.78	76.42
MC2	388360.64	396969.51	76.69
MC3	388305.58	396914.84	77.17
MC4	388345.16	396874.57	77.09
MC5	388345.38	396853.81	78.01
MC6	388371.83	396861.23	78.59
MC7	388375.13	396887.25	78.42
SO1	388337.87	396907.45	78.00
SO2	388337.89	396873.58	78.53
SO3	388394.30	396914.50	77.67
SO4	388371.64	396834.43	79.15
SO5	388371.61	396834.43	79.15
SO6	388368.17	396885.73	78.70
SO7	388387.75	396857.61	78.81

STANDARD REFERENCE & ABBREVIATIONS

APP.....Access Point	LL.....Invert Level
BK.....Air Brick	LP.....Lamp Pole
BH.....Bus Halt	TS.....Lamp Socket
BTB.....Barbed Wire	LB.....Letter Box
BW.....Barrier	LT.....Line Post
BS.....Bollard Beacon	MH.....Manhole
BC.....Borehole	MP.....Marker
BL.....Bollard	MP.....Marker Post
BT.....BT Pillar	MT.....Metal Tank Pump
BT Box.....British Telecom Box	MTB.....Motorbike
BT.....British Telecom Pit	NTS.....Not Surveyed
BTB.....Brick Retaining Wall	OP.....Open Pitting
BS.....Bus Stop	PC.....Overhead Electric Wire
BTL.....Bush Trees	PP.....Overhead Pipe
CTV.....Cable Detected	PPP.....Overhead Survey Back Mark
CT.....Cable Telecom TV	PT.....Overhead Telecom Wire
CTV.....Cable Unknown	PTB.....Paint & Blocks
CB.....Catch Basin	PTL.....Paint & Lines
CBL.....Cellar Light	PTS.....Paint & Signs
CH.....Chain Link	PTW.....Paving
CPS.....Chains	PE.....Pedestrian Barrier
CL.....Check Level	PL.....Petrol Pipe
CH.....Child Minder	PH.....Phone Right
CH.....Chimney	PBS.....Phoning Box
CMH.....Concrete	PPP.....Post Pallet Pipe
CP.....Control Point	PST.....Postbox
CPN.....Concrete Retaining Wall	PL.....Power Line
CTL.....Cable Telephone	PP.....Power Pole
CT.....Cabinet	PP.....Pipe Post
CR.....Concrete Block Wall	PR.....Pumping Level
CS.....Concrete Steps	PRV.....Pump Reducing Valve
CPT.....Deep Probe Survey	PL.....Pump Valve Independent
DP.....Drain	RP.....Rain Down Pipe
DW.....Drain Well Ant	RL.....Radio Mast
DPS.....Electricity Cable Pit	RP.....Reducing Valve
ESU.....Electricity Substation Open	TR.....Traffic Bollard
ESC.....Electricity Substation Open	TBL.....Traffic Control Back Box
ESB.....Electricity Substation Box	TSB.....Telephone Call Box
EL.....Electricity Sub Station	TTP.....Telephone Pole Reverse
EL.....Electricity Sub Station	TTP.....Timber Pole Reverse
EL.....Electricity Sub Station	TP.....Traffic Light
EM.....Electricity Pole	TL.....Traffic Light Control Box
EP.....Electricity Pole	TB.....Trial Borehole
EL.....Electricity Transformer Low	TP.....Trial Pit
ES.....Flood Bay	TC.....Telecommunication Pole
FH.....Fire Hydrant	TCP.....Trial Pit
FL.....Floor Level	TS.....Trial Survey
FP.....Footpath	UP.....Under Construction
GL.....Gate Left	UG.....Underground
GR.....Gate Right	UP.....Unknown Pipe
GM.....Gasholder	UTL.....Unable to Lift (Buried)
GP.....Gate Post	UTL.....Unable to Survey
GPO.....Gas Valve Kiosk	UP.....Vehicle Detector Pad
GAP.....Gas Water	VP.....Vent Pipe
GPO.....Gas Way Top (Electric)	WM.....Wire Mesh
GPO.....Gas Way Valve (Gas)	WL.....Water Level
GRL.....Grating	WL.....Water Valve
GL.....Ground	WL.....Weir Bit
GL.....High Voltage	WP.....Water Pipe
GL.....High Voltage	WP.....Water Pole Top (Electric)
GL.....Inspection Cover	WPO.....Water Way Valve (Gas)

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Client
Atelier MB Ltd

Drawing Title
Topographical Survey of Land at:
The Band Stand, Gorton
Manchester M18 7LJ

Scale(s) 1:200	Surveyor DoB/MC
Date JAN 24	Drawn PM
Job Number 23K240	Checked SO/MG

Sheet Size & Drg Number & Revision
A0 23K240/001

Appendix D – Proposed Site Plan

COPYRIGHT OF ATELIER MB LTD
DO NOT SCALE FROM THIS DRAWING
DIMENSIONS TO BE CHECKED ON SITE



This layout achieves:
14 Semi-detached houses
16 Townhouses

In total achieving 30Units

Accommodation Summary:
Type A - 20 no. (4B/6P 14sqm GIA).

Type B - 8 no. (4B/8P 130sqm GIA).

Type C - 2 no. (3B/6P 113sqm GIA).

0 5 10 15 20 25m

1:500 @A3

REV	NOTE	DRN	CHK
A 25/08/2026	Layout updated to suit revised house plans.	HW	HW

The Band Stand, Gorton

Proposed Site Plan - Roof Plan

SCHEME	2023
DRWG NO.	P(902)
REVISION	A
SCALE	1:500
DATE 1st	Oct 2025
DRAWN	MM

SK sketch E existing P proposed T tender C construction FI final issue

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ATELIER.MB

Appendix E – Flood Maps

Gorton Upper Reservoir
Gorton Lower Reservoir
Kingsdale Road
Dedsdale Lane
Clumber Road
A57
Hyde Road
Wall Way
Thornwood Avenue
Woodland Avenue
Abbey Hey Primary School
High Bank
Hobart Street
Highmead Street
Cross Lane
Kirk Street
Chapman Street
Wellington Street
Gore Brook
Far Lane
Old Hall Drive


Gorton Upper Reservoir
Gorton Lower Reservoir
Kingsdale Road
A57
Debdale Lane
Clumber Road
Hyde Road
Wall Way
Thornwood Avenue
Woodland Avenue
Abbey Hey Primary School
High Bank
Hobart Street
Highmead Street
Cross Lane
Kirk Street
Chapman Street
Wellington Street
Gore Brook
Fir Lane
Old Hall Drive

A57
Hyde Road
Gorton Upper Reservoir
Gorton Lower Reservoir
Debdale Lane
Debdale Lane
Debdale Lane
Hall Way
Thornwood Avenue
Dean Road
Woodland Avenue
Tan Yard Brow
High Bank
Abbey Hey Primary School
Hobart Street
Highmead Street
Wistaria Road
Cross Lane
Chapman Street
Wellington Street
Gore Brook
Fern Lane
Old Hall Drive
Old Hall Drive Primary School



Reservoirs map

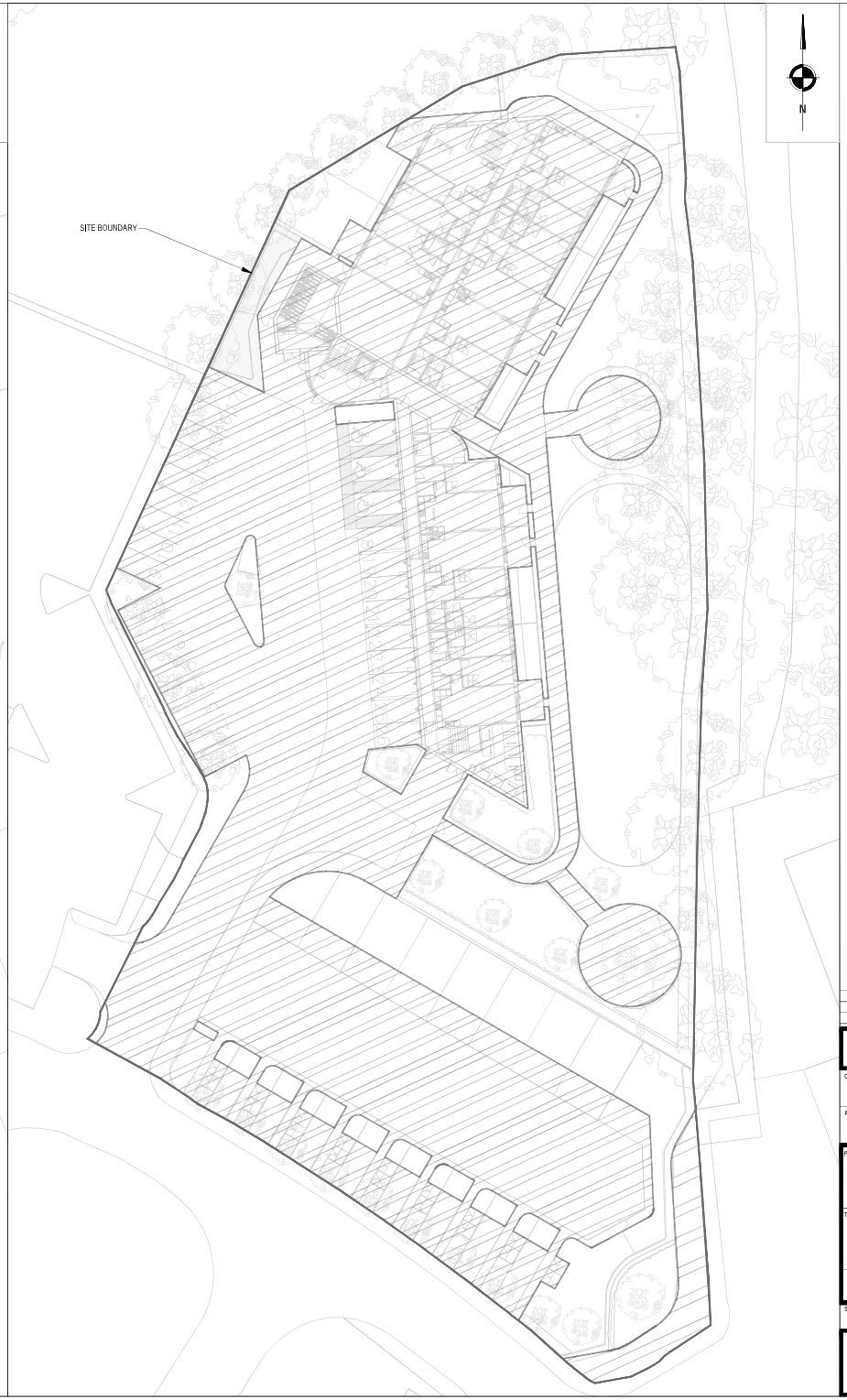
- Extent
  - When river levels are normal
  - When there is also flooding from rivers

Map details

- [x] Show flooding
- [x] Selected address

Appendix F – Pre & Post Development Impermeable Areas Drawing





PRE DEVELOPMENT
IMPERMEABLE AREAS = 3,276m^2

POST DEVELOPMENT
IMPERMEABLE AREAS = 3,990m^2

REV	DATE	DESCRIPTION	BY	CHK	APP
P02	28.04.2025	UPDATED TO REFLECT LATEST SITE INFORMATION	JJR	JJR	JCM
P01	25.03.2025	PRELIMINARY ISSUE	JJR	JJR	JCM

DRAWING STATUS:
PRELIMINARY

CLIENT:

ARCHITECT:
ATELIER MB

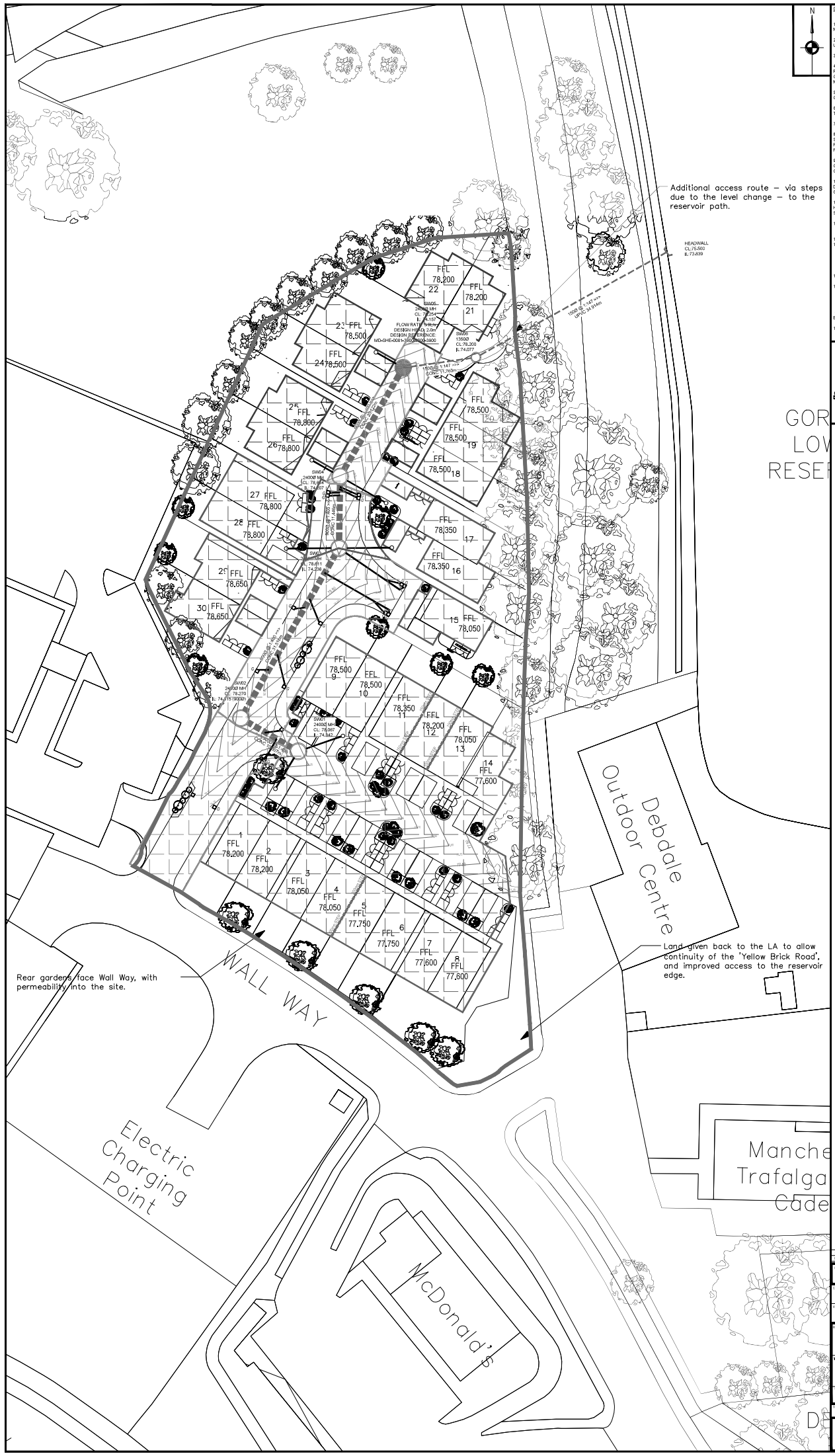
PROJECT:
THE BAND STAND
GORTON

TITLE:
PRE & POST DEVELOPMENT
IMPERMEABLE AREAS

STATUS:	PROJECT No.	PROJECT ORIGINATOR	VOL/SYS	LEVEL	TYPE	ROLE	DRAWING No.	REV:
S2	225-002	TBS - AJP -	ZZ -	00 -	SK -		**C - 0001**	**P02**

SCALE @ A1:	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
1:250	JJR	JJR	JCM	JCM	MAR 2025

AJP consulting engineers
0151 227 1462 info@ajpltd.co.uk 91 Dale Street, Liverpool, L2 2ET



GENERAL NOTES

1. SETTING OUT SHALL BE UNDERTAKEN USING ONLY THE INFORMATION GIVEN. DISTANCES SHOULD NOT BE SCALED FROM THIS DRAWING.
2. ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CODE FOR ADOPTION AND UNITED UTILITIES DETAILS & GUIDELINES.
3. THE MINIMUM GRAVITY PIPE DIAMETER UNDER ADOPTABLE HIGHWAYS SHALL BE 150mm
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION GIVEN WITH REGARDS TO EXISTING SERVICES AND DRAINAGE CONNECTIONS ETC, PRIOR TO COMMENCING THE WORKS, THE RATES SHALL INCLUDE FOR HAND DIG AROUND SERVICES WHERE NECESSARY, THE CONTRACTOR SHALL ADHERE TO THE CDM REGULATIONS AT ALL TIMES
5. THE OUTSIDES OF ALL SEWERS SHALL BE A MINIMUM OF 1.0m FROM KERB LINES AND THE OUTSIDE OF MANHOLES SHALL BE A MINIMUM OF 0.5m FROM KERB LINES
6. EXISTING FLOWS IN WATERCOURSES, SEWERS AND LAND DRAINS SHALL BE MAINTAINED AT ALL TIMES
7. ONLY TRAINED PERSONNEL SHALL BE PERMITTED TO ENTER CONFINED SPACES
8. ALL MATERIALS TO BEAR THE RELEVANT B.S. KITEMARK AND COMPLY FULLY WITH THE SPECIFICATIONS. ALL CONCRETE & CONCRETE PRODUCTS MUST USE SULPHATE RESISTANT CEMENT (UNLESS THE SITE INVESTIGATION REPORT PROVES THAT SULPHATE ATTACK FROM SOILS AND GROUNDWATER WILL NOT OCCUR TO WITHSTAND A CLASS
9. ALL OPENING NOTICES ETC. AS REQUIRED UNDER HIGHWAYS ACTS ETC, ARE TO BE OBTAINED PRIOR TO COMMENCEMENT OF WORKS. ALL WORKS ARE TO BE INSPECTED BY L.A., NHBC OR THE NETWORK OPERATOR AS APPLICABLE.
10. WHERE 'ULTRA RIB' UPVC PIPES (OR SIMILAR APPROVED) ARE USED IN ADOPTABLE DRAINAGE THEY SHALL STILL BE HANDLED AND LAID IN ACCORDANCE WITH THE SPECIFICATION AND GUIDANCE ISSUED BY THE HIGH PERFORMANCE PIPE ASSOCIATION.
11. A CLASS B BED AND SURROUND MUST BE USED FOR SUCH PIPES, TRENCH BACKFILL IN HIGHWAYS TO WITHIN 1m OF HIGHWAY SHALL AS DIRECTED BY THE HIGHWAY AUTHORITY BE A SUITABLE GRANULAR MATERIAL, ALL IN ACCORDANCE WITH SEWERS FOR ADOPTION CL. 4.3.4.
12. SLAB LEVELS SHALL NOT BE VARIED WITHOUT REFERENCE TO THE ENGINEER FOR GUIDANCE
13. DOMESTIC DRAINAGE SHALL BE TO BUILDING REGULATIONS APPROVED DOCUMENT H. 110mm U.P.V.C. PIPES LAID TO THE FOLLOWING MINIMUM FALLS UNLESS OTHERWISE SHOWN.

FOUL	S.W.
HEAD RUN 1 IN 40	1 IN 60
ELSEWHERE 1 IN 60	1 IN 100

14. ALL GULLY CONNECTIONS TO BE 150mm ø TRIMFIED UPVC UNLESS NOTED OTHERWISE
15. MINIMUM COVER TO DRAINAGE SOFFIT LEVEL

LANDSCAPING	TRAFFICKED AREAS	HIGHWAYS
0.900m	0.950m	1.200m

- CLASS 'S' BEDDING AND SURROUND TO BE USED WHERE MINIMUM COVER IS ACHIEVED.
- WHERE MINIMUM COVER IS NOT ACHEVED CLASS 'Z' BEDDING AND SURROUND (CONCRETE ENCASEMENT) IS TO BE USED.

16. FOUNDATIONS WITHIN CLOSE PROXIMITY TO PROPOSED DRAINAGE WILL NEED TO BE AT THE SAME DEPTH AS DRAINAGE TO AVOID THE POTENTIAL FOR UNDERMINING.

LEGEND

- PROPOSED S104 SURFACE WATER SEWER SUBJECT TO UNITED UTILITIES AGREEMENT
- PROPOSED S104 FLOW CONTROL CHAMBER SUBJECT TO UNITED UTILITIES AGREEMENT
- PROPOSED HIGHWAY GULLY & MANHOLES

DRAINAGE NOTES

- FOUL AND SURFACE WATER CONNECTIONS ARE TO BE CONFIRMED
- ALL POP-UP SETTING OUT TO BE PROVIDED BY THE ARCHITECT
- ALL SURFACE / FOUL WATER CONNECTIONS ARE TO HAVE ROADABLE ACCESS FROM ABOVE GROUND
- ANY RODD ACCESS CHAMBERS GREATER THAN 1.2m DEEP WILL REQUIRE A REDUCED ACCESS SHAFT

TOTAL AREA- 0.388ha

S.W Catchment Table

PIPE NO.	TOTAL AREA (Excluding Urban Creep)	HATCH
1.001	0.1730	
1.002	0.0600	
1.003	0.0710	
1.004	0.0170	
1.005	0.0672	

TOTAL AREA- 0.427ha

S.W Catchment Table

PIPE NO.	TOTAL AREA (Including Urban Creep)	HATCH
1.001	0.1903	
1.002	0.0660	
1.003	0.0781	
1.004	0.0187	
1.005	0.0739	

REV	PURPOSE	PRELIMINARY ISSUE	AIR	JOM	JOM
REV	DATE	DESCRIPTION	BY	CHK	APP

STATUS: **PRELIMINARY**

CLIENT: PEACOCK + SMITH

ARCHITECT: ATELIER MB

PROJECT: THE BAND STAND GORTON

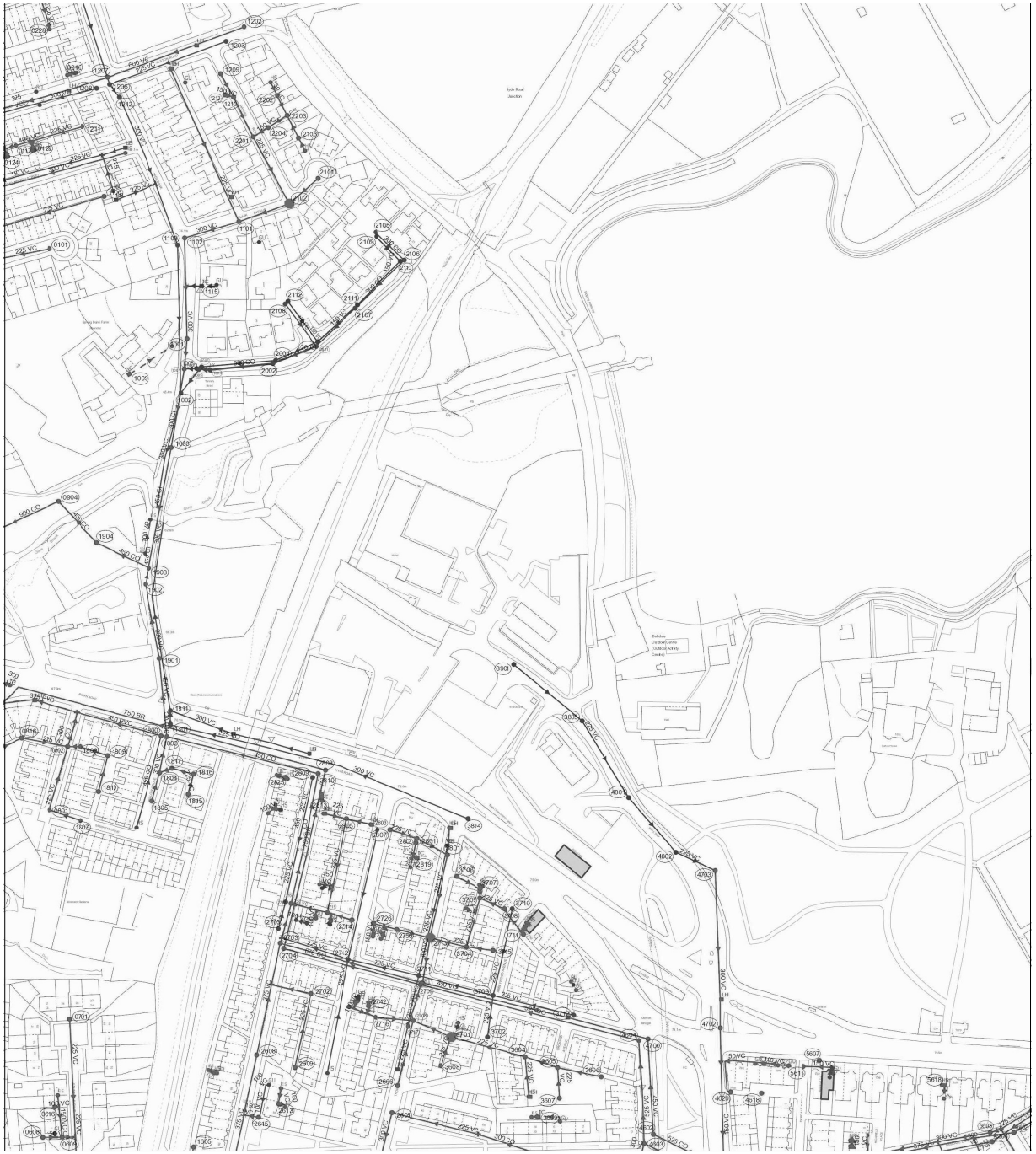
TITLE: SW CATCHMENTS PLAN

STATUS	PROJECT No.	ORIGINATOR	VOLUME	LEVEL	TYPE	ROLE	DRAWING No.	REV
S2	225-J002	TBS - AJP - ZZ - 00 - DR - C - 0002						P01

SCALE @ A1	DRAWN	CHECKED	APPROVED	DATE
1:200	JLJ	JLJ	JCM	AUG 2021

AJP consulting engineers
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Appendix G – United Utilities Public Sewer Maps



Refno	Cover	Func	Invert	Size x	Size y	Shape	Mat	Length	Grad
3606	75.47	CO	73.80	225			VC	25.5153	1 in 53
2713	72.45	CO	70.97	300			VC	35.31788	1 in 10
2711	73.42	SW	71.26	225			VC	46.02496	1 in 79
1802	76.91	CO	69.62	300			VC	69.33151	1 in 33
3707	73.6	CO	72.29	225			VC		1 in 29
1212		CO		150			VC	4.999985	
2102	75.41	CO	73.65	225			VC	26.73214	1 in 19
2101	77.69	SW	71.29	225			VC	70.84911	1 in 73
2101	77.29	CO	71.29	225			VC	35.29531	1 in 22
1801	69.24	CO	0	300			VC	31.28039	1 in 59
4703	76.29	CO	73.76	300			VC	87.39365	1 in 125
1817		CO		225			VC	5.332413	
0117		CO		100			VC	6.207175	
2107	72.42	SW	70.6	300			CO	30.3854	1 in 18
1811	76.03	SW	69.88	300			VC	165.2348	
1101	74.47	CO	72	300			VC	31.20252	1 in 224
2802		CO		225			VC	13.81193	
1008	69.65	FO	65.15	150			CI	6.618652	1 in 15
4700	77.23	CO	68.76	450			VC	125.7978	1 in 300
2003	70.62	FO	69.89	150			VC	20.28831	1 in 17
1006	66.76	FO	65.3	150			CI	5.070996	1 in 20
1815		CO		225			VC	14.49816	
3601	74.26	CO	73.15	225			VC	17.72039	1 in 53
3605	75.89	FO	74.8	225			VC	46.73161	1 in 131
3601	77.14	FO	75.18	225			VC	49.29373	1 in 175
1102	72.04	CO	71.29	300			VC	53.28663	1 in 8
3711	74.44	CO	72.85	225			VC	17.20449	1 in 43
3701	69.64	CO	68.23	225			VC	67.09132	1 in 93
2203		CO	0	150			VC	12.4508	
1807	76.3	SW	69.21	300			VC	4	
2202		CO	0	150			VC	12.67896	
1605	71.41	CO	69.49	225			VC	9.219544	1 in 28
2608	72.12	CO	67.8	375			VC	63.34926	1 in 792
1002	69.75	CO	0	300			CI	44.23566	
2712	72.81	SW	71.05	225			VC	30.9913	
2605	75.6	CO	73.47	225			VC	50.78573	1 in 27
2709	73.25	CO	69.77	675			CO	78.29753	1 in 123
2711	74.69	CO	71.29	225			VC	12.24611	1 in 20
0124		CO		100			VC	4.569015	
3610	73.65	CO	67.21	150			CO	6.21547	
3601	74.21	CO	71.25	225			VC	29.41507	1 in 100
2605	73.6	CO	70.8	225			VC	20.70942	1 in 70
2102	72.26	SW	69.88	150			VC	28.87317	1 in 30
2716	73.29	CO	71.21	225			VC	21.26502	1 in 63
1003	63.64	CO	61.91	450			CI	67.28548	1 in 84
2112	72.21	FO	69.24	150			VC	27.7523	1 in 28
1801	69.46	CO	67.91	225			VC	7	1 in 5
2808	73.2	CO	64.59	750			BR	185.8415	1 in 79
1816		CO		225			VC	15.43502	
2106	74.11	SW	72.09	300			CO	37.75412	1 in 19
0220		CO		150			VC	2.859486	
4801	76.76	FO	74.52	225			VC	40.13525	1 in 134
1903	69.45	CO	69.26	450			CO	31.20148	1 in 21
1203	77	SW	74.21	225			VC	69.28925	
1208	75.29	SW	74.13	300			VC	46.26164	1 in 57
3701	74.01	CO	72.32	225			VC	23.84792	1 in 74
3709	74.1	CO	72.48	225			VC	14.31782	1 in 40
3703	74.28	SW	72.83	225			VC	43.44997	1 in 49
2001	70.49	SW	64.3	900			CO	25.84921	1 in 250
2110	74.11	FO	72.3	150			VC	33.71334	1 in 20
3606	73.65	CO	71.21	225			VC	37.10705	1 in 93
2105	75.29	SW	73.12	300			CO	22.31371	1 in 42
1103	72.86	SW	71.26	300			CO	42.20888	1 in 12
1004	69.26	CO	68.3	450			CO	31.14482	1 in 23
1207	75.39	CO	73.29	600			VC	68.20778	1 in 54
2703	72.78	CO	69.7	450			VC	22.89916	1 in 253
2705	72.14	SW	70.97	225			VC	19.52417	1 in 19
0608		CO		150			VC	10.31034	
1805	76.26	CO	69.26	225			VC	15.61639	1 in 20
4803	76.22	CO	69.72	525			VC	29.21724	1 in 112
3712	76.81	SW	73.76	225			VC	46.32484	1 in 49
1212	75.31	SW	71.26	300			VC	68.26551	
0603		CO	0	225			VC	17.28853	
0602		CO		225			VC	7.643825	
2704	72.24	CO	68.18	675			CO	71.40884	1 in 571
1603	76.23	CO	75.08	300			VC	26.43798	1 in 93
1003	69.69	SW	64.21	150			VC	19.47725	1 in 97
1202	77.62	CO	71.23	900			VC	90.89389	1 in 127
2109	75.46	FO	72.96	150			VC	19.91223	1 in 41
2801		CO	0	225			VC	41.07518	
2815		CO		150			VC	8.319499	
0616		CO		100			VC	2.213363	
2004	69.6	FO	67.26	150			VC	46.26537	1 in 20
1106	74.49	CO	73.34	225			VC	61.28332	1 in 59
2702	72.42	CO	70.69	225			VC	22.59103	
0602	69.19	CO	68.23	300			CO	10.40131	1 in 6
2707	72.47	CO	67.39	450			VC	38.87818	1 in 132
2715	71.96	CO	70.26	225			VC	20.01555	1 in 20
3804	74.46	SW	72.28	300			VC	134.2771	1 in 95
1803	76.24	CO	0	450			VC	43.09154	
2204		CO	0	150			VC	9.781778	
3710	74.41	SW	73.23	225			VC	46.24426	1 in 97
0904	62.66	CO	57.28	900			CO	94.12947	
1206	76.29	CO	74.42	225			VC	14.7719	1 in 148
0602	76.21	CO	70.38	375			VC	20.2036	1 in 93
1807	69.66	SW	69.21	225			VC	19.20776	1 in 34
1206	75.42	SW	71.84	300			VC	9.219544	1 in 154
3706	73.91	CO	72.62	225			VC	14.75492	1 in 46
0601	69.53	CO	67.05	225			VC	36.49355	1 in 143
1810	76.18	CO	69.22	225			VC	20.01555	1 in 74
1901	67.56	CO	63.07	300			VC	41.7732	1 in 17
0616		CO		225			VC	25.71772	
2111	72.49	FO	70.49	150			VC	35.1912	1 in 19
1804	76.28	CO	69.26	300			VC	20.49279	
4802	76.26	FO	74.22	225			VC	23.29991	1 in 89
4702	77.21	CO	71.21	450			VC	34.2315	
0603		CO	0	225			VC	7.643825	
4802	76.12	CO	69.16	450			VC	53.29484	1 in 133
2712	72.83	CO	67.13	300			BR	14.14214	1 in 1
2610		CO		300			VC	4.777932	
2001	70.41	CO	70	225			VC	42.29648	1 in 93
1800	70.29	CO	0	450			PVC	48.75674	
3804	74.36	CO	73.73	225			VC	42.44857	1 in 51
2807	73.91	CO	72.27	225			VC	15.81339	1 in 51
2601	74.21	CO	71.74	225			VC	19.23338	1 in 69
0604	76.27	CO	73.62	300			VC	66.2915	1 in 117
1902	64.26	CO	61.2	300			VC	9.219544	1 in 21
1210	76.26	CO	74.21	225			VC	24.59376	1 in 88
1002	65.26	SW		300			VC	65.2604	
3702	74.3	SW	73.11	225			VC	23.19483	1 in 155
4604	77.65	CO	69.25	525			CO	104.408	1 in 79
3605	75.26	CO	73.47	225			VC	18.87387	1 in 73
2714	75.1	CO	71.34	225			VC	14.59222	1 in 14
2726		CO		225			VC	12.74615	
1211		CO		225			VC	23.17277	
3705	73.51	CO	72.11	225			VC	28.19228	1 in 91
1004	69.26	SW		150			VC	0.3855609	
2706		CO		225			VC	19.39761	
2603	73.63	SW	72.03	225			VC	70.79936	1 in 77
3704	73.56	CO	0	225			VC	26.01553	
2710	73.53	CO	69.28	450			VC	50.2601	1 in 84
3705	74.07	CO	72.49	225			VC	15.13275	
2002	69.72	SW	64.8	900			CO	36.09917	1 in 292

Refno	Cover	Func	Invert	Size x	Size y	Shape	Mat	Length	Grad

LEGEND

Atandonod | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extentof Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Cutfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- TJunction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNI Network Monitoring Point
- Change of Characteristic

MANHOLE FUNCTION

FO	Fou
SW	Surface Wate
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circuar	TR	Tapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	horseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforcec PlasticMatrix
CO	Concrete
CSB	Concrete SegmentBolted
CSU	Concrete SegmentUnbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
S	Steel
VC	Vitrfied Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

DEBDALE OUTDOOR CENTRE 1073 HYDE ROAD, MANCHESTER, M18 7LJ

Scale: 1:1250 **Date:** 10/04/2025
Nodes: 134
Sheet: 1 of 1

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West

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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Appendix H – United Utilities Pre-Dev Response

WASTEWATER PRE-DEVELOPMENT ENQUIRY

United Utilities
Water for the North West

United Utilities Grasmere House, 2nd Floor
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Response Date: 08/04/2025

Dear Jamie

Pre-Development Enquiry for The Band Stand, M18 7LJ

UU Reference Number: 07258694

We have assessed your application based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your strategy will need review by other authorities as part of the planning process. We advise conducting necessary site investigations to confirm viability of your proposals.

Modelled Flood Risk

I can confirm that we do not have modelled flood risk within the vicinity of the proposed development.

Please note that our modelling data is indicative, and only representative of the 1:100year storm event.

Please see **comment 2** of the attached guidance sheet

Asset Protection

1. We have reviewed our records and can confirm that there does not appear to be any charted public sewers located within the boundary of the proposed development.

Please see **comment 3** of the attached guidance sheet and **Working Near Our Pipelines Guidance document**

Foul Water

Foul flow from this site will be allowed to drain into the public foul water sewer system.

Our preferred point of discharge would be to the 225mm foul sewer located south of your proposed development at an unrestricted rate.

Manhole reference SJ89953901, **Grid reference** 389345, 395908

Please see the images on **page 3** for clarification

WASTEWATER PRE-DEVELOPMENT ENQUIRY

Surface Water

Follow the National Planning Policy Guidance drainage hierarchy andPpovide evidence for discounting higher options before considering public sewer discharge. Consult the Lead Local Flood Authority regarding surface water concerns.

Please see comment **4** within the guidance sheet

Infiltration

Please see comment **4** within the guidance sheet

Waterbody

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/or Environment Agency to discuss a point of discharge to the **open watercourses** located at various locations around the development boundary.

We would encourage you to engage with any third-party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

Public Sewer

At this stage, United Utilities will not consider a surface water discharge into the foul sewer system due to the viable watercourses within the vicinity of the development.

Site Images



WASTEWATER PRE-DEVELOPMENT ENQUIRY

United Utilities
Water for the North West

Appendix I – Existing Greenfield Runoff Calcs

ICP SUDS Mean Annual Flood

Input

Return Period (years)	2	Soil	0.450
Area (ha)	0.626	Urban	0.328
SAAR (mm)	822	Region Number	Region 10

Results l/s

QBAR Rural	3.3
QBAR Urban	5.3
Q2 years	5.1
Q1 year	4.6
Q30 years	8.3
Q100 years	9.5

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Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	✓
Rainfall Events	Singular	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	20.0
M5-60 (mm)	18.000	Starting Level (m)	
Ratio-R	0.360	Check Discharge Rate(s)	✓
Summer CV	1.000	Check Discharge Volume	✓
Winter CV	1.000	100 year 360 minute (m³)	
Analysis Speed	Normal		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	10	0
2	0	10	0
30	0	10	0
100	45	10	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.357	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.173	5.00	78.067	2700	389349.892	395943.384	3.725	74.342
2	0.060	5.00	78.270	2700	389340.705	395948.685	3.955	74.315
3	0.071	5.00	78.611	2700	389356.493	395975.962	4.375	74.236
4	0.017	5.00	78.654	2700	389356.605	395987.407	4.447	74.207
5	0.067	5.00	78.254	2700	389366.706	396004.810	4.097	74.157
6	0.000		77.560	1350	389378.348	396006.472	3.483	74.077
7	0.000		75.500	1350	389408.929	396023.319	1.661	73.839

Links (Results)

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.717	1486.3	28.9	2.675	2.905	0.173	0.0	99	0.698
1.001	1.717	1486.3	38.0	2.905	3.325	0.233	0.0	113	0.756
1.002	1.717	1486.3	49.1	3.325	3.397	0.304	0.0	128	0.815
1.003	1.717	1486.3	51.0	3.397	3.047	0.321	0.0	130	0.825
1.004	0.826	14.6	0.0	3.947	3.333	0.388	0.0	0	0.000
1.005	0.826	14.6	0.0	3.333	1.511	0.388	0.0	0	0.000

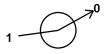
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.607	400.0	1050	Circular_Default Sewer Type	78.067	74.342	2.675	78.270	74.315	2.905
1.001	31.517	400.0	1050	Circular_Default Sewer Type	78.270	74.315	2.905	78.611	74.236	3.325
1.002	11.446	400.0	1050	Circular_Default Sewer Type	78.611	74.236	3.325	78.654	74.207	3.397
1.003	20.122	400.0	1050	Circular_Default Sewer Type	78.654	74.207	3.397	78.254	74.157	3.047
1.004	11.760	147.0	150	Circular_Default Sewer Type	78.254	74.157	3.947	77.560	74.077	3.333
1.005	34.914	147.0	150	Circular_Default Sewer Type	77.560	74.077	3.333	75.500	73.839	1.511

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	2700	Manhole	Adoptable	2	2700	Manhole	Adoptable
1.001	2	2700	Manhole	Adoptable	3	2700	Manhole	Adoptable
1.002	3	2700	Manhole	Adoptable	4	2700	Manhole	Adoptable
1.003	4	2700	Manhole	Adoptable	5	2700	Manhole	Adoptable
1.004	5	2700	Manhole	Adoptable	6	1350	Manhole	Adoptable
1.005	6	1350	Manhole	Adoptable	7	1350	Manhole	Adoptable

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	389349.892	395943.384	78.067	3.725	2700				
						0	1.000	74.342	1050
2	389340.705	395948.685	78.270	3.955	2700	 1	1.000	74.315	1050
						0	1.001	74.315	1050
3	389356.493	395975.962	78.611	4.375	2700	 1	1.001	74.236	1050
						0	1.002	74.236	1050
4	389356.605	395987.407	78.654	4.447	2700	 1	1.002	74.207	1050
						0	1.003	74.207	1050
5	389366.706	396004.810	78.254	4.097	2700	1 	1.003	74.157	1050
						0	1.004	74.157	150
6	389378.348	396006.472	77.560	3.483	1350	1 	1.004	74.077	150
						0	1.005	74.077	150
7	389408.929	396023.319	75.500	1.661	1350	1 	1.005	73.839	150

Node 5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	74.157	Product Number	CTL-SHE-0080-5300-3900-5300
Design Depth (m)	3.900	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	5.3	Min Node Diameter (mm)	1200

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	76.550
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	150.0	0.800	150.0	184.7	0.810	0.0	184.7

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Results for 1 year +10% A Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	180	74.747	0.405	9.0	2.7292	0.0000	OK
240 minute summer	2	180	74.747	0.432	10.1	2.6145	0.0000	OK
240 minute summer	3	180	74.746	0.510	9.5	3.1050	0.0000	OK
240 minute summer	4	180	74.746	0.539	5.9	3.1341	0.0000	OK
240 minute summer	5	180	74.746	0.589	5.7	3.5866	0.0000	SURCHARGED
15 minute summer	6	23	74.124	0.047	3.0	0.0668	0.0000	OK
15 minute summer	7	23	73.885	0.046	3.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	28.8	0.591	0.019	1.6614	
15 minute summer	2	1.001	3	34.5	0.585	0.023	6.3887	
15 minute summer	3	1.002	4	31.7	0.559	0.021	2.9392	
15 minute summer	4	1.003	5	17.1	0.248	0.011	5.9292	
60 minute summer	5	1.004	6	3.0	0.635	0.206	0.0557	
15 minute summer	6	1.005	7	3.0	0.651	0.206	0.1614	28.5

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Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 99.71%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	176	74.906	0.564	9.0	3.8055	0.0000	OK
180 minute winter	2	176	74.906	0.591	10.2	3.5810	0.0000	OK
180 minute winter	3	176	74.906	0.670	9.5	4.0756	0.0000	OK
180 minute winter	4	176	74.906	0.699	5.8	4.0612	0.0000	OK
180 minute winter	5	176	74.906	0.749	5.7	4.5576	0.0000	SURCHARGED
15 minute summer	6	68	74.124	0.047	3.0	0.0668	0.0000	OK
15 minute summer	7	68	73.885	0.046	3.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	35.6	0.626	0.024	2.4102	
15 minute summer	2	1.001	3	41.9	0.586	0.028	8.6921	
15 minute summer	3	1.002	4	28.7	0.556	0.019	3.7927	
15 minute summer	4	1.003	5	21.4	0.272	0.014	7.5754	
15 minute winter	5	1.004	6	3.0	0.692	0.206	0.0557	
15 minute summer	6	1.005	7	3.0	0.651	0.206	0.1614	36.7

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Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	232	76.505	2.163	13.7	14.5920	0.0000	SURCHARGED
240 minute winter	2	232	76.506	2.191	16.0	13.2723	0.0000	SURCHARGED
240 minute winter	3	232	76.502	2.266	13.1	13.7839	0.0000	SURCHARGED
240 minute winter	4	232	76.504	2.297	9.1	13.3438	0.0000	SURCHARGED
240 minute winter	5	232	76.501	2.344	10.0	14.2615	0.0000	SURCHARGED
240 minute winter	6	232	74.132	0.055	4.1	0.0790	0.0000	OK
240 minute winter	7	232	73.893	0.054	4.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	59.9	0.658	0.040	5.8162	
15 minute winter	2	1.001	3	53.5	0.609	0.036	18.8044	
15 minute winter	3	1.002	4	43.7	0.631	0.029	7.4375	
120 minute winter	4	1.003	5	23.5	0.205	0.016	17.3580	
240 minute winter	5	1.004	6	4.1	0.690	0.283	0.0704	
240 minute winter	6	1.005	7	4.1	0.710	0.283	0.2031	91.3

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Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 98.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	456	77.825	3.483	29.5	138.2864	0.0000	FLOOD RISK
480 minute winter	2	456	77.826	3.511	27.3	21.2745	0.0000	SURCHARGED
480 minute winter	3	456	77.822	3.586	26.4	21.8127	0.0000	SURCHARGED
480 minute winter	4	456	77.824	3.617	19.6	21.0145	0.0000	SURCHARGED
480 minute winter	5	456	77.820	3.663	12.0	22.2904	0.0000	SURCHARGED
480 minute winter	6	456	74.139	0.062	5.1	0.0888	0.0000	OK
480 minute winter	7	456	73.900	0.061	5.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	102.3	0.657	0.069	9.1500	
15 minute winter	2	1.001	3	85.8	0.640	0.058	27.1877	
15 minute summer	3	1.002	4	67.9	0.686	0.046	9.8737	
60 minute winter	4	1.003	5	-31.0	0.255	-0.021	17.3580	
480 minute winter	5	1.004	6	5.1	0.728	0.350	0.0825	
480 minute winter	6	1.005	7	5.1	0.751	0.350	0.2373	175.5

Water Quality (TSS)

Node	Treatment	Effectiveness	SuDS Component	Mitigation TSS	Cumulative TSS
1	Depth/Area	1.0	Detention Basin	0.500	0.000
7					0.000

Water Quality (Metals)

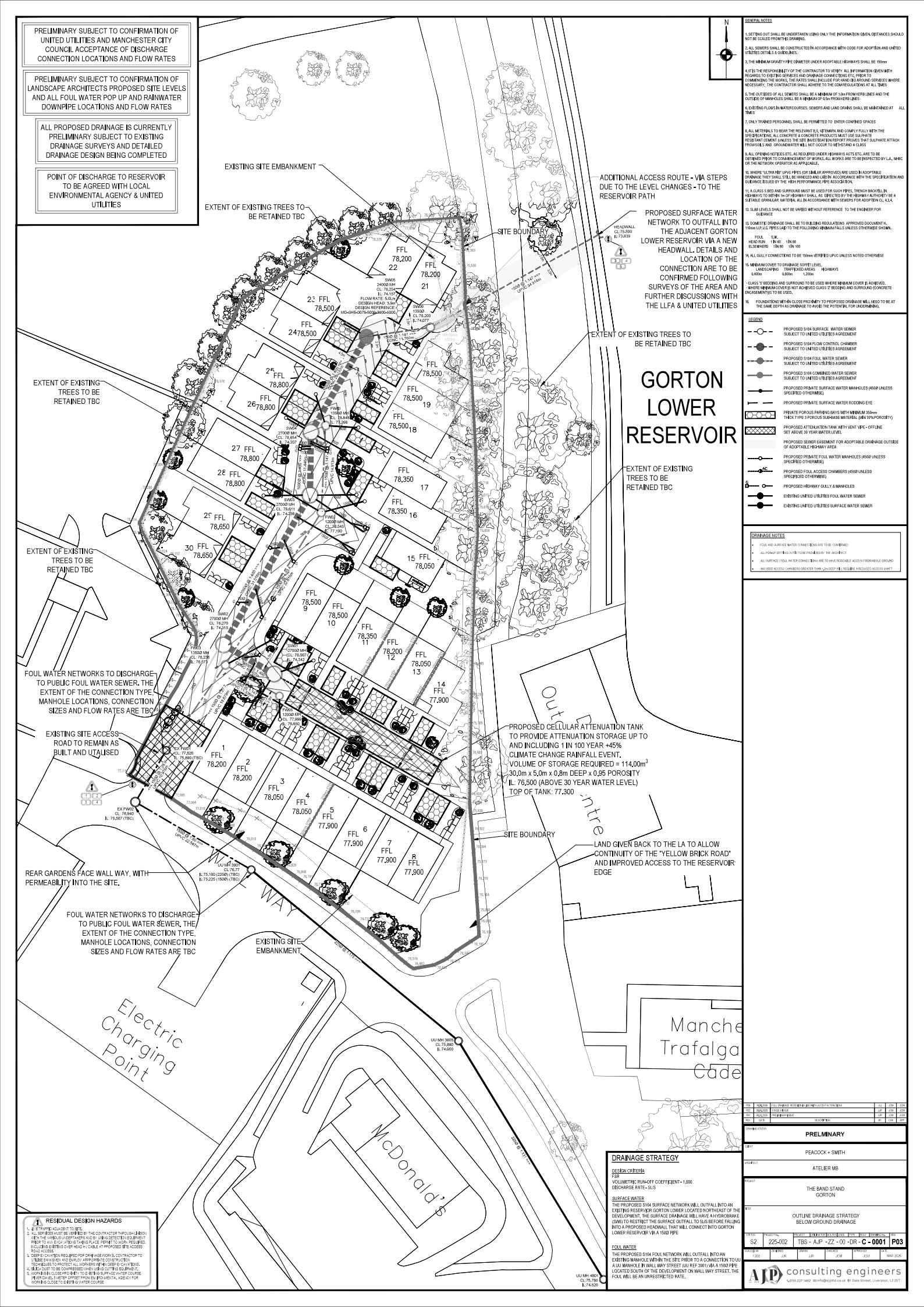
Node	Treatment	Effectiveness	SuDS Component	Mitigation Metals	Cumulative Metals
1	Depth/Area	1.0	Detention Basin	0.500	0.000
7					0.000

Water Quality (Hydrocarbons)

Node	Treatment	Effectiveness	SuDS Component	Mitigation Hydrocarbons	Cumulative Hydrocarbons
1	Depth/Area	1.0	Detention Basin	0.600	0.000
7					0.000

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Appendix J – Drainage Strategy Drawing & Surface Water Calcs


PRELIMINARY SUBJECT TO CONFIRMATION OF UNITED UTILITIES AND MANCHESTER CITY COUNCIL ACCEPTANCE OF DISCHARGE CONNECTION LOCATIONS AND FLOW RATES
PRELIMINARY SUBJECT TO CONFIRMATION OF LANDSCAPE ARCHITECTS PROPOSED SITE LEVELS AND ALL FOUL WATER POP UP AND RAINWATER DOWNPIPE LOCATIONS AND FLOW RATES
ALL PROPOSED DRAINAGE IS CURRENTLY PRELIMINARY SUBJECT TO EXISTING DRAINAGE SURVEYS AND DETAILED DRAINAGE DESIGN BEING COMPLETED
POINT OF DISCHARGE TO RESERVOIR TO BE AGREED WITH LOCAL ENVIRONMENTAL AGENCY & UNITED UTILITIES
N
EXISTING SITE EMBANKMENT
EXTENT OF EXISTING TREES TO BE RETAINED TBC
ADDITIONAL ACCESS ROUTE - VIA STEPS DUE TO THE LEVEL CHANGES - TO THE RESERVOIR PATH
SITE BOUNDARY
PROPOSED SURFACE WATER NETWORK TO OUTFALL INTO THE ADJACENT GORTON LOWER RESERVOIR VIA A NEW HEADWALL. DETAILS AND LOCATION OF THE CONNECTION ARE TO BE CONFIRMED FOLLOWING SURVEYS OF THE AREA AND FURTHER DISCUSSIONS WITH THE LLFA & UNITED UTILITIES
HEADWALL CL:75.500 IL:73.839
EXTENT OF EXISTING TREES TO BE RETAINED TBC
GORTON LOWER RESERVOIR
EXTENT OF EXISTING TREES TO BE RETAINED TBC
EXTENT OF EXISTING TREES TO BE RETAINED TBC
EXTENT OF EXISTING TREES TO BE RETAINED TBC
FOUL WATER NETWORKS TO DISCHARGE TO PUBLIC FOUL WATER SEWER. THE EXTENT OF THE CONNECTION TYPE, MANHOLE LOCATIONS, CONNECTION SIZES AND FLOW RATES ARE TBC
EXISTING SITE ACCESS ROAD TO REMAIN AS BUILT AND UTALISED
PROPOSED CELLULAR ATTENUATION TANK TO PROVIDE ATTENUATION STORAGE UP TO AND INCLUDING 1 IN 100 YEAR +45% CLIMATE CHANGE RAINFALL EVENT.
VOLUME OF STORAGE REQUIRED = 114,00m³
30,0m x 5,0m x 0,8m DEEP x 0,95 POROSITY
IL: 76,500 (ABOVE 30 YEAR WATER LEVEL)
TOP OF TANK: 77.300
SITE BOUNDARY
LAND GIVEN BACK TO THE LA TO ALLOW CONTINUITY OF THE "YELLOW BRICK ROAD" AND IMPROVED ACCESS TO THE RESERVOIR EDGE
REAR GARDENS FACE WALL WAY, WITH PERMEABILITY INTO THE SITE.
FOUL WATER NETWORKS TO DISCHARGE TO PUBLIC FOUL WATER SEWER. THE EXTENT OF THE CONNECTION TYPE, MANHOLE LOCATIONS, CONNECTION SIZES AND FLOW RATES ARE TBC
EXISTING SITE EMBANKMENT
Electric Charging Point
McDonald's
Manche
Trafalga
Cade
RESIDUAL DESIGN HAZARDS
1. LIE STRIPPIE ADJACENT TO SITE.
2. ALL SERVICES MUST BE VERIFIED BY THE CONTRACTOR THROUGH LIAISON WITH THE VARIOUS UNDERTAKERS AND BY USING DETECTION EQUIPMENT PRIOR TO ANY EXCAVATION BY HAND PLACE PERMIT TO WORK REQUIRED, INCLUDING EXISTING OVER HEAD CABLE AT PROPOSED SITE ACCESS ROAD ACCESS.
3. DEEP EXCAVATION REQUIRED FOR DRAINAGE WORKS, CONTRACTOR TO UTILISE SHORING AND SURVEY APPROPRIATE CONSTRUCTION TECHNIQUES TO PROTECT ALL WORKERS WITHIN DEEP EXCAVATIONS.
4. SLUDGE DUST TO BE COMPRESSED WHEN USING CUTTING EQUIPMENT.
5. WORKING IN CLOSE PROXIMITY TO EXISTING SURFACE WATER COURSE (RIVER BANK) 3 METER OFFSET FROM ENVIRONMENTAL AGENCY FOR WORKING CLOSE TO EXISTING WATER COURSE
GENERAL NOTES
1. SETTING OUT SHALL BE UNDERTAKEN USING ONLY THE INFORMATION GIVEN DISTANCES SHOULD NOT BE SCALED FROM THIS DRAWING.
2. ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CODE FOR ADOPTION AND UNITED UTILITIES DETAILS & GUIDELINES.
3. THE MINIMUM GRAVITY PIPE DIAMETER UNDER ADOPTABLE HIGHWAYS SHALL BE 150mm
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION GIVEN WITH REGARDS TO EXISTING SERVICES AND DRAINAGE CONNECTIONS ETC, PRIOR TO COMMENCING THE WORKS, THE RATES SHALL INCLUDE FOR HAND DIG AROUND SERVICES WHERE NECESSARY, THE CONTRACTOR SHALL ADHERE TO THE COMREGULATIONS AT ALL TIMES
5. THE OUTSIDES OF ALL SEWERS SHALL BE A MINIMUM OF 1.0m FROM KERB LINES AND THE OUTSIDE OF MANHOLES SHALL BE A MINIMUM OF 0.5m FROM KERB LINES
6. EXISTING FLOWS IN WATERCOURSES, SEWERS AND LAND DRAINS SHALL BE MAINTAINED AT ALL TIMES
7. ONLY TRAINED PERSONNEL SHALL BE PERMITTED TO ENTER CONFINED SPACES
8. ALL MATERIALS TO BEAR THE RELEVANT B.S. KITEMARK AND COMPLY FULLY WITH THE SPECIFICATIONS. ALL CONCRETE & CONCRETE PRODUCTS MUST USE SULPHATE RESISTANT CEMENT UNLESS THE SITE INVESTIGATION REPORT PROVES THAT SULPHATE ATTACK FROM SOILS AND GROUNDWATER WILL NOT OCCUR TO WITHSTAND A CLASS
9. ALL OPENING NOTICES ETC. AS REQUIRED UNDER HIGHWAYS ACTS ETC, ARE TO BE OBTAINED PRIOR TO COMMENCEMENT OF WORKS, ALL WORKS ARE TO BE INSPECTED BY L.A., NHBC OR THE NETWORK OPERATOR AS APPLICABLE.
10. WHERE 'ULTRA RIB' UPVC PIPES (OR SIMILAR APPROVED) ARE USED IN ADOPTABLE DRAINAGE THEY SHALL STILL BE HANDLED AND LAID IN ACCORDANCE WITH THE SPECIFICATION AND GUIDANCE ISSUED BY THE HIGH PERFORMANCE PIPE ASSOCIATION.
11. A CLASS S BED AND SURROUND MUST BE USED FOR SUCH PIPES, TRENCH BACKFILL IN HIGHWAYS TO WITHIN 1m OF HIGHWAY SHALL AS DIRECTED BY THE HIGHWAY AUTHORITY BE A SUITABLE GRANULAR MATERIAL ALL IN ACCORDANCE WITH SEWERS FOR ADOPTION CL. 4.3.4.
12. SLAB LEVELS SHALL NOT BE VARIED WITHOUT REFERENCE TO THE ENGINEER FOR GUIDANCE
13. DOMESTIC DRAINAGE SHALL BE TO BUILDING REGULATIONS APPROVED DOCUMENT H, 110mm U.P.V.C. PIPES LAID TO THE FOLLOWING MINIMUM FALLS UNLESS OTHERWISE SHOWN.
FOUL S/W.
HEAD RUN 1 IN 40 1 IN 60
ELSEWHERE 1 IN 60 1 IN 100
14. ALL GULLY CONNECTIONS TO BE 150mm UTHPED UPVC UNLESS NOTED OTHERWISE
15. MINIMUM COVER TO DRAINAGE SOFFIT LEVEL.
LANDSCAPING TRAFFICKED AREAS HIGHWAYS
0.900m 0.900m 1.200m
- CLASS 'S' BEDDING AND SURROUND TO BE USED WHERE MINIMUM COVER IS ACHIEVED.
- WHERE MINIMUM COVER IS NOT ACHIEVED CLASS 'Z' BEDDING AND SURROUND (CONCRETE ENCASEMENT) TO BE USED.
16. FOUNDATIONS WITHIN CLOSE PROXIMITY TO PROPOSED DRAINAGE WILL NEED TO BE AT THE SAME DEPTH AS DRAINAGE TO AVOID THE POTENTIAL FOR UNDERMINING.
LEGEND
PROPOSED S104 SURFACE WATER SEWER SUBJECT TO UNITED UTILITIES AGREEMENT
PROPOSED S104 FLOW CONTROL CHAMBER SUBJECT TO UNITED UTILITIES AGREEMENT
PROPOSED S104 FOUL WATER SEWER SUBJECT TO UNITED UTILITIES AGREEMENT
PROPOSED S104 COMBINED WATER SEWER SUBJECT TO UNITED UTILITIES AGREEMENT
PROPOSED PRIVATE SURFACE WATER MANHOLES (450Ø UNLESS SPECIFIED OTHERWISE)
PROPOSED PRIVATE SURFACE WATER RODDING EYE
PRIVATE POROUS PARKING BAYS WITH MINIMUM 350mm THICK TYPE 3 POROUS SUB-BASE MATERIAL (MIN 30%POROSITY)
PROPOSED ATTENUATION TANK WITH VENT VPE - OFFLINE SET ABOVE 30 YEAR WATER LEVEL
PROPOSED SEWER EASEMENT FOR ADOPTABLE DRAINAGE OUTSIDE OF ADOPTABLE HIGHWAY AREA
PROPOSED PRIVATE FOUL WATER MANHOLES (450Ø UNLESS SPECIFIED OTHERWISE)
PROPOSED FOUL ACCESS CHAMBERS (450Ø UNLESS SPECIFIED OTHERWISE)
PROPOSED HIGHWAY GULLY & MANHOLES
EXISTING UNITED UTILITIES FOUL WATER SEWER
EXISTING UNITED UTILITIES SURFACE WATER SEWER
DRAINAGE NOTES
FOUL AND SURFACE WATER CONNECTIONS ARE TO BE CONFIRMED
ALL POP-UP SETTING OUTS TO BE PROVIDED BY THE ARCHITECT
ALL SURFACE / FOUL WATER CONNECTIONS ARE TO HAVE RODDABLE ACCESS FROM ABOVE GROUND
ANY 600Ø ACCESS CHAMBERS GREATER THAN 1.2m DEEP WILL REQUIRE A REDUCED ACCESS SHAFT
DRAINAGE STRATEGY
DESIGN CRITERIA
FSR
VOLUMETRIC RUN-OFF COEFFICIENT - 1.000
DISCHARGE RATE - 5L/S
SURFACE WATER
THE PROPOSED S104 SURFACE NETWORK WILL OUTFALL INTO AN EXISTING RESERVOIR GORTON LOWER LOCATED NORTHEAST OF THE DEVELOPMENT. THE SURFACE DRAINAGE WILL HAVE A HYDROBRAKE (SWS) TO RESTRICT THE SURFACE OUTFALL TO 5L/S BEFORE FALLING INTO A PROPOSED HEADWALL THAT WILL CONNECT INTO GORTON LOWER RESERVOIR VIA A 150Ø PIPE
FOUL WATER
THE PROPOSED S104 FOUL NETWORK WILL OUTFALL INTO AN EXISTING MANHOLE WITHIN THE SITE PRIOR TO A CONNECTION TO UU A UU MANHOLE IN WALL WAY STREET (UU REF 3901) VIA A 150Ø PIPE LOCATED SOUTH OF THE DEVELOPMENT ON WALL WAY STREET. THE FOUL WILL BE AN UNRESTRICTED RATE.
REV | PURPOSE | DRAWN | CHECKED | APPROVED | DATE
P03 | PLANNING | Full Drainage Redesign to suit new layout & Attenuation | JJ | JCM | JCM | 25.11.25
P02 | PLANNING | Minor Amendments | AJP | JCM | JCM | 24.10.25
P01 | PLANNING | Initial planning issue | AJP | JCM | JCM | 30.09.25
REV | DATE | DESCRIPTION | BY | CHK | APP
PRELIMINARY
CLIENT: PEACOCK + SMITH
ARCHITECT: ATELIER MB
PROJECT: THE BAND STAND GORTON
TITLE: OUTLINE DRAINAGE STRATEGY BELOW GROUND DRAINAGE
STATUS: S2 | PROJECT No.: 225-J002 | ORIGINATOR: TBS | VOLUME: AJP | LEVEL: ZZ | TYPE: 00 | ROLE: DR | NUMBER: C - 0001 | REV: P03
SCALE @ A1: 1:200 | DRAWN: JJR | CHECKED: JCM | APPROVED: JCM | DATE: MAR 2026
AJP consulting engineers
t.0151 227 1462 e.info@ajpltd.co.uk 91 Dale Street, Liverpool, L2 2ET

Appendix K – Infiltration Testing Assessment

INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365: 2007

Client: **RS 786 Limited**

Site: **Former Bandstand Public House**

Job No: **M225-059** **Test No: SA02 Test 1**

CALCULATION OF SOIL INFILTRATION RATE

Time (min)	Depth (m)
0	1.10
1	1.10
2	1.10
3	1.10
4	1.10
5	1.10
10	1.10
20	1.10
30	1.10
40	1.10
50	1.10
60	1.10
90	1.10
120	1.10
150	1.10
180	1.10

Gravel Filled Y/N 0

Depth at start of test (m bgl) = 1.10

Depth at end of test (m bgl) = 1.10

Depth of Loss in test (m) 0.00

75% level = 1.35

50% level = 1.60

25% level = 1.85

Size of Soakaway

	Pit Dimensions	Depth of Water
Length (m) =	2.50	1.00
Width (m) =	1.00	
Depth (m) =	2.10	

Base area of pit (m2) = 2.500

ap_{50}, area of loss (m2) = 6.000

Volume outflow 75 - 25% (m3) = 1.250

From the graph:

tp 75 (min) =

tp 25 (min) =

Test Type

Soil infiltration rate, f, (m/s) = **#DIV/0!**

Input:	CO

Checked:	

Date:	24/03/2025

