



Alpha House, Wythenshawe

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY REPORT



25 February 2026

Alpha House, Wythenshawe

Flood Risk Assessment & Drainage Strategy

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PREPARED BY JOHN SPEERS



Alpha House, Wythenshawe

Flood Risk Assessment & Drainage Strategy Report

Muse Places



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Alan Johnston Partnership Ltd.
Company No. 13204766

Alpha House, Wythenshawe

Flood Risk Assessment & Drainage Strategy Report

1. INTRODUCTION

This Flood Risk Assessment (FRA) and Drainage Strategy Report has been prepared on behalf of Muse Places in connection with the construction of new multi-storey apartment block in Rowlandsway, Wythenshawe, situated within Manchester City Council. Even though the site is located entirely within Flood Zone 1 and the total area of the proposed development is under 1.0ha, an FRA has been completed as the site has a medium risk of surface water flooding.

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), Design and Construction Guidance Version 2.2, Building Regulations Approved Document H (Drainage and waste disposal), the National Planning Policy Framework document (Department for Communities and Local Government, July 2021) and associated Planning Practice Guidance.



2. SITE DESCRIPTION

The site is located on Rowlandsway, Wythenshawe and comprises of a former office building which is currently in the process of being demolished. The site is located at National Grid reference SJ 82829 86982. The site location plan is shown in Figure 2.1, attached in Appendix A, and the extent of the area to which the application relates is shown on the enclosed aerial photo in Figure 2.2, attached in Appendix B.

The existing site covers a total area of 0.361ha with the proposed development area covering the entire 0.361ha site. The site is bounded by existing commercial developments to the north and south, with the existing highways Rowlandsway to the west and Wavell Road to the east.

The levels across the site range from approximately 60.100mAOD to the north-east of the site to 61.200mAOD to the south-west of the site. This indicates a gradual fall in elevation from south-west to north-east, with the minimum level recorded at 60.100mAOD and the maximum level at 61.200mAOD. The topographic and utility survey is attached in Appendix C.

Figure 2.1: Site Location Map



Source Ordnance Survey

Figure 2.2: Aerial Photo



Source: Ordnance Survey

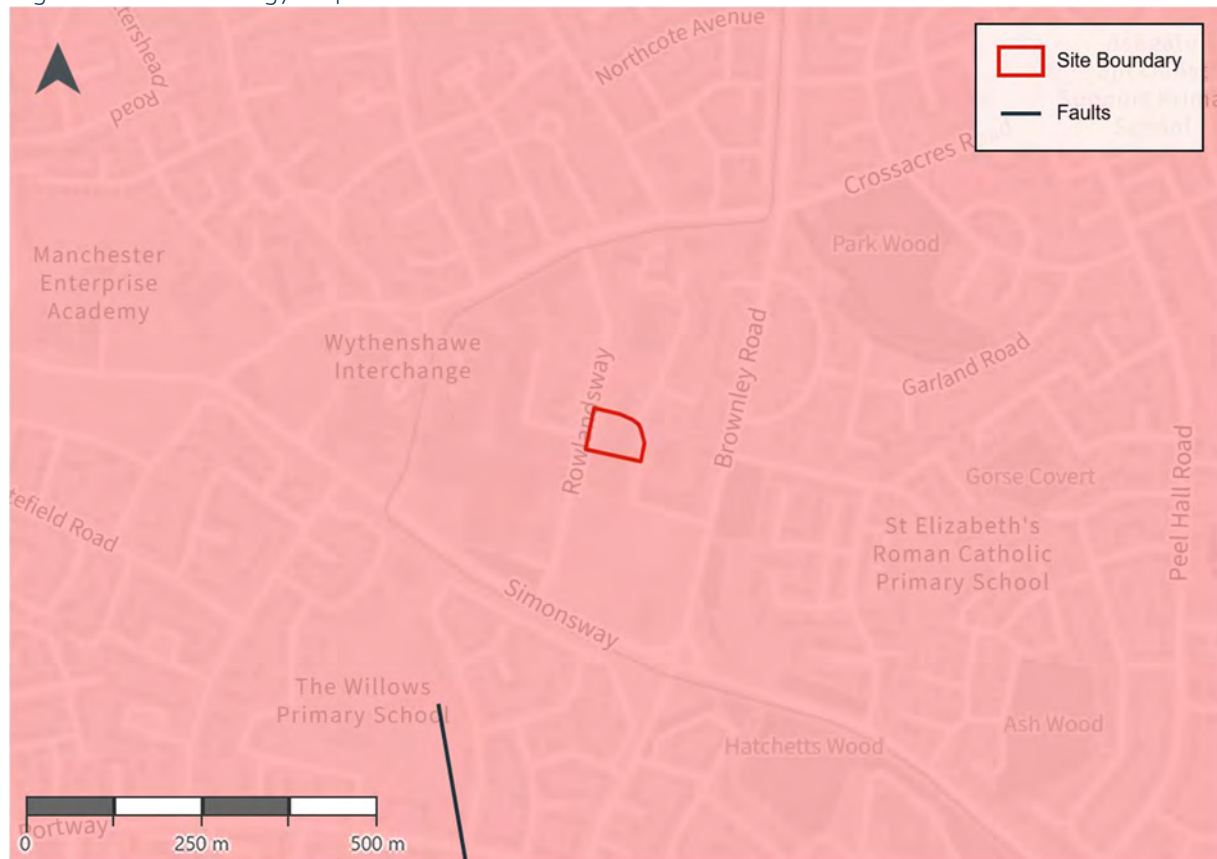
2.1. Geology

An intrusive site investigation was completed in January 2025 by WML Consulting and is contained within the Geo-Environmental Investigation & Assessment Report, 11380G-WML-XX-ZZ RP-G-0002A.

The site investigation report indicates that the underlying strata consists of made ground to depths of up to 0.65mbgl, which is underlain by Glacial deposits comprising mainly of clays to a maximum recorded depth of 2.35mbgl. The bedrock consisted of mudstone and was encountered from depths between 2.10mbgl to a maximum recorded depth of 9.00mbgl.

This is supported by the information taken from the British Geological Survey (BGS) 1:50,000 Bedrock geology maps which also show that the site has superficial deposits comprising of Glacial Till deposits. The survey also show bedrock geology is reported to be Bollin Mudstone Member.

Figure 2.3: BGS Geology Map



Source: Ordnance Survey, BGS

2.2. Hydrogeology

The Environment Agency groundwater maps show that the superficial deposits are classified as a Secondary (undifferentiated). The bedrock aquifer is designated as a Secondary B aquifer.

The Environment Agency groundwater maps also indicate that the development site is not situated within a groundwater Source Protection Zone (SPZ). They also indicate that the site is located within an area which has a medium to low risk of groundwater flooding.

Despite the medium to low risk of groundwater flooding, identified by the Environment Agency groundwater maps, the intrusive site investigation recorded no groundwater strikes for all exploratory holes, to a maximum recorded depth of 9.00mbgl.

Figure 2.4: Site Hydrogeology



Source: Ordnance Survey, BGS

Figure 2.5: Groundwater Source Protection Zones



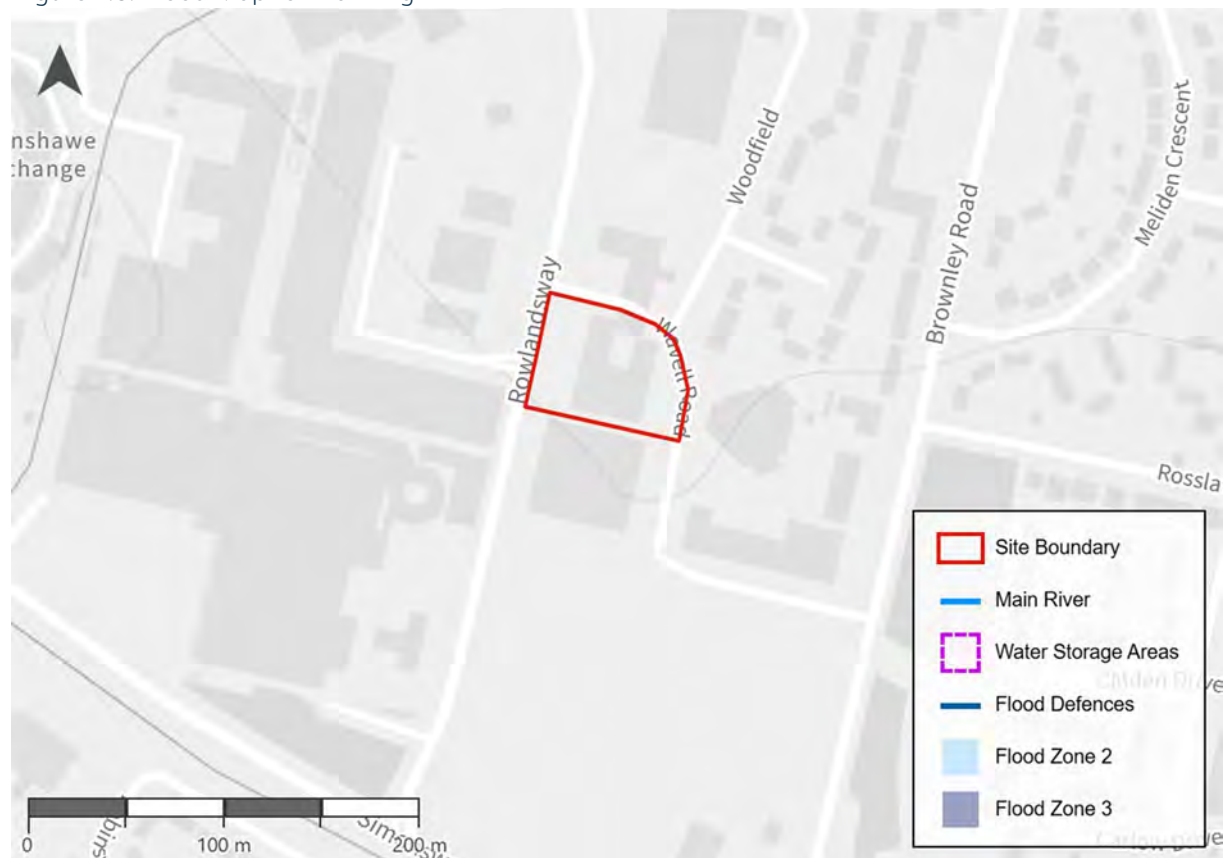
Source: Ordnance Survey, Environment Agency

2.3. Hydrology

The site is located within Flood Zone 1, land assessed to have a low probability of flooding

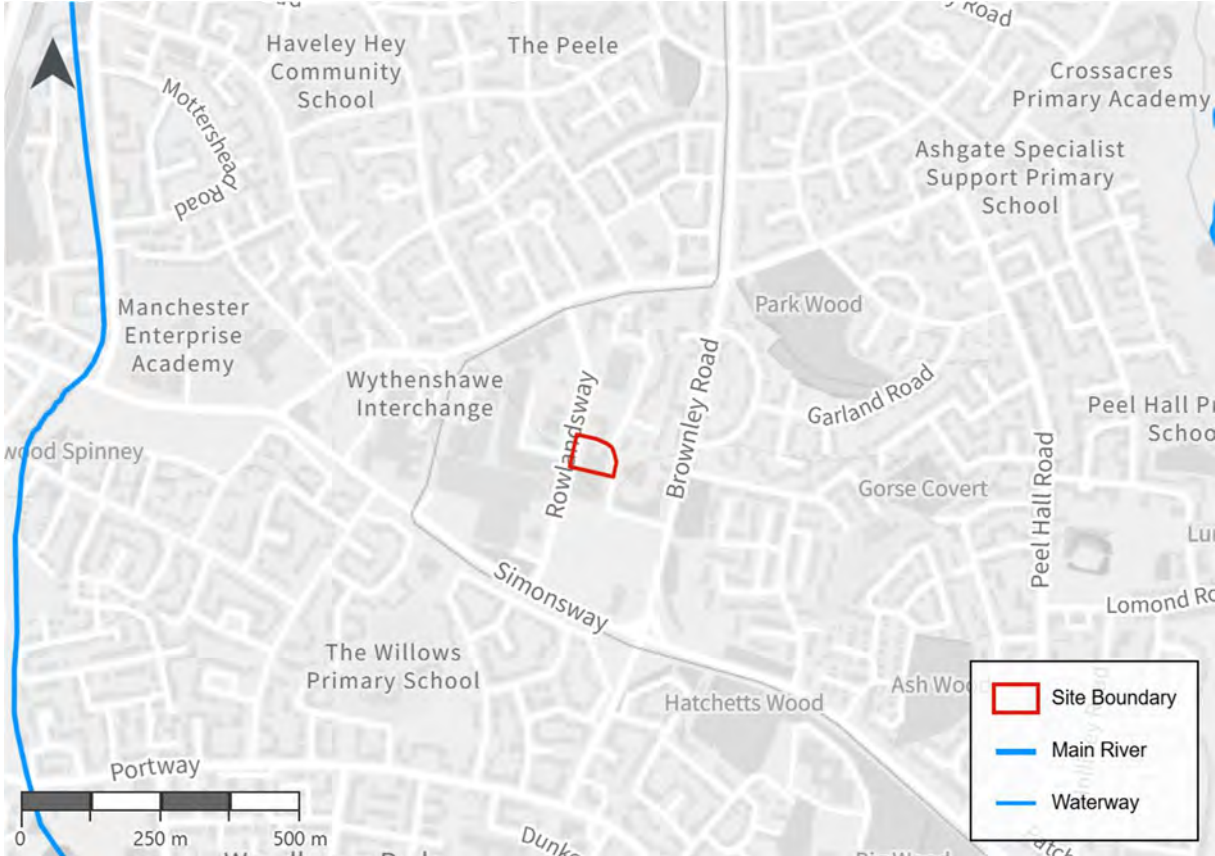
The nearest watercourse to the site is the Baguley Brook, classified as a main river. It is located approximately 900m to the west of the site.

Figure 2.6: Flood Map for Planning



Source: Ordnance Survey, Environment Agency

Figure 2.7: Main Rivers Map



Source: Ordnance Survey, Environment Agency

3. PROPOSED DEVELOPMENT

The proposed development at Alpha House, Wythenshawe, involves the construction of a new multi-storey residential apartment building. The scheme will comprise of a new multi-storey apartment block containing 125no. apartments, with an internal courtyard garden located at first floor level and an internal car park at ground floor level.

The total area of the proposed development is 0.361ha, and the small areas surrounding the building will be appropriately paved and landscaped. The former use of the site is offices, and the proposed use is residential.

To enable a viable scheme, the proposed site levels are constrained by the existing site boundaries, therefore, site levels are likely to remain similar to the existing. The proposed site plans for the development are attached in Appendix D.

4. 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 as 'More vulnerable' and as the site is located within Flood Zone 1, the Exception Test is not required.



5. 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 shown in Figure 5.1 below. Records of historical flooding have also been assessed and shown in Figure 5.2 below.

As can be seen from the Flood risk map, the site is located within Flood Zone 1, land assessed to have a low probability of flooding

The nearest watercourse to the site is the Baguley Brook, classified as a main river. It is located approximately 900m to the west of the site.

Therefore, the risk of flooding to the new development from rivers is considered to be low.

Figure 5.1: Risk of Flooding from Rivers and Sea (RoFRS) Map



Source: Ordnance Survey, Environment Agency

Figure 5.2: Historical Flood Extents Map



Source: Ordnance Survey, Environment Agency

5.2. Flooding from Sea

The site is not at risk of flooding from the sea. The lowest level of the site is approximately 60.100mAOD, 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

Figure 5.3 below.

It can be seen from the map that some areas of the site are classified as having a medium risk of surface water flooding, while the remainder is classified as having a very low risk of surface water flooding.

However, these areas are to be reworked during the construction of the new multi-storey residential apartment building and surrounding hard landscaping and therefore the levels within these areas will likely be amended to suit the new drainage network. These areas will also have sufficient new positive drainage to collect any surface water runoff.

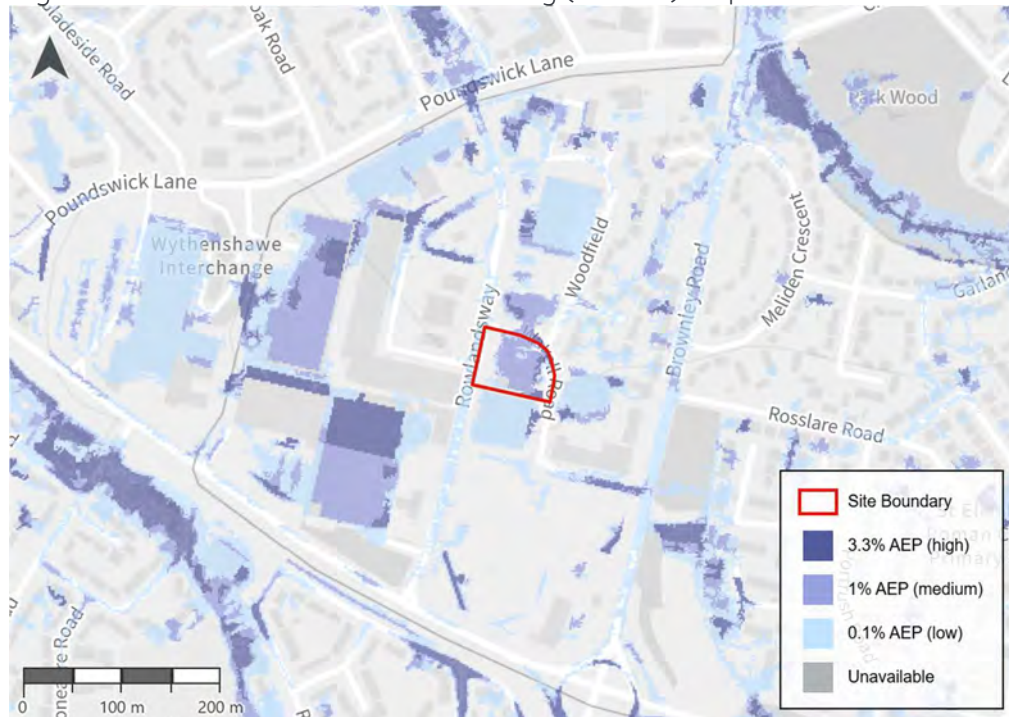
The proposed lowest FFL of 60.600mAOD sits above the surface water flood extents in the 1% AEP + climate change event, with no internal flooding predicted. As such, the proposed development is considered safe for its lifetime without additional freeboard.

This is supported by drawing 18703-LB-ZZ-XX-D-A-130010 which shows that the minimum FFL of the proposed building is 60.600mAOD and this sits around 300mm - 400mm above the adjacent Wavell Road levels to the north-east of the site. As such, any surface water flooding would be contained within Wavell Road to the north of the site and would flow north-east along the lower levels located within the highways Wavell Road and Woodfield Road.

For clarity, AJP have completed an exceedance flow paths drawing which indicates that any overland/surface water flows would flow away from the building and towards the surrounding highways. Please refer to Appendix I for the exceedance flow paths drawing.

Therefore, due to the FFL levels, surrounding lower existing levels and sufficiently designed drainage networks, the site can be considered to be at low risk from 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.

Figure 5.3: Risk of Surface Water Flooding (RoSWF) Map



Source: Ordnance Survey, Environment Agency

5.4. Flooding from Groundwater

As outlined in Section 5.20 of the WML Consulting Geo-Environmental Investigation & Assessment Report, 11380G-WML-XX-ZZ RP-G-0002A, no groundwater was encountered in any of the exploratory holes.

As such, due to the lack of groundwater encountered by the site investigation and the fact that the Environment Agency groundwater maps indicate that the development site is located within an area which has a medium to low risk of groundwater flooding, 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 E. As can be seen from the United Utilities sewer maps there are public sewers within the site boundary.

There is an existing 525mm diameter public combined water sewer located just inside the western boundary of the proposed site and a number of existing public combined water sewers located within the highways to the north and east of the site.

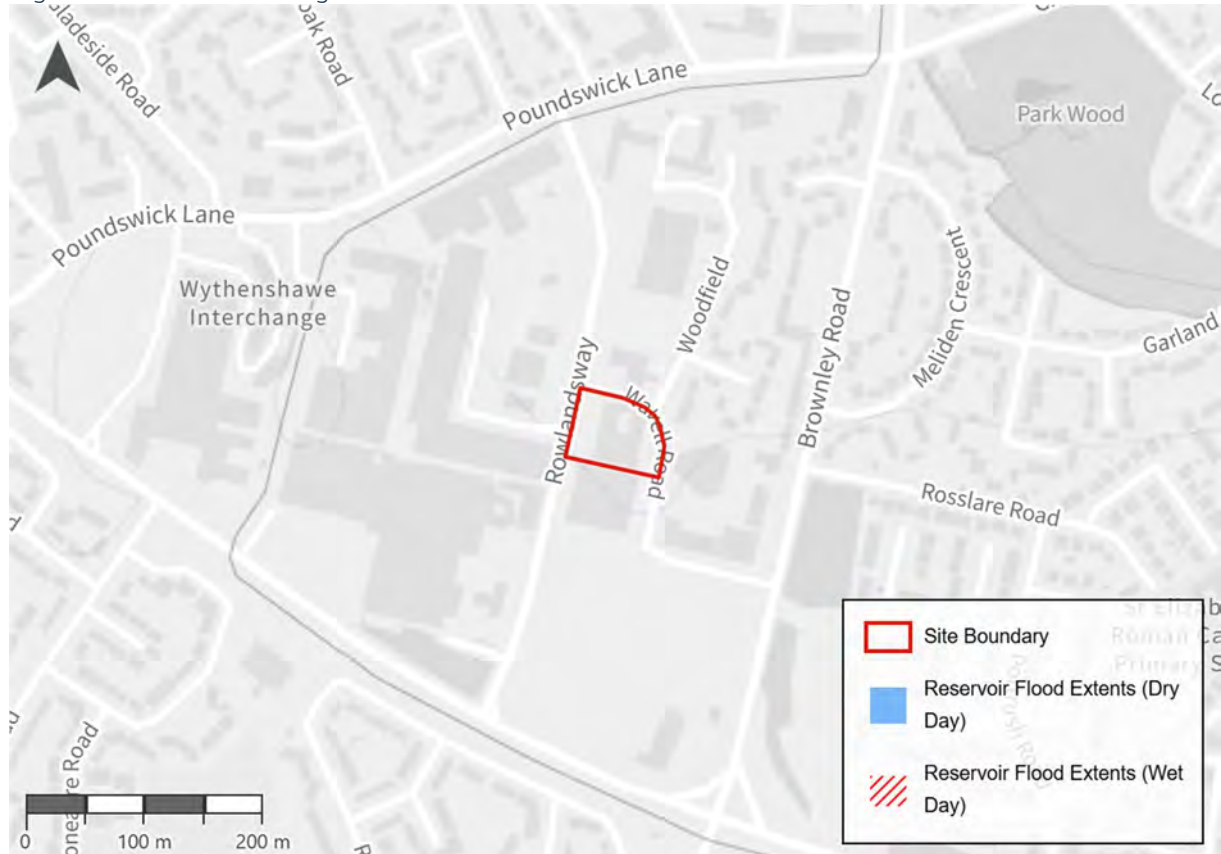
As the public sewers are maintained by United Utilities and also the fact that the proposed drainage for the site will be suitably designed, leads to the conclusion that the site itself is considered to have a low risk of flooding from sewers.

5.6. Flooding from Reservoirs, Canals and Other Artificial Sources

The Reservoir Flood Risk map is included in Figure 5.4, with the nearest reservoir being Rostherne Mere, which is located approximately 8.53km to the South West of the site.

As such, it can be seen from the map that the site is at low risk of flooding from reservoirs, canals or other artificial sources.

Figure 5.4: Risk of Flooding from Reservoirs



Source: Ordnance Survey, Environment Agency

6. PROPOSED DEVELOPMENT & DRAINAGE STRATEGY

6.1. Effect of Proposed Development

As previously outlined in Section 2.0, the existing site covers a total area of 0.361ha and consists of the existing derelict office block and surrounding hardstanding, which are in the process of being demolished. As can be seen from the aerial photo, attached in Appendix B.

As such, the pre and post development impermeable areas for the 0.361ha 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 below;

Total Development Site Area (ha)	Existing Impermeable Area (ha)	Proposed Impermeable Area (ha)
0.361	0.263	0.297

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, drainage systems are needed 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 6.3, 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 from the United Utilities sewer maps attached in Appendix E, there are public sewers located within the site boundary. There is an existing 525mm diameter public combined water sewer located just inside the western boundary of the proposed site and a number of existing public combined water sewers located within the highways to the north and east of the site.

To the north and east of the proposed development there are 225mm diameter public combined water sewers located within Wavell Road. These sewers both run to the junction of Wavell Road and Woodfield, where they combine into a 300mm diameter public combined water sewer, prior to running north along Woodfield.

As the 525mm diameter public combined water sewer is running adjacent to the proposed building footprint, the required 3m easement from United Utilities will not be achievable. As such, discussions with United Utilities are currently ongoing regarding the use of an offset easement on the existing public sewer. The correspondence is attached in Appendix E.

Further discussions should be undertaken with United Utilities to confirm their acceptance of the proposed offset easement. Should United Utilities not accept the offset easement or build-over proposals, the existing 525mm diameter public combined water sewer will need to be diverted via a Section 185 agreement with United Utilities to ensure that the required 3m easement is achieved.

As the existing building is currently in the process of being demolished, a CCTV survey of the existing drainage within the site boundary has not been completed. Once the current demolition is completed, the CCTV survey of the existing public and private drainage should be conducted, to confirm the exact location, levels and details of all of the existing public and private drainage both within and immediately surrounding the proposed site.

6.3. Proposed Drainage Strategy

As outlined above in Section 6.1, 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 Planning Policy Guidance and the CIRIA SuDS Manual detail that surface water runoff from a development should be disposed of as high up the following hierarchy as reasonable practicable:

- ◆ into the ground (infiltration);
- ◆ to a surface water body;
- ◆ to a surface water sewer, highway drain, or another drainage system;
- ◆ to a combined sewer.

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

Section 6.27 of the WML Consulting, Geo-Environmental Investigation & Assessment Report, 11380G-WML-XX-ZZ RP-G-0002A states; *“In consideration of the predominantly cohesive nature of the natural soils, soakaways are not considered a feasible drainage option for the site. In addition, given the restrictive nature of the site there would likely be insufficient room to locate an appropriately sized soakaway the required distance away from proposed and retained structures.”*

Therefore, the use of infiltration to dispose of the surface water runoff from the site is not considered to be feasible. This is due to the underlying impermeable strata and also the space restrictions across the site.

As the possibility of infiltration has been ruled out by the site investigation, the intention for the development would be to discharge to watercourse. As indicated in Section 5.1, the nearest watercourse is the Baguley Brook which is located 900m west of the proposed site. Given the distance and large areas of developed land between the site and the watercourse, discharging to watercourse is considered unacceptable.

Therefore, the surface water runoff from the site should discharge to a surface water sewer. However, as can be seen from the United Utilities sewer map, attached in Appendix E, and the topographic and utility survey is attached in Appendix C, there are no nearby surface water sewers or highway drains. Therefore, it is envisaged that the surface water runoff from the proposed development area will discharge into the existing public combined water sewers.

It is anticipated that the surface water runoff from the proposed development site will discharge into the existing 525mm diameter public combined water sewer located just inside the western boundary of the site.

It should be noted that discussions with United Utilities regarding future proofing the surface water drainage have been undertaken. These discussions have formed a part of the overall Wythenshawe Town Centre masterplan, which involves the construction of a new public surface water sewer along Rowlandsway, to the west of the site. This forms part of the drive from United Utilities to remove surface water runoff from the existing public combined water sewer network.

As such, AJP have agreed that even though the surface water runoff from the proposed development will discharge into the existing 525mm diameter public combined water sewer, should the new public surface water sewer in Rowlandsway be constructed, the surface water runoff from the Alpha House development will be disconnected from the public combined water sewer and connected to the new public surface water sewer in Rowlandsway.

Therefore, AJP will ensure that the surface water drainage design includes a pipe stub from the last surface water manhole within the site which can be utilised, in the future, to connect the surface water drainage network from the site, into the new public surface water sewer in Rowlandsway.

While every effort to use the 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 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 case of 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 new advice, issued by Defra, which updates previous climate change allowances outlined in the National Planning Policy Framework.

Suitable systems of below ground drainage will be required to contain as a minimum requirement, the 1 in 30 year event. Additionally, any surface water run-off from events that exceed the design capacity of the new drainage system, up to and including the 1 in 100 year

(+45%) event, will be retained on-site in safe storage areas. LLFA requirements also ask for 1 in 30 year event with 45% CC allowance.

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

As the existing site is brownfield, to align with the Manchester, Trafford and Salford Strategic Flood Risk Assessment, a minimum of 50% betterment is required for reduction in runoff rate compared to the existing rates.

However, United Utilities have indicated within their pre development enquiry response, which is attached in Appendix E, that the surface water runoff from the site should be restricted to a maximum discharge rate of 5 L/s.

For completeness an assessment of the existing surface water run-off from the brownfield site has been completed using a three pipe network within Micro Drainage. Using only the existing impermeable area of 0.263ha, the existing brownfield run-off rates were calculated. The brownfield runoff assessment is attached in Appendix G and the results summarised within the table below.

Rainfall Return Period (years)	Existing Brownfield Runoff Rate (L/s)	Proposed Discharge Rate (L/s)	Betterment (%)
1 Year	29.0	4.6	84
Qbar (2 Year)	37.5	4.9	87
30 year	73.9	5.0	93
100 year	92.7	5.0	95

As can be seen from the table above, the proposed maximum surface water discharge rate of 5 L/s provides a minimum 84% betterment on the existing brownfield runoff rates and therefore complies with the required 50% betterment within the Manchester, Trafford and Salford Strategic Flood Risk Assessment and the United Utilities requirements.

Therefore, the surface water discharge rate from the site should be limited to a maximum of 5 L/s for all rainfall events up to and including the 1 in 100 year +45% climate change event.

As seen in from the Outline Drainage Strategy Drawing attached in Appendix H, it is anticipated that the surface water runoff from the proposed building will be collected via green roof areas (first floor courtyard area only), rainwater downpipes and gullies, and convey the flow to the north-west corner of site.

Here it will combine with the foul water runoff from the site, prior to discharging into the existing 525mm diameter public combined water sewer, located just inside the western boundary of the site.

As previously outlined, should the new public surface water sewer in Rowlandsway be constructed, the surface water runoff from the Alpha House development will be

disconnected from the public combined water sewer and connected to the new public surface water sewer in Rowlandsway, via the pipe stub within the last surface water manhole.

The surface water runoff is restricted via a vortex flow control device prior to discharging into the proposed combined water drainage. The vortex flow control device restrict the runoff to 5 L/s for all rainfall events up to and including the 1 in 100 year +45% climate change event.

The surface water drainage calculations have also been included within Appendix H 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 required 5 L/s discharge rate. This is summarised in the table above.

It should be noted that the areas of hardstanding/roof which drain directly into the surface water drainage network are indicated within the total area contributing section of the drainage calculations. However, the remaining areas, which consist of the first floor courtyard area, are indicated within the time area diagram section of the calculations and have been input as green roof areas to better represent the increased time of entry into the surface water drainage network.

The surface water drainage strategy should be confirmed via more detailed discussions with Manchester City Council and United Utilities prior to the commencement of any works.

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	✓	Suitable and incorporated, where possible (first floor courtyard area only).
Rainwater Harvesting	✗	Impractical due to lack of demand for greywater.
Basins, Ponds & Swales	✗	Unsuitable due to lack of available space across the site.
Filter Strips	✗	Unsuitable due to lack of available space and areas to incorporate across the site.
Bio-retention Areas	✗	Unsuitable due to lack of available space and areas to incorporate across the site.
Infiltration Techniques	✗	Unsuitable due to impermeable strata and building regulations restrictions.
Permeable Surfaces	✗	Unsuitable due to lack of available areas to incorporate across the site.
Tanked/Piped Systems	✓	Suitable and incorporated, where required.

Green roof areas have been considered and incorporated, where possible. The only area available for this development is the garden/courtyard podium deck area, which is located at first floor level. This provides water quality, water quantity, amenity and biodiversity benefits for the site. The other roof areas at higher levels have a lack of available space due to the incorporation of PV panels and other plant and equipment.

Rainwater harvesting was also considered but due to a lack of greywater demand and the cost associated with tanks and pumping of the separate system, it has been deemed as impractical to include a rainwater harvesting system.

The use of basin, ponds, swales and filter drains have been considered but due to a lack of available space across the site, these have been deemed as impractical.

Raingardens have also been considered but due to a lack of available space and a lack of available areas to incorporate them, it has been concluded that the use of raingardens is unsuitable.

As discussed in Section 6.3.1, infiltration is not suitable for the proposed site and therefore infiltration techniques have been discounted. The use of porous surfacing has also been considered but due to a lack of available areas to incorporate, it has been concluded that the use of porous surfacing is unsuitable.

Finally, the use of oversized pipe networks and below ground attenuation tanks have been incorporated, where required.

The use of SuDS solutions across the site is subject to change and is dependent upon the final site layout, detailed drainage design and the results of additional surveys. However, the drainage strategy and proposed SuDS solutions should adhere as close as possible to the above outline drainage strategy and SuDS solutions.

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 mainly of roof areas, car park areas and low traffic roads, 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 a low pollution hazard level, with 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 SuDS treatment train of green roofs results in the mitigation indices outweighing the pollution hazard indices identified above. The use of green roofs (bio-retention system) on the first floor external courtyard area, would result in mitigation indices of; TSS - 0.8, Metals - 0.8 and Hydrocarbons - 0.8, which would be sufficient on its own.

As the mitigation indices are equal to or greater than each of the pollution hazard indices the use of the detention basin 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, March 2012).
- ◆ 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 from the Drainage Strategy Drawing attached in Appendix H, it is anticipated that the foul water drainage will collect run off from the proposed building and convey the foul water to the north- west corner of the proposed site.

Here the foul water will combine with the restricted surface water runoff, prior to discharging into the existing 525mm diameter public combined water sewer located just inside the western boundary of the site. United Utilities have confirmed that the foul water from the site can discharge into the existing foul water public sewer, at unrestricted rates.

The foul water drainage strategy should be confirmed via more detailed discussions with Manchester City Council (LLFA) and United Utilities prior to the commencement of any works.



7. 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 cellular attenuation tank.

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.
- ◆ Green roof (first floor courtyard area only).
- ◆ Cellular attenuation tank.

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 the maintenance of the surface and foul water drainage systems will be the responsibility of the Client and/or end user.

As such, the maintenance of the specified SuDS 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. A copy of the final construction drainage layout should also be provided in the final Operations and Maintenance Manual.

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 below table sets out the maintenance schedule for the pipe components of the proposed drainage systems.

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.

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 table 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. Green Roof

The green roof areas refer to the first floor external courtyard area only. 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 green roofs are outlined within Table 12.5 of the CIRIA SUDS Manual C753. An extract of that table is given below to set out the maintenance schedule for the potential detention basin component of the proposed drainage system.

TABLE 12.5 Operation and maintenance requirements for green roofs

Maintenance schedule	Required action	Typical frequency
Regular inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required
	During establishment (ie year one), replace dead plants as required	Monthly (but usually responsibility of manufacturer)
	Post establishment, replace dead plants as required (where > 5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required

7.7. 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..

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

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. CONCLUSIONS

- The site is located within Flood Zone 1 and has a low risk of flooding from all sources other than surface water.
- The medium risk of surface water flooding has been mitigated by ensuring that the lowest FFL of the proposed building sits above the surface water flood extents in the 1% AEP + climate change event and also sits around 300mm - 400mm above the adjacent existing highway levels.
- Due to the proposed surface water flood risk mitigation measures and low risk of flooding from all other sources, the risk of flooding from all sources can be considered to be low.
- The WML Consulting, Geo-Environmental Investigation & Assessment Report, 11380G-WML-XX-ZZ RP-G-0002A states that the use of infiltration to dispose of the surface water runoff from the site is not considered to be feasible. This is due to the underlying impermeable strata and also the space restrictions across the site.
- As the possibility of infiltration has been ruled out by the intrusive site investigation, the intention for the development would be to discharge to watercourse. The nearest watercourse is Baguley Brook which is located 900m west of the proposed site. Due to the distance across previously developed land, discharging to watercourse has been deemed as impractical.
- Therefore, the surface water runoff from the proposed development should discharge to a public surface water sewer. However, there are no nearby public surface water sewers. As such, it is envisaged that the surface water runoff from the proposed development will discharge into the existing 525mm diameter public combined water sewer located just inside the western boundary of the site.
- It should be noted that discussions with United Utilities regarding future proofing the surface water drainage have been undertaken. These discussions have formed a part of the overall Wythenshawe Town Centre masterplan, which involves the construction of a new public surface water sewer along Rowlandsway, to the west of the site, to remove surface water runoff from the existing public combined water sewer network.
- As such, it has been agreed that even though the surface water runoff from the proposed development will discharge into the existing 525mm diameter public combined water sewer, should the new public surface water sewer in Rowlandsway be constructed, the surface water runoff from the Alpha House development will be disconnected from the public combined water sewer and connected to the new public surface water sewer in Rowlandsway.
- To comply with the Manchester, Trafford and Salford Strategic Flood Risk Assessment, a minimum of 50% betterment is required for reduction in runoff rate compared to the existing rates. However, United Utilities have indicated that the

surface water runoff from the site should be restricted to a maximum discharge rate of 5 L/s.

- ◆ Therefore, the proposed surface water drainage collects the runoff from the site area and conveys it to the north-west corner of the proposed site. Here the surface water runoff is restricted to a maximum discharge rate of 5 L/s, via a flow control device prior to combining with the foul water discharge from the site. The combined drainage then discharges into the existing 525mm diameter public combined water sewer located just inside the western boundary of the site.
- ◆ The surcharged runoff is attenuated with the proposed below ground cellular attenuation tank and the drainage network itself.
- ◆ Using a vortex flow control device, the surface water discharge is to be restricted to the maximum discharge rate of 5 L/s, for all rainfall events up to and including the 100 year + 45% climate change design storm
- ◆ The foul water drainage will collect the run off from the proposed building and convey the foul water to the north-west corner of the proposed site. Here the foul water drainage combines with the restricted surface water runoff prior to discharging into the existing 525mm diameter public combined water sewer located just inside the western boundary of the site.
- ◆ As a new connection into the United Utilities public combined water sewer will be required, a Section 106 agreement with United Utilities will be required. This should be obtained prior to the commencement of any works on the United Utilities public combined water sewer.
- ◆ As the 525mm diameter public combined water sewer is running adjacent to the proposed building footprint, the required 3m easement from United Utilities will not be achievable. As such, discussions with United Utilities are currently ongoing regarding the use of an offset easement or build-over agreement on the existing public sewer.
- ◆ The external ground levels around proposed buildings shall fall away from the proposed building with any new levels being designed to ensure any overland flood routes, for events in excess of the 1 in 100 Year + 45% CC, exit towards the surrounding highways, for use in exceptional circumstances.

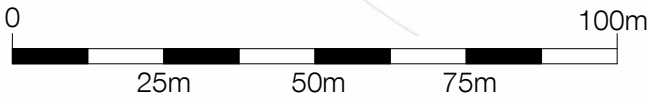
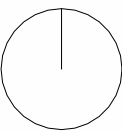
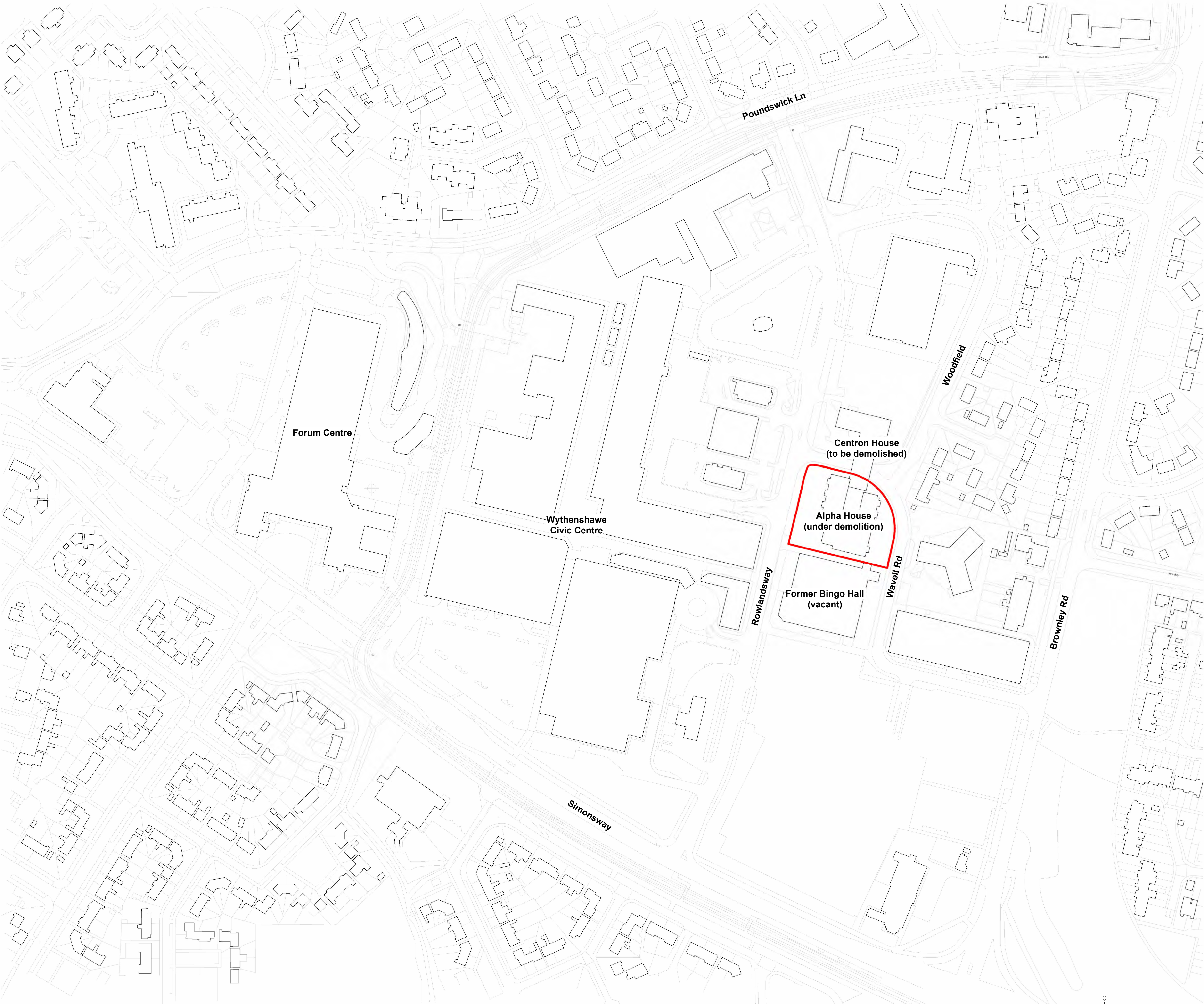


9. RECOMMENDATIONS

- Once the current demolition is completed, the CCTV survey of the existing public and private drainage should be conducted, to confirm the exact location, levels and details of all of the existing public and private drainage both within and immediately surrounding the proposed site.
- Further discussions are required with United Utilities to confirm if the use of an offset easement or build-over agreement on the existing public sewer is acceptable.
- The surface water drainage strategy should be confirmed via more detailed discussions with Manchester City Council (LLFA) and United Utilities prior to the commencement of any works.
- The foul water drainage strategy and unrestricted discharge rate should be confirmed via more detailed discussions with Manchester City Council (LLFA) and United Utilities prior to the commencement of any works.
- The use of specific SuDS techniques across the site should be determined during the detailed design process but where possible, the SuDS summary should be adhered to as close as reasonably possible with SuDS techniques incorporated, where possible, across the site.



APPENDIX A – SITE LOCATION PLAN



Notes

1. Do not scale this drawing.
2. All dimensions must be checked on site and any discrepancies verified with the architect.
3. Unless shown otherwise, all dimensions are to structural surfaces.
4. Drawing to be read with all other issued information. Any discrepancies to be brought to the attention of the architect.
5. This drawing is the copyright of Levitt Bernstein and may not be copied, altered or reproduced in any form, or passed to a third party without license or written consent.
6. This document is prepared for the sole use of Wythenshawe Community Housing Group and Muse Places. Levitt Bernstein accepts no liability for use of this drawing by parties other than the party for whom it was prepared or for purposes other than those for which it was prepared.
7. Unless indicated otherwise, all Structural and MEPH information shown in this architectural drawing has been designed and modelled by the relevant consultants, who have complete design responsibility for those elements.

This is not a construction drawing, it is unsuitable for the purpose of construction and must on no account be used as such.

Ownership Boundary

DRAFT

P01	31.10.25	Draft planning issue	TM/DM
Rev	Date	Description	Drawn / Checked

Project name

Alpha House
3995B

Drawing number Rev

18703 - LB - ZZ - XX - D - A - 100000 **P01**

Drawing

Site Location Plan

Purpose of issue Suitability code
For Comment

Scale First issue date
1 : 1250 @ A1 09/15/25

Client
Wythenshawe Community Housing Group and Muse Places

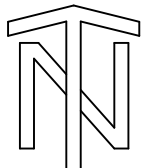
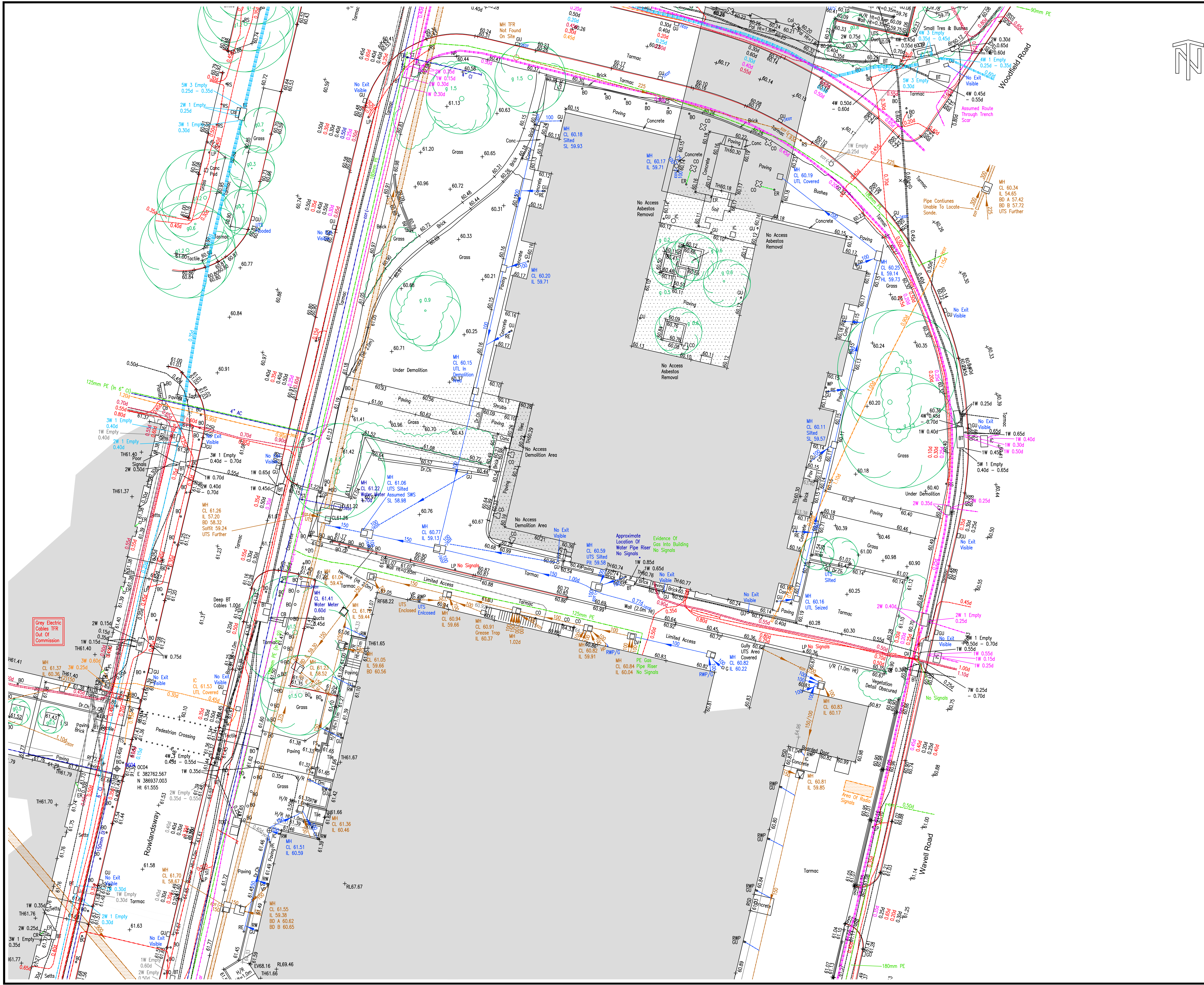
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2-4 Thane Villas
London N7 7PA
+44 (0)20 7275 7676
Manchester
Eastgate
2 Castle Street
Manchester M3 4LZ
+44 (0)161 669 8740

Levitt Bernstein
levittbernstein.co.uk

APPENDIX B – AERIAL PHOTO



APPENDIX C – TOPOGRAPHIC & UTILITY SURVEY



NOTES

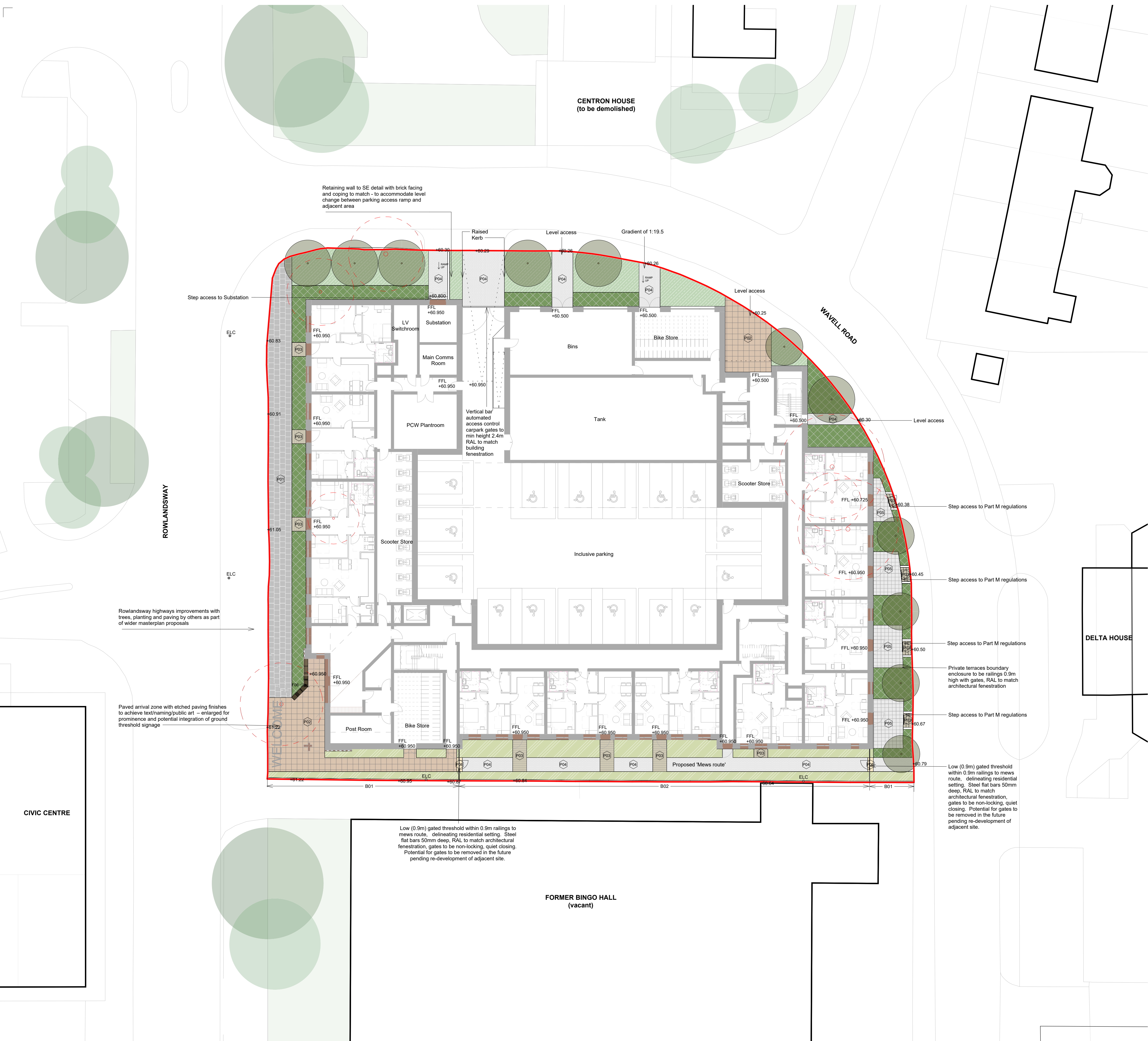
KEY

Grid & Datum Local Plane Grid related to OS National Grid & Datum
By GNSS RTK Observations

STANDARD ABBREVIATIONS

STREET FURNITURE	LETTER BOX	TRUCK MACHINE
AD - AIR CONDITIONING	LI - LIGHT	TR - TELEGRAPH POLE
AL - ALARM	LP - LAMP POST	UL - UTILITY LAMP
AV - AIR VALVE	MA - MANHOLE	UP - UNDERGROUND PIPING
BA - BATTERY	MB - MANHOLE	VP - VENT PIPE
BB - BELL MANHOLE	MC - MANHOLE	WM - WATER METER
BC - BELL MANHOLE	MD - MANHOLE	WP - WASTE PIPE
BD - BELL MANHOLE	ME - MANHOLE	
BE - BELL MANHOLE	MF - MANHOLE	
BF - BELL MANHOLE	MG - MANHOLE	
BG - BELL MANHOLE	MH - MANHOLE	
BH - BELL MANHOLE	MI - MANHOLE	
BI - BELL MANHOLE	ML - MANHOLE	
BJ - BELL MANHOLE	MM - MANHOLE	
BK - BELL MANHOLE	MN - MANHOLE	
BL - BELL MANHOLE	MO - MANHOLE	
BM - BELL MANHOLE	MP - MANHOLE	
BN - BELL MANHOLE	MQ - MANHOLE	
BO - BELL MANHOLE	MR - MANHOLE	
BP - BELL MANHOLE	MS - MANHOLE	
BR - BELL MANHOLE	MT - MANHOLE	
BS - BELL MANHOLE	MU - MANHOLE	
BT - BELL MANHOLE	MV - MANHOLE	
BU - BELL MANHOLE	MW - MANHOLE	
BV - BELL MANHOLE	MX - MANHOLE	
BW - BELL MANHOLE	MY - MANHOLE	
BY - BELL MANHOLE	MZ - MANHOLE	
CA - CABLE	PA - PAVEMENT	
CB - CABLE	PB - PAVEMENT	
CC - CABLE	PC - PAVEMENT	
CD - CABLE	PD - PAVEMENT	
CE - CABLE	PE - PAVEMENT	
CF - CABLE	PF - PAVEMENT	
CG - CABLE	PG - PAVEMENT	
CH - CABLE	PH - PAVEMENT	
CI - CABLE	PI - PAVEMENT	
CJ - CABLE	PJ - PAVEMENT	
CK - CABLE	PK - PAVEMENT	
CL - CABLE	PL - PAVEMENT	
CM - CABLE	PM - PAVEMENT	
CN - CABLE	PN - PAVEMENT	
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IP - ILLUMINATION	VI - VENT	
IQ - ILLUMINATION	VI - VENT	
IR - ILLUMINATION	VI - VENT	
IS - ILLUMINATION	VI - VENT	
IT - ILLUMINATION	VI - VENT	
IU - ILLUMINATION	VI - VENT	
IV - ILLUMINATION	VI - VENT	
IW - ILLUMINATION	VI - VENT	
IX - ILLUMINATION	VI - VENT	
IY - ILLUMINATION	VI - VENT	
IZ - ILLUMINATION	VI - VENT	
JA - JUNCTION	WA - WATER	
JB - JUNCTION	WB - WATER	
JC - JUNCTION	WC - WATER	
JD - JUNCTION	WD - WATER	
JE - JUNCTION	WE - WATER	
JF - JUNCTION	WF - WATER	
JG - JUNCTION	WG - WATER	
JH - JUNCTION	WH - WATER	
JI - JUNCTION	WI - WATER	
JJ - JUNCTION	WJ - WATER	
JK - JUNCTION	WK - WATER	
JL - JUNCTION	WL - WATER	
JM - JUNCTION	WM - WATER	
JN - JUNCTION	WN - WATER	
JO - JUNCTION	WO - WATER	
JP - JUNCTION	WP - WATER	
JQ - JUNCTION	WQ - WATER	
JR - JUNCTION	WR - WATER	
JS - JUNCTION	WS - WATER	
JT - JUNCTION	WT - WATER	
JU - JUNCTION	WU - WATER	
JV - JUNCTION	WV - WATER	
JW - JUNCTION	WW - WATER	
JX - JUNCTION	WX - WATER	
JY - JUNCTION	WY - WATER	
JZ - JUNCTION	WZ - WATER	
KA - KITCHEN	XA - X-RAY	
KB - KITCHEN	XB - X-RAY	
KC - KITCHEN	XC - X-RAY	
KD - KITCHEN	XD - X-RAY	
KE - KITCHEN	XE - X-RAY	
KF - KITCHEN	XF - X-RAY	
KG - KITCHEN	XC - X-RAY	
KH - KITCHEN	XD - X-RAY	
KI - KITCHEN	XE - X-RAY	
KJ - KITCHEN	XF - X-RAY	
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KX - KITCHEN	XD - X-RAY	
KY - KITCHEN	XE - X-RAY	
KZ - KITCHEN	XF - X-RAY	
LA - LAMP	YA - YARD	
LB - LAMP	YB - YARD	
LC - LAMP	YC - YARD	
LD - LAMP	YD - YARD	
LE - LAMP	YE - YARD	
LF - LAMP	YF - YARD	
LG - LAMP	YC - YARD	
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LT - LAMP	YD - YARD	
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LV - LAMP	YF - YARD	
LW - LAMP	YC - YARD	
LX - LAMP	YD - YARD	
LY - LAMP	YE - YARD	
LZ - LAMP	YF - YARD	
MA - MANHOLE	ZA - ZONE	
MB - MANHOLE	ZB - ZONE	
MC - MANHOLE	ZC - ZONE	
MD - MANHOLE	ZD - ZONE	
ME - MANHOLE	ZE - ZONE	
MF - MANHOLE	ZF - ZONE	
MG - MANHOLE	ZC - ZONE	
MH - MANHOLE	ZD - ZONE	
MI - MANHOLE	ZE - ZONE	
MJ - MANHOLE	ZF - ZONE	
MK - MANHOLE	ZC - ZONE	
ML - MANHOLE	ZD - ZONE	
MM - MANHOLE	ZE - ZONE	
MN - MANHOLE	ZF - ZONE	
MO - MANHOLE	ZC - ZONE	
MP - MANHOLE	ZD - ZONE	
MQ - MANHOLE	ZE - ZONE	
MR - MANHOLE	ZF - ZONE	
MS - MANHOLE	ZC - ZONE	
MT - MANHOLE	ZD - ZONE	
MU - MANHOLE	ZE - ZONE	
MV - MANHOLE	ZF - ZONE	
MW - MANHOLE	ZC - ZONE	
MX - MANHOLE	ZD - ZONE	
MY - MANHOLE	ZE - ZONE	
MZ - MANHOLE	ZF - ZONE	
NA - NAIL	AA - AREA	
NB - NAIL	AB - AREA	
NC - NAIL	AC - AREA	
ND - NAIL	AD - AREA	
NE - NAIL	AE - AREA	
NF - NAIL	AF - AREA	
NG - NAIL	AC - AREA	
NH - NAIL	AD - AREA	
NI - NAIL	AE - AREA	
NJ - NAIL	AF - AREA	
NK - NAIL	AC - AREA	
NL - NAIL	AD - AREA	
NM - NAIL	AE - AREA	
NO - NAIL	AF - AREA	
NP - NAIL	AC - AREA	
NQ - NAIL	AD - AREA	
NR - NAIL	AE - AREA	
NS - NAIL	AF - AREA	
NT - NAIL	AC - AREA	
NU - NAIL	AD - AREA	
NV - NAIL	AE - AREA	
NW - NAIL	AF - AREA	
NX - NAIL	AC - AREA	
NY - NAIL	AD - AREA	
NZ - NAIL	AE - AREA	
OA - OIL	BA - BAY	
OB - OIL	BB - BAY	
OC - OIL	BC - BAY	
OD - OIL	BD - BAY	
OE - OIL	BE - BAY	
OF - OIL	BF - BAY	
OG - OIL	BC - BAY	
OH - OIL	BD - BAY	
OI - OIL	BE - BAY	
OJ - OIL	BF - BAY	
OK - OIL	BC - BAY	
OL - OIL	BD - BAY	
OM - OIL	BE - BAY	
ON - OIL	BF - BAY	
OO - OIL	BC - BAY	
OP - OIL	BD - BAY	
OQ - OIL	BE - BAY	
OR - OIL	BF - BAY	
OS - OIL	BC - BAY	
OT - OIL	BD - BAY	
OU - OIL	BE - BAY	
OV - OIL	BF - BAY	
OW - OIL	BC - BAY	
OX - OIL	BD - BAY	
OY - OIL	BE - BAY	
OZ - OIL	BF - BAY	
PA - PAVEMENT	CA - CABLE	
PB - PAVEMENT	CB - CABLE	
PC - PAVEMENT	CC - CABLE	
PD - PAVEMENT	CD - CABLE	
PE - PAVEMENT	CE - CABLE	
PF - PAVEMENT	CF - CABLE	
PG - PAVEMENT	CG - CABLE	
PH - PAVEMENT	CH - CABLE	
PI - PAVEMENT	CI - CABLE	
PJ - PAVEMENT	CJ - CABLE	
PK - PAVEMENT	CK - CABLE	
PL - PAVEMENT	CL - CABLE	
PM - PAVEMENT	CM - CABLE	
PN - PAVEMENT	CN - CABLE	
PO - PAVEMENT	CO - CABLE	
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PQ - PAVEMENT	CQ - CABLE	
PR - PAVEMENT	CR - CABLE	
PS - PAVEMENT	CS - CABLE	
PT - PAVEMENT	CT - CABLE	
PU - PAVEMENT	CU - CABLE	
PV - PAVEMENT	CV - CABLE	
PW - PAVEMENT	CW - CABLE	
PX - PAVEMENT	CX - CABLE	
PY - PAVEMENT	CY - CABLE	
PZ - PAVEMENT	CZ - CABLE	
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QB - QUANTITY	DB - DRAIN	
QC - QUANTITY	DC - DRAIN	
QD - QUANTITY	DD - DRAIN	
QE - QUANTITY	DE - DRAIN	
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QI - QUANTITY	DE - DRAIN	
QJ - QUANTITY	DF - DRAIN	
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QL - QUANTITY	DD - DRAIN	
QM - QUANTITY	DE - DRAIN	
QN - QUANTITY	DF - DRAIN	
QO - QUANTITY	DC - DRAIN	
QP - QUANTITY	DD - DRAIN	
QR - QUANTITY	DE - DRAIN	
QS - QUANTITY	DF - DRAIN	
QT - QUANTITY	DC - DRAIN	
QU - QUANTITY	DD - DRAIN	
QV - QUANTITY	DE - DRAIN	
QW - QUANTITY	DF - DRAIN	
QX - QUANTITY	DC - DRAIN	
QY - QUANTITY	DD - DRAIN	
QZ - QUANTITY	DE - DRAIN	
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RB - ROAD	EB - EARTH	
RC - ROAD	EC - EARTH	
RD - ROAD	ED - EARTH	
RE - ROAD	EE - EARTH	
RF - ROAD	EF - EARTH	
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RH - ROAD	ED - EARTH	
RI - ROAD	EE - EARTH	
RJ - ROAD	EF - EARTH	
RK - ROAD	EC - EARTH	
RL - ROAD	ED - EARTH	
RM - ROAD	EE - EARTH	
RN - ROAD	EF - EARTH	
RO - ROAD	EC - EARTH	
RP - ROAD	ED - EARTH	
RQ - ROAD	EE - EARTH	
RR - ROAD	EF - EARTH	
RS - ROAD	EC - EARTH	
RT - ROAD	ED - EARTH	
RU - ROAD	EE - EARTH	
RV - ROAD	EF - EARTH	
RW - ROAD	EC - EARTH	
RX - ROAD	ED - EARTH	
RY - ROAD	EE - EARTH	
RZ - ROAD	EF - EARTH	
SA - STREET	FA - FENCE	
SB - STREET	FB - FENCE	
SC - STREET	FC - FENCE	
SD - STREET	FD - FENCE	
SE - STREET	FE - FENCE	
SF - STREET	FF - FENCE	
SG - STREET	FC - FENCE	
SH - STREET	FD - FENCE	
SI - STREET	FE - FENCE	
SJ - STREET	FF - FENCE	
SK - STREET	FC - FENCE	
SL - STREET	FD - FENCE	
SM - STREET	FE - FENCE	</

APPENDIX D – PROPOSED SITE PLAN



- KEY**
- Ownership Boundary (to be verified)
 - Proposed trees (ref plans 18703-LB-ZZ-XX-D-L-200003 and 18703-LB-ZZ-XX-D-L-200004 Landscape Planning Plan)
 - Existing trees to be removed
 - Existing lighting columns
- Hard Landscape**
- P01 PCC 600mm wide s/g slabs to local authority highways standard or slabs to match wider Rowlandsway masterplan
 - P02 Communal lobby entrance slab paving in mixed tones - pcc paving with 70% natural granite aggregate content (eg Lavarò Wit and Gris/rood by Hardscape, 400x400mm or similar approved products)
 - P03 Private entrance paving: Textured linear sets in mixed tones - pcc paving with 100% natural granite aggregate content (eg Liscio Bianco and Ambrogio by Hardscape, 330x110mm or similar approved products)
 - P04 Slab paving - pcc paving with 70% natural granite aggregate content, (eg Lavarò Wit by Hardscape, 300x150mm or similar approved products)
 - P05 Flags paving - natural granite aggregate paving (eg Mayfair Slabs by Tobemore, Stack, Silver, 400x400mm or similar approved products)
 - P06 Gate setts paving - pcc paving with 70% natural granite aggregate content (eg Lavarò Oranje, 150x150mm or similar approved products)
 - P07 Resin bound gravel 1 (eg Nickel by GCL Products or similar approved products)
 - P08 Resin bound gravel 2 (eg Iberian Sun by GCL Products or similar approved products)
 - P09 Recycled composite timber decking (to courtyard only)
- Notes:**
- Pedestrian paving at ground level to be edged with pcc edge kerbs to match adjacent surface eg by Hardscape or similar approved products
 - At courtyard level paving to be edged in steel/aluminium. All planting at courtyard/podium level to be raised above slab in either 500mm or 800mm raised steel planter edge - colour to match fenestration RAL with PPC finish.
- Soft Landscape** (ref plans 18703-LB-ZZ-XX-D-L-200003 and 18703-LB-ZZ-XX-D-L-200004 Landscape Planning Plan)
- PL01 Wavell Road edge planting
 - PL02 Hedge planting
 - PL03 Mews planting
 - PL04 Courtyard planting
- Furniture** (some features in courtyard only - ref plan 18703-LB-ZZ-XX-D-L-200002-Landscape GA Plan - First Floor)
- F01 Pergola - Painted powder coated steel structures 2.4m high x width and arrangement shown. RAL to match architectural fenestration. Pergola over table seating area to include recessed LED lighting on switch system for management control with catenary lighting.
 - F02 Ventilation grilles - Galvanised steel grilles in horizontal arrangement to satisfy ventilation requirements. Grilles to be fixed to concrete upstand to SE detail, suitable to withstand safe pedestrian loading eg by Lang and Fulton
 - F03 Privacy panels - 1.8m high x 1.8m (or 2.5m) depth, steel painted powder coated privacy panels formed in louvre-style horizontal slatted metal screens to filter views to adjacent homes. RAL to match architectural fenestration
 - F04 FSC certified hardwood 0.5m high timber growing beds, plugged fixings sizes as shown
 - F05 FSC certified hardwood communal tables 0.9m x 2m approx with painted steel frame
 - F06 FSC certified hardwood slatted seating with arms and backrests with painted steel frame
 - F07 Painted steel bistro style tables and chairs with backrests and arms - RAL to match fenestration
 - F08 Catenary lighting to specialist design - wires and fixings to SE design directional downlighters to avoid glare into homes (all other lighting to be building-mounted to architect detail)
 - F09 Lockable water points
 - F10 External power point
 - F11 Habitat features - to include bat boxes, bird boxes, bee posts and bricks (locations to be agreed with ecologist)
- Boundary**
- B01 Timber fence to 1.1m height with 'tongue and groove' style FSC certified softwood, timber posts and capping rails. Boundary to be in place pending re-development of adjacent site.
 - B02 Timber fence to overall 2.4m height. 0.2m high Fencing gravel board, 1.9m high 'tongue and groove' style FSC certified softwood, timber posts and capping rails, with 300mm height slatted timber trellis on top. Boundary to be in place pending re-development of adjacent site.

Notes

1. Do not scale this drawing.
2. All dimensions must be checked on site and any discrepancies verified with the architect.
3. Unless shown otherwise, all dimensions are to structural surfaces.
4. Drawing to be read with all other issued information. Any discrepancies to be brought to the attention of the architect.
5. This drawing is the copyright of Levitt Bernstein and may not be copied, altered or reproduced in any form, or passed to a third party without license or written consent.
6. This document is prepared for the sole use of MUSE Places and no liability to any other persons is accepted by Levitt Bernstein. Levitt Bernstein accepts no liability for use of this drawing by parties other than the party for whom it was prepared or for purposes other than those for which it was prepared.
7. Unless indicated otherwise, all Structural and MEPH information shown in this architectural drawing has been designed and modelled by the relevant consultants, who have complete design responsibility for those elements.

This is not a construction drawing, it is unsuitable for the purpose of construction and must on no account be used as such.

DRAFT

P01	31/10/25	DRAFT - Planning issue	YD/KD
Rev	Date	Description	Drawn / Checked
Project name			
Alpha House			
3995B			
Drawing number			
18703 - LB - ZZ - XX - D - L - 200001			
P01			
Drawing			
Purpose of issue			
For Comment			
Scale			
1 : 200 @ A1			
First issue date			
31/10/25			
Client			
MUSE Places			
London			
Thane Studios			
2-4 Thane Villas			
London N1 7PA			
+44 (0)20 7275 7676			
Manchester			
Eastgate			
2 Castle Street			
Manchester M3 4LZ			
+44 (0)161 669 8740			
Levitt Bernstein			
levittbernstein.co.uk			

APPENDIX E – UNITED UTILITIES SEWER MAP & CORRESPONDENCE

UCML

Mainetti House
Bedwell Road,
Wrexham,
LL13 0TS

FAO:

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: PR8057
Our Ref: UUPS-ORD-530598
Date: 13/11/2023

Dear Sirs

Location: Alpha House

I acknowledge with thanks your request dated 10/11/2023 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

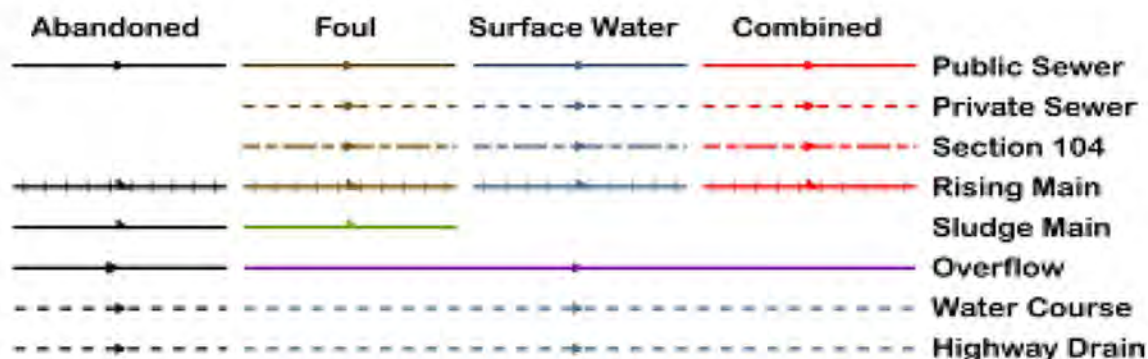
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Wastewater Symbolology



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

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

SEWER RECORDS

Address or Site Reference

Alpha House,

Scale: 1:1250
Date: 13/11/2023

Printed by: Property Searches

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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Ordnance Survey 100022432. Unauthorised
reproduction will infringe these copyrights.



Clean Water Symbolology

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water
			Air Valve
			AC Valve, open
			AC Valve, closed
			CC Valve, open
			CC Valve, closed
			Non Return Valve
			Pressure Management Valve
			OMS Valve
			Stop Tap
			Flow Meter
			Domestic Meter
			Commercial Meter
			Pump
			Hydrant
			Fire Hydrant
			Anode
			Chlorination Point
			De-chlorination Point
			Strainer Point
			Access Point
			Hatch Box
			IP Point
			Sampling Station
			Logger Box
			Bore Hole
			Inlet Point
			Bulk Supply Point
			End Cap
			Site Termination
			Change of Characteristic
			Condition Report
			<u>Property Types</u>
			Water Tower
			Valve House
			Booster Pumping Station
			Intake Pumping Station
			Water Treatment Works
			Supply Reservoir
			Service Reservoir
			Impounding Reservoir
			Pipe Bridge

Symbology for proposed assets is the same as above, but shown in **green**
 Symbology for abandoned assets is the same as above, but shown in **black**



WATER MAIN RECORDS

Address or Site Reference

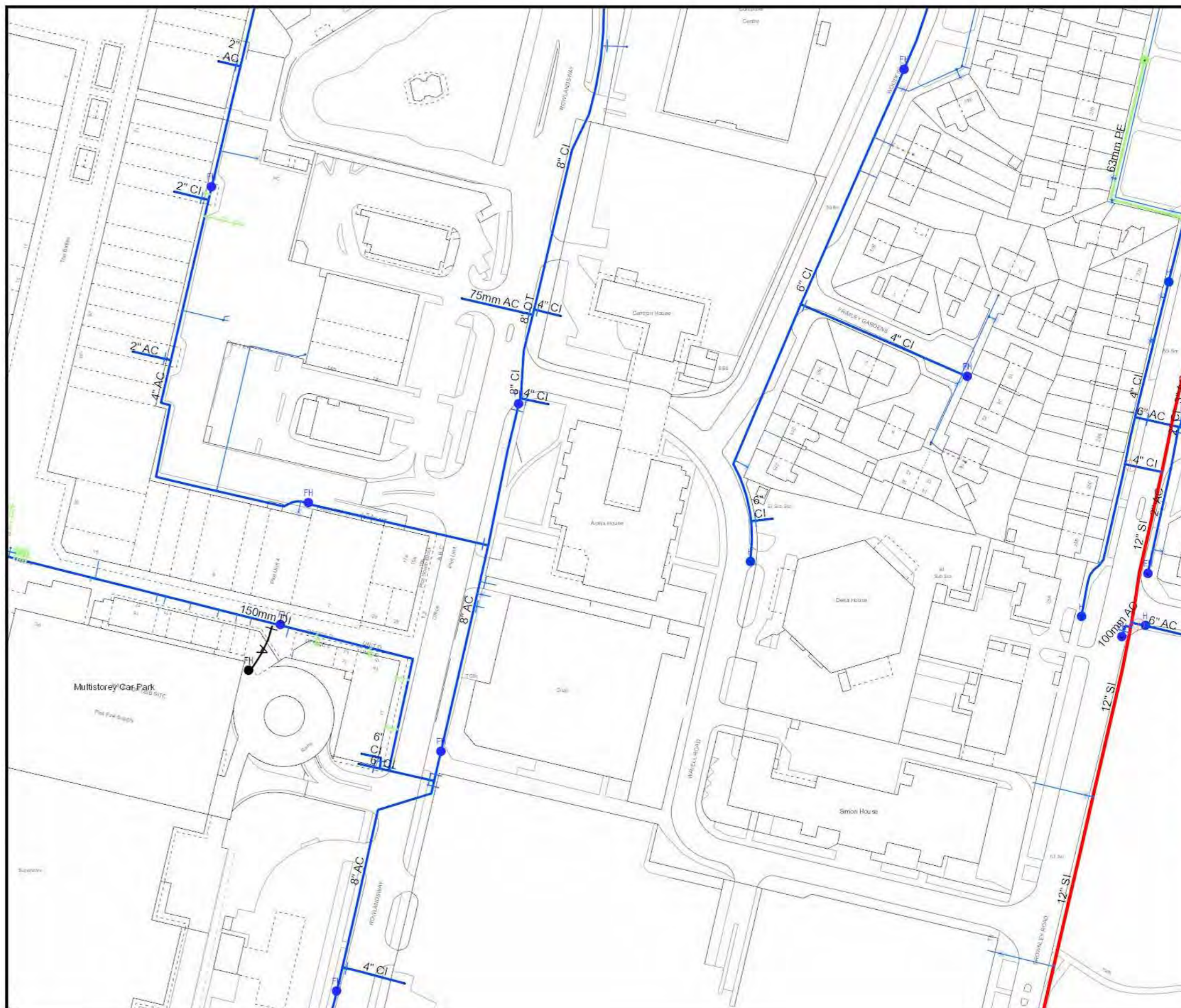
Alpha House,

Scale: 1:1250
Date: 13/11/2023

Printed by: Property Searches

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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Ordnance Survey 100022432. Unauthorised
reproduction will infringe these copyrights.



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

13/10/2025

Dear **John**,

Pre-Development Enquiry for **Alpha House, Wythenshawe, M22 5RG** UU Reference Number: **08225597**

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

[Please see the image at the end of this letter for details](#)

I can confirm that we 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. According to our public sewer records, there are public sewers located within your site boundary. This requires an easement of **3m either side of the centreline** If you cannot achieve the required clearance, you may wish to consider diverting and or abandoning the public sewer.

[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/combined sewer system.

Our preferred point of discharge would be to the 525mm diameter public combined sewer within your proposed development at an unrestricted rate.

Manhole reference SJ82867901, **Grid reference** 382789, 386967

[Please see the images at the end of this letter for clarification](#)

Surface Water

Follow the National Planning Policy Guidance drainage hierarchy and Provide 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](#)

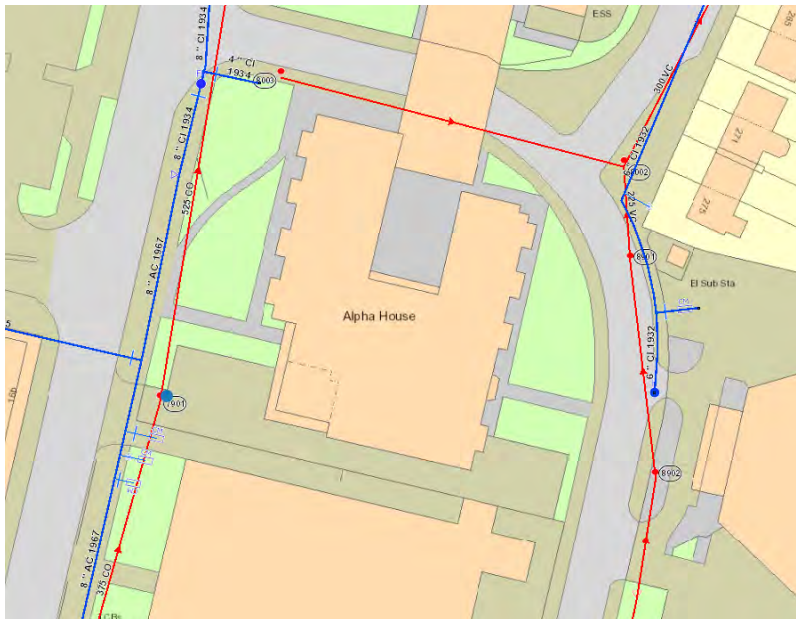
Public Sewer

United Utilities will consider a connection to the 525mm diameter public combined sewer within your proposed development at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities requests that any agreed rate does not exceed 5/s.

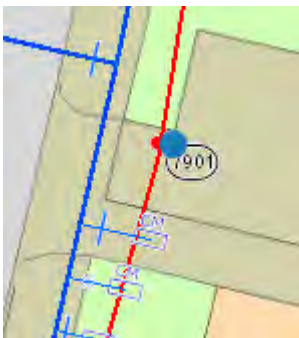
Manhole reference SJ82867901, **Grid reference** 382789, 386967

[Please see images at the end of this letter for clarification](#)

Site Images



Connection Point



Modelling Information

Node reference – SJ82867901

Ground Level – 61.5m AOD

Max TWL 100yr – 58.687m AOD

Node reference - SJ82878003

Ground Level – 60.27m AOD

Max Flood 100yr – 354m³

Max TWL 100yr – 61.475m AOD

John Speers

From: seweradoptions@uuplc.co.uk
Sent: 29 October 2025 16:54
To: John Speers
Subject: RE: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: 224-126 - Alpha House Rolandsway Wythenshawe

Good Afternoon John,

Thank you for your email.

Has a survey been undertaken on the existing sewer to confirm the line and level of the asset? We will require this information, along with the foundation details, to consider any reduction in the easement for this asset.

A saddle connection may be acceptable, provided the proposed connection is at least 150mm smaller than the existing sewer and serves no more than three properties.

Regarding the surface water separation, could you please confirm who at United Utilities you are liaising with? I'd like to ensure that our proposals are aligned with their ongoing projects.

Kind regards,



Eireann Thompson
Developer Engineer
Developer Services & Metering
01925 429086
unitedutilities.com

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----- Original Message -----

From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]
Sent: 16/10/2025 11:55
To: johnspeers@ajpltd.co.uk
Subject: RE: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Good Morning,

Your enquiry has been logged and sent to our engineer Eireann Thompson and her contact number is 01925 429086. Our service Level agreement is to respond to you within 10 working days.

Many thanks



Laura Owens
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 0345 026 8989 option 4
unitedutilities.com

If you feel you have received a good service from myself, please can you take two minutes to fill in the survey below. This will be much appreciated



Visit: <https://unitedutilities.thewowawards.co.uk/nominate>

----- Original Message -----

From: John Speers [johnspeers@ajpltd.co.uk]

Sent: 16/10/2025 11:28

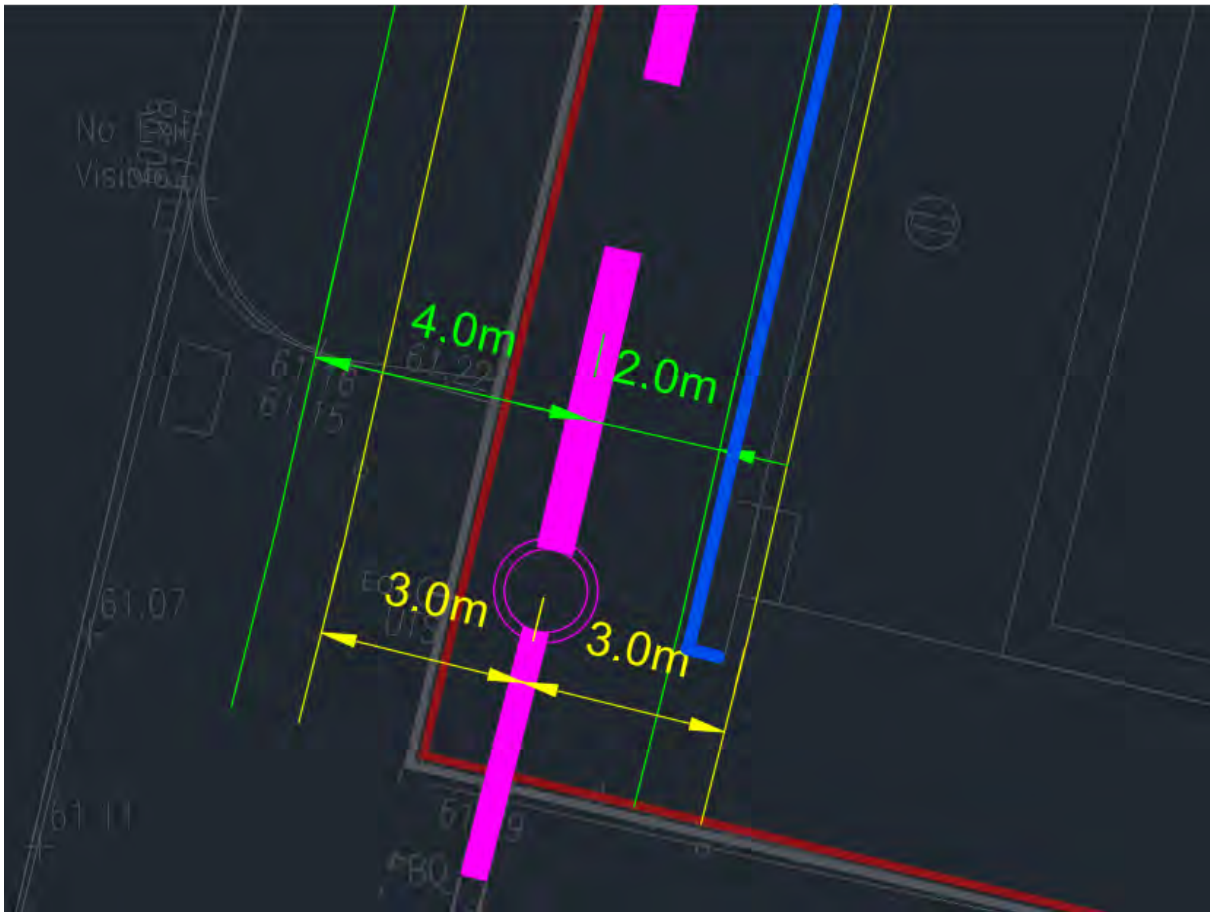
To: seweradoptions@uuplc.co.uk

Subject: RE: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Hi Eireann,

Thanks for the pre-development enquiry response.

With regards to the 3m easement on the existing UU sewer, unfortunately, we are unable to achieve this due to the space restrictions across the site. **Can you please check with asset protection if they would be willing to accept an offset easement of 2m on the building side and 4m on the highway side?** Please see below sketch which shows the required 3m easement in yellow, the proposed offset easement in green and the proposed building extents in blue.



Also, with regards to the connection point we would be looking to connect in the north-west corner of the site rather than the south-west. This is due to the fact that the existing site topography falls from south to north. **Would United Utilities accept a junction connection to the existing 525mm diameter public combined water sewer or would they require a new manhole on the line of the existing combined water sewer?** See yellow square on the below extract for approximate location of proposed connection point to the existing UU combined sewer.



Finally, just to make you aware, we have had various discussions with UU regarding the overall Wythenshawe Town Centre masterplan and the intention to construct a new public surface water sewer along Rowlandsway, to the west of the proposed development. This is to remove as much of the surface water runoff as possible, from the public combined water sewers and will be constructed after this proposed development. With this in mind, it has been agreed that we will connect to the current UU combined water sewer to the west of the development but will provide a pipe stub from the proposed private surface water drainage to allow the private surface water drainage network to connect to the 'new' public surface water sewer when it is constructed in the future.

If you want to discuss anything, please give me a call using the details below.

Kind Regards

John

John Speers

Associate



creating balance in
the built environment

☎ 0151 227 1462

☎ 07841 832 409

✉ johnspeers@ajpltd.co.uk

📍 1 Dale St, Liverpool, L2 2ET

From: seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>

Sent: 13 October 2025 11:59

To: John Speers <johnspeers@ajpltd.co.uk>

Subject: RE: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Hi John,

Please see attached pre-dev response and guidance.

Kind regards,



Eireann Thompson
Developer Engineer
Developer Services & Metering
01925 429086
unitedutilities.com

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----- Original Message -----

From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]

Sent: 03/10/2025 09:10

To: johnspeers@ajpltd.co.uk

Subject: RE: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Good Morning,

PROPOSED PRE DEVELOPMENT AT Alpha House, Rowlandsway, Wythenshawe M22 5RG - UU Ref – 08225597.

Thank you for your **bacs** payment for 565.55 received 02.10.25. Your application has now been processed and passed to our Engineer.

We will respond within the next 10 working days, please feel free to contact us if you need anything.

Kind regards



Laura Owens
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 0345 026 8989 option 4
unitedutilities.com

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----- Original Message -----

From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]

Sent: 01/10/2025 09:17

To: johnspeers@ajpltd.co.uk

Subject: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Good Morning,

PRE DEVELOPMENT APPLICATION AT: Alpha House, Rowlandsway, Wythenshawe M22 5RG – UU Ref 08225597.

Thank you for your application submitted on 30.09.25 for the above development. We have now logged this on our system under reference 08225597. Please use this reference in any future correspondence.

I have reviewed your application and attachments and can confirm we have received all necessary documents.

Before we can proceed with passing this to our Engineering Team, we kindly ask that you submit a payment of 565.55. This can be made via BACS to the account below, using reference 08225597.

NatWest Sort Code:	01-09-17
NatWest Account Number:	58934014
Account Name:	UUW Sundry Debtors Receipts

Alternatively, please call us on 0345 026 8989 to make payment over the phone.

Please note that until payment is received your application will not be progressed.

If you have any questions, feel free to reach out.

Kind regards



Laura Owens
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 0345 026 8989 option 4
unitedutilities.com

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----- Original Message -----

From: [donotreply@uu-web.co.uk]

Sent: 30/09/2025 16:08

To: seweradoptions@uuplc.co.uk; webmaster@uuplc.co.uk

Subject: Wastewater Pre-Development Enquiry Submission

Question	Answer
Section 1 - Your Details	
Developer/Consultant/Land owner/Other	Consultant
Name	John Speers
Company Name	AJP
Address	4th Floor 1 Dale Street Liverpool L2 2ET
Contact Number	0151 227 1462
Email Address	johnspeers@ajpltd.co.uk
Section 2 - Development Details	
Do you intend to offer any of the sewers for adoption by United Utilities under S104?	No
Site Address	Alpha House, Rowlandsway, Wythenshawe M22 5RG
Site Postcode	#Development postcode#
Site Name	Alpha House, Wythenshawe
Grid Reference Number	382828, 386978
Development Type	Residential
Approx. Number Units	116
Total Site Area (hectares)	0.36
Does this site have planning permission?	No
Planning Reference Number	
Council Area	Manchester City Council
Have you approached us about this site previously?	No
If yes, please provide reference number	
Is the development part of a larger site that will be developed in phases?	No
Location Plan	Site Location Plan.pdf
Section 3: Previous Land Use	
Please confirm what the land was previously used for:	Brownfield
Brownfield evidence of positive drainage to the public sewer	Utilities Survey.pdf
Section 4 - Drainage Strategy	
Foul connection: How are you proposing to drain foul flows from the site?	Via a new connection to the public sewer
Via an existing connection to the public sewer?	No
Surface water connection: How are you proposing to drain your site, following the surface water hierarchy, as outlined in National Planning Policy Guidance?	Combined sewer
SuDS: Have SuDS features been considered in the surface water drainage strategy?	Yes

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Warrington, WA5 3LP
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John Speers

Subject: FW: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

From: seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>

Sent: 14 November 2025 13:34

To: Kenny O'Brien <kennyobrien@ajpltd.co.uk>

Subject: Re: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Hi Kenny,

I have had a review of the proposals r.e the offset easement. In principle I have no objection but this would be subject to a build over application and approval, this process would mean you need to thoroughly survey the sewer and ensure there is no loading on the pipeline from your foundations.

Kind regards,



Eireann Thompson
Developer Engineer
Developer Services & Metering
01925 429086
unitedutilities.com

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----- Original Message -----

From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]

Sent: 14/11/2025 08:46

To: kennyobrien@ajpltd.co.uk

Subject: Re: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Good Morning

Thanks for your email.

Your case is currently with our engineer to review. Our service level agreement for a response is 10 working days so the engineer will be issuing their response to you on or before 24/11/25.

Kind Regards,



Laura Owens
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 0345 026 8989 option 4
unitedutilities.com

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----- Original Message -----

From: Kenny O'Brien [kennyobrien@ajpltd.co.uk]

Sent: 14/11/2025 08:03

To: johnny.phillips@uuplc.co.uk; seweradoptions@uuplc.co.uk

Cc: dee.grahamslaw@uuplc.co.uk

Subject: Re: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

Hi all

Any update on this at all - we need to ideally report back into the client today.

Thanks

Regards

Kenny O'Brien

Director

Alan Johnston Partnership Ltd

Email: kennyobrien@ajpltd.co.uk

Mobile: 07809 516842

Office: 0151 2271462

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From: Kenny O'Brien

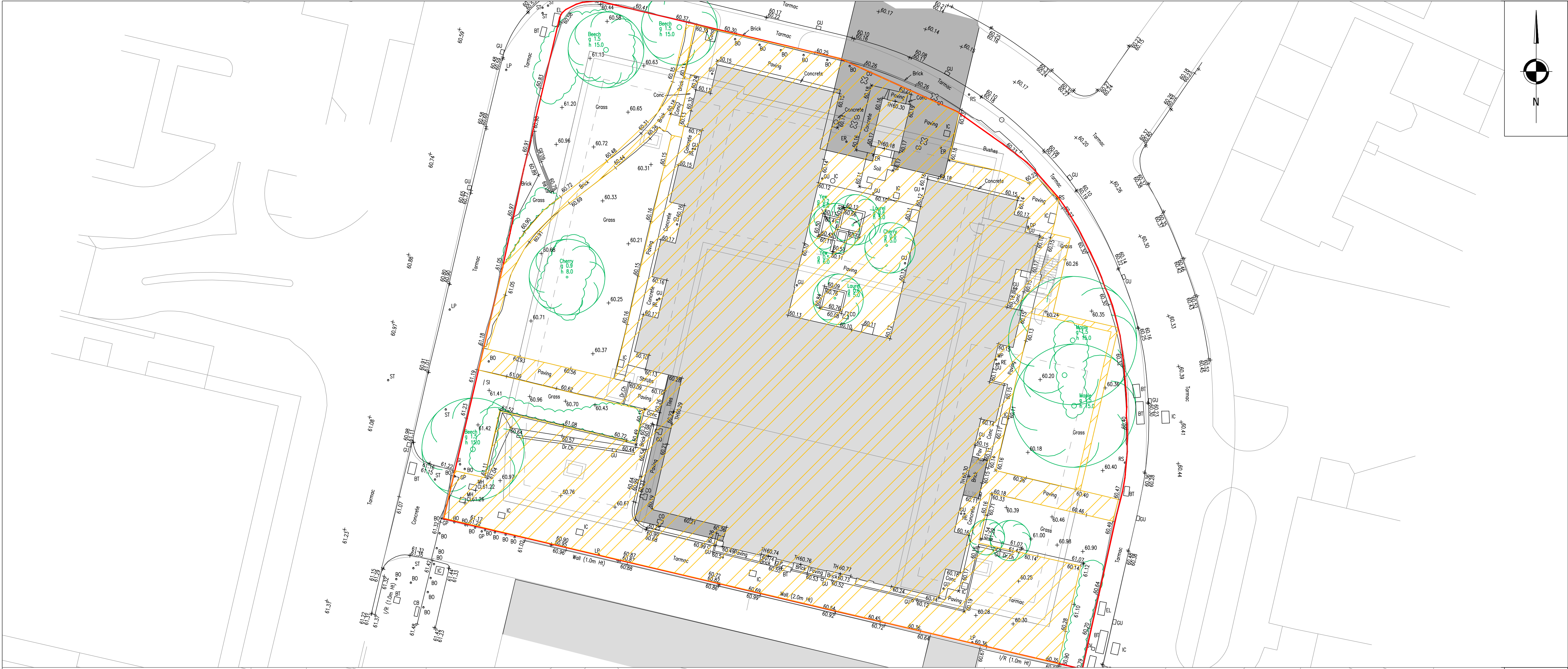
Sent: Tuesday, November 11, 2025 11:59:21 AM

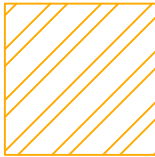
To: johnny.phillips@uuplc.co.uk <johnny.phillips@uuplc.co.uk>; seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>

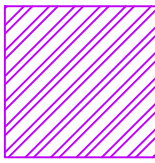
Cc: Dee.Grahamslaw@uuplc.co.uk <Dee.Grahamslaw@uuplc.co.uk>

Subject: REF: 08225597 - Wastewater Pre-Development Enquiry Submission - Alpha House, Rowlandsway, Wythenshawe M22 5RG

APPENDIX F – PRE & POST IMPERMEABLE AREAS



- 

PRE DEVELOPMENT IMPERMEABLE
AREAS = 2631m²
- 

POST DEVELOPMENT
IMPERMEABLE AREAS = 2967m²

P01	07.11.2025	PRELIMINARY ISSUE	JC	JRS	KOB
REV	DATE	DESCRIPTION	BY	CHK	APP

DRAWING STATUS:

PRELIMINARY

CLIENT:

MUSE PLACES

ARCHITECT:

LEVITT BERNSTEIN

PROJECT:

ALPHA HOUSE, WYTHENSHAW

TITLE:

PRE AND POST DEVELOPMENT
IMPERMEABLE AREAS

STATUS:	PROJECT No:	PROJECT	ORIGIN	FUNCT.	SPACIAL	FORM	DISC.	DRAWING No:	REV:
S2	224-126	18703 - AJP- XX - ZZ - SK - C - 001000						P01	

SCALE @ A1:	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
N.T.S	JC	JC	JRS	KOB	NOV 2025

 consulting engineers

0151 227 1462 info@ajpltd.co.uk 01 Dale Street, Liverpool, L2 2ET

APPENDIX G – EXISTING BROWNFIELD RUNOFF RATES

Alan Johnston Partnership		Page 1
1 Dale Street Liverpool L2 2ET	224-126 Alpha House, Wythenshawe Brownfield Runoff Rates	
Date 06/11/2025 10:00 File Brownfield Runoff Rates.MDX	Designed by JRS Checked by KOB	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	30	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.381	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.230	4-8	0.033

Total Area Contributing (ha) = 0.263

Total Pipe Volume (m³) = 0.972

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	10.000	0.101	99.0	0.088	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	10.000	0.101	99.0	0.088	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.002	10.000	0.101	99.0	0.087	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.17	59.650	0.088	0.0	0.0	0.0	1.01	17.8	11.9
S1.001	50.00	5.29	59.474	0.176	0.0	0.0	0.0	1.31	52.2	23.8
S1.002	50.00	5.42	59.373	0.263	0.0	0.0	0.0	1.31	52.2	35.6

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.088	0.088	0.088
1.001	-	-	100	0.088	0.088	0.088
1.002	-	-	100	0.087	0.087	0.087
				Total	Total	Total
				0.263	0.263	0.263

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.002	S	61.000	59.272	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.381		

Alan Johnston Partnership		Page 3
1 Dale Street Liverpool L2 2ET	224-126 Alpha House, Wythenshawe Brownfield Runoff Rates	
Date 06/11/2025 10:00 File Brownfield Runoff Rates.MDX	Designed by JRS Checked by KOB	
Innovyze	Network 2020.1.3	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.381 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded
									Level (m)	Depth (m)	Volume (m³)
S1.000	SSW01	15 Winter	1	+0%	30/15	Summer			59.742	-0.058	0.000
S1.001	SSW02	15 Winter	1	+0%	30/15	Summer			59.582	-0.117	0.000
S1.002	SSW03	15 Winter	1	+0%	30/15	Summer			59.508	-0.090	0.000

PN	US/MH Name	Half Drain		Pipe		Level Exceeded
		Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
S1.000	SSW01	0.67			10.7	OK
S1.001	SSW02	0.46			19.8	OK
S1.002	SSW03	0.67			29.0	OK

Alan Johnston Partnership		Page 4
1 Dale Street Liverpool L2 2ET	224-126 Alpha House, Wythenshawe Brownfield Runoff Rates	
Date 06/11/2025 10:00 File Brownfield Runoff Rates.MDX	Designed by JRS Checked by KOB	
Innovyze	Network 2020.1.3	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Hot Start (mins) 0

Hot Start Level (mm) 0

Manhole Headloss Coeff (Global) 0.500

Foul Sewage per hectare (l/s) 0.000

Additional Flow - % of Total Flow 0.000

MADD Factor * 10m³/ha Storage 2.000

Inlet Coeffiecient 0.800

Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 0

Number of Storage Structures 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

Region England and Wales

FSR M5-60 (mm) 18.000

Ratio R 0.381

Cv (Summer) 0.750

Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status ON

DVD Status OFF

Inertia Status OFF

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

Return Period(s) (years) 1, 2, 30, 100

Climate Change (%) 0, 0, 0, 0

									Water	Surcharged	Flooded
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)
S1.000	SSW01	15 Winter	2	+0%	30/15 Summer				59.760	-0.040	0.000
S1.001	SSW02	15 Winter	2	+0%	30/15 Summer				59.600	-0.099	0.000
S1.002	SSW03	15 Winter	2	+0%	30/15 Summer				59.536	-0.062	0.000

		Half Drain		Pipe		
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Level Exceeded
S1.000	SSW01	0.87			13.8	OK
S1.001	SSW02	0.59			25.7	OK
S1.002	SSW03	0.86			37.5	OK

Alan Johnston Partnership		Page 5
1 Dale Street Liverpool L2 2ET	224-126 Alpha House, Wythenshawe Brownfield Runoff Rates	
Date 06/11/2025 10:00 File Brownfield Runoff Rates.MDX	Designed by JRS Checked by KOB	
Innovyze	Network 2020.1.3	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.381 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	SSW01	15 Winter	30	+0%	30/15	Summer			60.151	0.351	0.000
S1.001	SSW02	15 Winter	30	+0%	30/15	Summer			59.917	0.218	0.000
S1.002	SSW03	15 Winter	30	+0%	30/15	Summer			59.789	0.191	0.000

		Half Drain		Pipe			Level
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Exceeded
S1.000	SSW01	1.60			25.4	SURCHARGED	
S1.001	SSW02	1.13			49.0	SURCHARGED	
S1.002	SSW03	1.70			73.9	SURCHARGED	

Alan Johnston Partnership		Page 6
1 Dale Street Liverpool L2 2ET	224-126 Alpha House, Wythenshawe Brownfield Runoff Rates	
Date 06/11/2025 10:00 File Brownfield Runoff Rates.MDX	Designed by JRS Checked by KOB	
Innovyze	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Hot Start (mins) 0

Hot Start Level (mm) 0

Manhole Headloss Coeff (Global) 0.500

Foul Sewage per hectare (l/s) 0.000

Additional Flow - % of Total Flow 0.000

MADD Factor * 10m³/ha Storage 2.000

Inlet Coeffiecient 0.800

Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 0

Number of Storage Structures 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

Region England and Wales

FSR M5-60 (mm) 18.000

Ratio R 0.381

Cv (Summer) 0.750

Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status

DVD Status

Inertia Status

300.0

ON

OFF

OFF

Profile(s)

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

Return Period(s) (years)

Climate Change (%)

Summer and Winter

1, 2, 30, 100

0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	SSW01	15 Winter	100	+0%	30/15	Summer			60.532	0.732	0.000
S1.001	SSW02	15 Winter	100	+0%	30/15	Summer			60.154	0.455	0.000
S1.002	SSW03	15 Winter	100	+0%	30/15	Summer			59.957	0.359	0.000

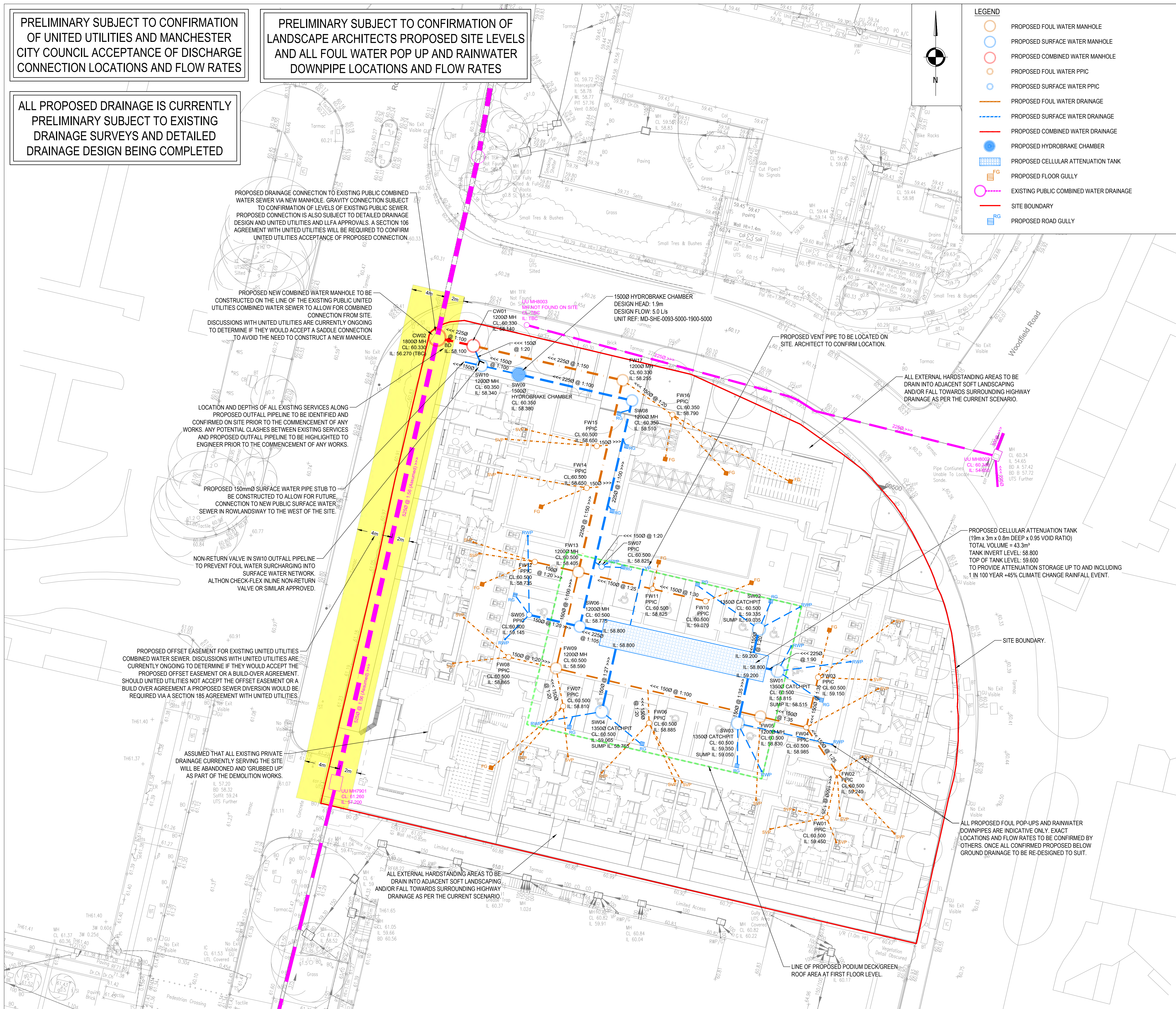
		Half Drain		Pipe			Level
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Exceeded
S1.000	SSW01	2.00			31.8	SURCHARGED	
S1.001	SSW02	1.40			60.9	SURCHARGED	
S1.002	SSW03	2.13			92.7	SURCHARGED	

APPENDIX H – OUTLINE DRAINAGE STRATEGY & SURFACE WATER CALCS

PRELIMINARY SUBJECT TO CONFIRMATION
OF UNITED UTILITIES AND MANCHESTER
CITY COUNCIL ACCEPTANCE OF DISCHARGE
CONNECTION LOCATIONS AND FLOW RATES

ALL PROPOSED DRAINAGE IS CURRENTLY
PRELIMINARY SUBJECT TO EXISTING
DRAINAGE SURVEYS AND DETAILED
DRAINAGE DESIGN BEING COMPLETED

PRELIMINARY SUBJECT TO CONFIRMATION OF
LANDSCAPE ARCHITECTS PROPOSED SITE LEVELS
AND ALL FOUL WATER POP UP AND RAINWATER
DOWNPIPE LOCATIONS AND FLOW RATES



GENERAL NOTES

- SETTING OUT SHALL BE UNDERTAKEN USING ONLY THE INFORMATION GIVEN. DISTANCES SHOULD NOT BE SCALED FROM THIS DRAWING.
- ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DESIGN & CONSTRUCTION GUIDANCE & UNITED UTILITIES CONSTRUCTION GUIDANCE.
- THE MINIMUM GRAVITY PIPE DIAMETER UNDER ADOPTABLE HIGHWAYS SHALL BE 150mm
- 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
- 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
- EXISTING FLOWS IN WATERCOURSES, SEWERS AND LAND DRAINS SHALL BE MAINTAINED AT ALL TIMES
- ONLY TRAINED PERSONNEL SHALL BE PERMITTED TO ENTER CONFINED SPACES
- 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
- 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.
- 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.
- 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.
- SLAB LEVELS SHALL NOT BE VARIED WITHOUT REFERENCE TO THE ENGINEER FOR GUIDANCE
- 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 80	1 IN 100
- ALL HIGHWAY GULLY CONNECTIONS TO BE 150mm VITRIFIED CLAY UNLESS NOTED OTHERWISE
- ALL PRIVATE GULLY CONNECTIONS TO BE 100mm VITRIFIED CLAY UNLESS NOTED OTHERWISE
- MINIMUM COVER TO DRAINAGE SOFFIT LEVEL & ACCESS CHAMBERS ;
LANDSCAPING 0.600m
TRAFFICKED AREAS 0.900m
HIGHWAYS 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) IS TO BE USED.
- FOUNDATIONS WITHIN CLOSE PROXIMITY TO PROPOSED DRAINAGE WILL NEED TO BE AT THE SAME DEPTH AS DRAINAGE TO AVOID THE POTENTIAL FOR UNDERMINING.
- TOP OF FOUNDATIONS ARE TO BE A MIN 750mm FROM FINISHED EXTERNAL LEVELS.
- ALL SURFACE / FOUL WATER CONNECTIONS ARE TO HAVE RODDABLE ACCESS FROM ABOVE GROUND
- ALL POP-UP AND RWP SETTING OUT IS TO BE PROVIDED BY THE ARCHITECT
- FINAL POP UP LOCATIONS SUBJECT TO ARCHITECT / M&E CO-ORDINATION

P02	25.11.2025	PRELIMINARY ISSUE - UPDATED TO SUIT DESIGN TEAM COMMENTS	JC	JRS	KOB
P01	07.11.2025	PRELIMINARY ISSUE	JC	JRS	KOB
REV	DATE	DESCRIPTION	BY	CHK	APP

DRAWING STATUS:

PRELIMINARY

CLIENT:

MUSE PLACES

ARCHITECT:

LEVITT BERNSTEIN

PROJECT:

ALPHA HOUSE, WYTHENSHAW

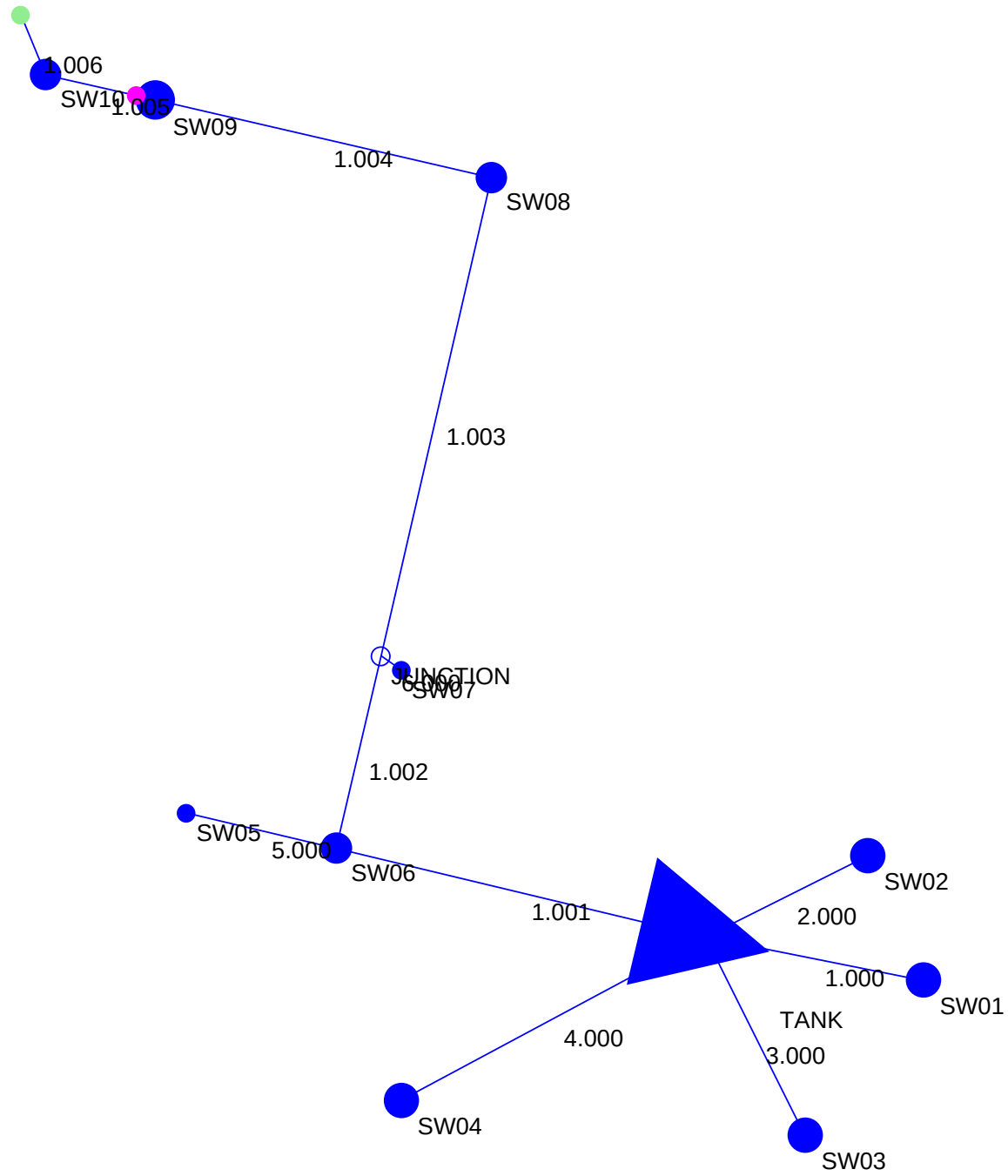
TITLE:

BELOW GROUND DRAINAGE
OUTLINE DRAINAGE STRATEGY

STATUS:	PROJECT No:	PROJECT	ORIGIN	FUNCT.	SPECIAL	FORM	DISC.	DRAWING No:	REV:
S2	224-126	18703 - AJP- XX - ZZ - D - C - 000900	P02						

SCALE @ A1:	DESIGNED:	DRAWN:	CHECKED:	APPROVED:	DATE:
1:200	JC	JC	JRS	KOB	NOV 2025

0151 227 1462 info@ajp ltd.co.uk 1 Dale Street, Liverpool, L2 2ET



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1 Dale Street Liverpool L2 2ET	224-126 Alpha House, Wythenshawe SW Network	
Date 07/11/2025 00:03 File REV D.MDX	Designed by JRS Checked by KOB	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	30	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.378	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.131	4-8	0.087

Total Area Contributing (ha) = 0.218

Total Pipe Volume (m³) = 3.226

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	8.474	0.015	564.9	0.039	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	6.908	0.135	51.2	0.023	5.00	0.0	0.600	o	150	Pipe/Conduit	
3.000	8.481	0.150	56.5	0.037	5.00	0.0	0.600	o	150	Pipe/Conduit	
4.000	13.195	0.265	49.8	0.032	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	14.493	0.025	579.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.26	58.815	0.039	0.0	0.0	0.0	0.54	21.6	5.3
2.000	50.00	5.08	59.335	0.023	0.0	0.0	0.0	1.41	24.9	3.1
3.000	50.00	5.11	59.350	0.037	0.0	0.0	0.0	1.34	23.7	5.0
4.000	50.00	5.15	59.065	0.032	0.0	0.0	0.0	1.43	25.3	4.3
1.001	50.00	5.71	58.800	0.131	0.0	0.0	0.0	0.54	21.3	17.7

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
5.000	5.886	0.294	20.0	0.062	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	7.507	0.075	100.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.000	0.952	0.048	19.8	0.025	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	18.745	0.190	98.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	13.161	0.130	101.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.005	4.300	0.040	107.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.006	2.459	0.025	98.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
5.000	50.00	5.04	59.145	0.062	0.0	0.0	0.0	2.26	40.0	8.4
1.002	50.00	5.81	58.775	0.193	0.0	0.0	0.0	1.31	52.0	26.1
6.000	50.00	5.01	58.825	0.025	0.0	0.0	0.0	2.27	40.1	3.4
1.003	50.00	6.04	58.700	0.218	0.0	0.0	0.0	1.32	52.3	29.5
1.004	50.00	6.21	58.510	0.218	0.0	0.0	0.0	1.30	51.7	29.5
1.005	50.00	6.29	58.380	0.218	0.0	0.0	0.0	0.97	17.1«	29.5
1.006	50.00	6.33	58.340	0.218	0.0	0.0	0.0	1.01	17.9«	29.5

Manhole Schedules for Storm											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SW01	60.500	1.685	Open Manhole	1350	1.000	58.815	225				
SW02	60.500	1.165	Open Manhole	1350	2.000	59.335	150				
SW03	60.500	1.150	Open Manhole	1350	3.000	59.350	150				
SW04	60.500	1.435	Open Manhole	1350	4.000	59.065	150				
TANK	60.500	1.700	Open Manhole	1200	1.001	58.800	225	1.000	58.800	225	
								2.000	59.200	150	325
								3.000	59.200	150	325
								4.000	58.800	150	
SW05	60.500	1.355	Open Manhole	600	5.000	59.145	150				
SW06	60.500	1.725	Open Manhole	1200	1.002	58.775	225	1.001	58.775	225	
								5.000	58.851	150	1
SW07	60.500	1.675	Open Manhole	600	6.000	58.825	150				
JUNCTION	60.500	1.800	Junction		1.003	58.700	225	1.002	58.700	225	
								6.000	58.777	150	2
SW08	60.350	1.840	Open Manhole	1200	1.004	58.510	225	1.003	58.510	225	
SW09	60.350	1.970	Open Manhole	1500	1.005	58.380	150	1.004	58.380	225	
SW10	60.350	2.010	Open Manhole	1200	1.006	58.340	150	1.005	58.340	150	
	60.330	2.015	Open Manhole	0		OUTFALL		1.006	58.315	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW01	382836.120	386978.301	382836.120	386978.301	Required	
SW02	382833.995	386983.044	382833.995	386983.044	Required	
SW03	382831.609	386972.382	382831.609	386972.382	Required	
SW04	382816.198	386973.703	382816.198	386973.703	Required	
TANK	382827.812	386979.964	382827.812	386979.964	Required	
SW05	382807.981	386984.661	382807.981	386984.661	Required	
SW06	382813.716	386983.335	382813.716	386983.335	Required	
SW07	382816.194	386990.116	382816.194	386990.116	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
JUNCTION	382815.405	386990.650			No Entry	
SW08	382819.628	387008.914	382819.628	387008.914	Required	
SW09	382806.806	387011.879	382806.806	387011.879	Required	
SW10	382802.616	387012.847	382802.616	387012.847	Required	
	382801.660	387015.113			No Entry	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	SW01	60.500	58.815	1.460	Open Manhole	1350
2.000	o	150	SW02	60.500	59.335	1.015	Open Manhole	1350
3.000	o	150	SW03	60.500	59.350	1.000	Open Manhole	1350
4.000	o	150	SW04	60.500	59.065	1.285	Open Manhole	1350
1.001	o	225	TANK	60.500	58.800	1.475	Open Manhole	1200
5.000	o	150	SW05	60.500	59.145	1.205	Open Manhole	600
1.002	o	225	SW06	60.500	58.775	1.500	Open Manhole	1200
6.000	o	150	SW07	60.500	58.825	1.525	Open Manhole	600
1.003	o	225	JUNCTION	60.500	58.700	1.575	Junction	
1.004	o	225	SW08	60.350	58.510	1.615	Open Manhole	1200
1.005	o	150	SW09	60.350	58.380	1.820	Open Manhole	1500
1.006	o	150	SW10	60.350	58.340	1.860	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	8.474	564.9	TANK	60.500	58.800	1.475	Open Manhole	1200
2.000	6.908	51.2	TANK	60.500	59.200	1.150	Open Manhole	1200
3.000	8.481	56.5	TANK	60.500	59.200	1.150	Open Manhole	1200
4.000	13.195	49.8	TANK	60.500	58.800	1.550	Open Manhole	1200
1.001	14.493	579.7	SW06	60.500	58.775	1.500	Open Manhole	1200
5.000	5.886	20.0	SW06	60.500	58.851	1.499	Open Manhole	1200
1.002	7.507	100.0	JUNCTION	60.500	58.700	1.575	Junction	
6.000	0.952	19.8	JUNCTION	60.500	58.777	1.573	Junction	
1.003	18.745	98.7	SW08	60.350	58.510	1.615	Open Manhole	1200
1.004	13.161	101.0	SW09	60.350	58.380	1.745	Open Manhole	1500
1.005	4.300	107.5	SW10	60.350	58.340	1.860	Open Manhole	1200
1.006	2.459	98.4		60.330	58.315	1.865	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.039	0.039	0.039
2.000	-	-	100	0.023	0.023	0.023
3.000	-	-	100	0.037	0.037	0.037
4.000	-	-	100	0.032	0.032	0.032
1.001	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.062	0.062	0.062
1.002	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.025	0.025	0.025
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.218	0.218	0.218

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.006		60.330	58.315	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Time/Area Diagrams	4
		Number of Storage Structures	1
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.378		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SW09, DS/PN: 1.005, Volume (m³): 4.0

Unit Reference	MD-SHE-0100-5000-1400-5000
Design Head (m)	1.400
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	100
Invert Level (m)	58.380
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.400	5.0	Kick-Flo®	0.855	4.0
Flush-Flo™	0.416	5.0	Mean Flow over Head Range	-	4.4

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.3	0.800	4.3	2.000	5.9	4.000	8.2	7.000	10.7
0.200	4.6	1.000	4.3	2.200	6.2	4.500	8.6	7.500	11.0
0.300	4.9	1.200	4.7	2.400	6.4	5.000	9.1	8.000	11.4
0.400	5.0	1.400	5.0	2.600	6.7	5.500	9.5	8.500	11.7
0.500	5.0	1.600	5.3	3.000	7.1	6.000	9.9	9.000	12.0
0.600	4.9	1.800	5.6	3.500	7.7	6.500	10.3	9.500	12.3

Storage Structures for Storm

Cellular Storage Manhole: TANK, DS/PN: 1.001

Invert Level (m) 58.800 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	57.0	0.0	0.800	57.0	0.0	0.801	0.0	0.0

Time Area Diagram for Green Roof at Pipe Number 2.000 (Storm)

Area (m³) 137 Evaporation (mm/day) 3
 Depression Storage (mm) 5 Decay Coefficient 0.050

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From: To:		From: To:		From: To:		From: To:	
0 4	0.002490	32 36	0.000503	64 68	0.000101	96 100	0.000020
4 8	0.002038	36 40	0.000412	68 72	0.000083	100 104	0.000017
8 12	0.001669	40 44	0.000337	72 76	0.000068	104 108	0.000014
12 16	0.001366	44 48	0.000276	76 80	0.000056	108 112	0.000011
16 20	0.001119	48 52	0.000226	80 84	0.000046	112 116	0.000009
20 24	0.000916	52 56	0.000185	84 88	0.000037	116 120	0.000008
24 28	0.000750	56 60	0.000151	88 92	0.000031		
28 32	0.000614	60 64	0.000124	92 96	0.000025		

Time Area Diagram for Green Roof at Pipe Number 3.000 (Storm)

Area (m³) 137 Evaporation (mm/day) 3
 Depression Storage (mm) 5 Decay Coefficient 0.050

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From: To:		From: To:		From: To:		From: To:	
0 4	0.002490	32 36	0.000503	64 68	0.000101	96 100	0.000020
4 8	0.002038	36 40	0.000412	68 72	0.000083	100 104	0.000017
8 12	0.001669	40 44	0.000337	72 76	0.000068	104 108	0.000014
12 16	0.001366	44 48	0.000276	76 80	0.000056	108 112	0.000011
16 20	0.001119	48 52	0.000226	80 84	0.000046	112 116	0.000009
20 24	0.000916	52 56	0.000185	84 88	0.000037	116 120	0.000008
24 28	0.000750	56 60	0.000151	88 92	0.000031		
28 32	0.000614	60 64	0.000124	92 96	0.000025		

Time Area Diagram for Green Roof at Pipe Number 4.000 (Storm)

Area (m³) 137 Evaporation (mm/day) 3
 Depression Storage (mm) 5 Decay Coefficient 0.050

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From: To:		From: To:		From: To:		From: To:	
0 4	0.002490	24 28	0.000750	48 52	0.000226	72 76	0.000068
4 8	0.002038	28 32	0.000614	52 56	0.000185	76 80	0.000056
8 12	0.001669	32 36	0.000503	56 60	0.000151	80 84	0.000046
12 16	0.001366	36 40	0.000412	60 64	0.000124	84 88	0.000037
16 20	0.001119	40 44	0.000337	64 68	0.000101	88 92	0.000031
20 24	0.000916	44 48	0.000276	68 72	0.000083	92 96	0.000025

Time Area Diagram for Green Roof at Pipe Number 4.000 (Storm)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From: To:		From: To:		From: To:		From: To:	
96 100	0.000020	104 108	0.000014	112 116	0.000009		
100 104	0.000017	108 112	0.000011	116 120	0.000008		

Time Area Diagram for Green Roof at Pipe Number 6.000 (Storm)

Area (m³) 137

Evaporation (mm/day) 3

Depression Storage (mm) 5

Decay Coefficient 0.050

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
From: To:		From: To:		From: To:		From: To:	
0 4	0.002490	32 36	0.000503	64 68	0.000101	96 100	0.000020
4 8	0.002038	36 40	0.000412	68 72	0.000083	100 104	0.000017
8 12	0.001669	40 44	0.000337	72 76	0.000068	104 108	0.000014
12 16	0.001366	44 48	0.000276	76 80	0.000056	108 112	0.000011
16 20	0.001119	48 52	0.000226	80 84	0.000046	112 116	0.000009
20 24	0.000916	52 56	0.000185	84 88	0.000037	116 120	0.000008
24 28	0.000750	56 60	0.000151	88 92	0.000031		
28 32	0.000614	60 64	0.000124	92 96	0.000025		

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 4
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.378 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	SW01	15 Winter	1	+0%	30/30 Summer				58.896	-0.144
2.000	SW02	120 Winter	1	+0%	100/120 Winter				59.349	-0.136
3.000	SW03	120 Winter	1	+0%	100/120 Winter				59.364	-0.136
4.000	SW04	120 Winter	1	+0%	30/120 Winter				59.078	-0.137
1.001	TANK	120 Winter	1	+0%	30/30 Summer				58.853	-0.172
5.000	SW05	15 Winter	1	+0%	100/15 Summer				59.194	-0.101
1.002	SW06	15 Winter	1	+0%	30/15 Summer				58.842	-0.158
6.000	SW07	60 Winter	1	+0%	30/15 Summer				58.842	-0.133
1.003	JUNCTION	15 Winter	1	+0%	30/15 Summer				58.756	-0.169
1.004	SW08	15 Winter	1	+0%	30/15 Summer				58.640	-0.095
1.005	SW09	15 Winter	1	+0%	1/15 Summer				58.632	0.102
1.006	SW10	15 Winter	1	+0%					58.408	-0.082

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)				
1.000	SW01	0.000	0.28		4.7		OK		
2.000	SW02	0.000	0.02		0.4		OK		
3.000	SW03	0.000	0.02		0.4		OK		
4.000	SW04	0.000	0.02		0.4		OK		
1.001	TANK	0.000	0.12		64 1.7		OK		
5.000	SW05	0.000	0.23		7.6		OK		
1.002	SW06	0.000	0.19		7.3		OK		
6.000	SW07	0.000	0.03		0.4		OK		
1.003	JUNCTION	0.000	0.14		7.4		OK*		
1.004	SW08	0.000	0.15		6.6		OK		
1.005	SW09	0.000	0.37		4.6	SURCHARGED			
1.006	SW10	0.000	0.43		4.6		OK		

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 4
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.378 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	SW01	15 Winter	2	+0%	30/30 Summer				58.909	-0.131
2.000	SW02	60 Winter	2	+0%	100/120 Winter				59.352	-0.133
3.000	SW03	60 Winter	2	+0%	100/120 Winter				59.367	-0.133
4.000	SW04	60 Winter	2	+0%	30/120 Winter				59.081	-0.134
1.001	TANK	120 Winter	2	+0%	30/30 Summer				58.865	-0.160
5.000	SW05	15 Winter	2	+0%	100/15 Summer				59.201	-0.094
1.002	SW06	15 Winter	2	+0%	30/15 Summer				58.851	-0.149
6.000	SW07	60 Winter	2	+0%	30/15 Summer				58.845	-0.130
1.003	JUNCTION	15 Winter	2	+0%	30/15 Summer				58.765	-0.160
1.004	SW08	15 Winter	2	+0%	30/15 Summer				58.734	-0.001
1.005	SW09	15 Winter	2	+0%	1/15 Summer				58.726	0.196
1.006	SW10	15 Winter	2	+0%					58.411	-0.079

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)				
1.000	SW01	0.000	0.36		6.1		OK		
2.000	SW02	0.000	0.03		0.6		OK		
3.000	SW03	0.000	0.03		0.6		OK		
4.000	SW04	0.000	0.03		0.6		OK		
1.001	TANK	0.000	0.18		61	2.4	OK		
5.000	SW05	0.000	0.30		9.8		OK		
1.002	SW06	0.000	0.24		9.3		OK		
6.000	SW07	0.000	0.05		0.6		OK		
1.003	JUNCTION	0.000	0.18		9.5		OK*		
1.004	SW08	0.000	0.17		7.6		OK		
1.005	SW09	0.000	0.39		4.9	SURCHARGED			
1.006	SW10	0.000	0.45		4.9		OK		

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 4
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.378 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	SW01	120 Winter	30	+40%	30/30 Summer				59.240	0.200
2.000	SW02	30 Winter	30	+40%	100/120 Winter				59.364	-0.121
3.000	SW03	30 Winter	30	+40%	100/120 Winter				59.380	-0.120
4.000	SW04	120 Winter	30	+40%	30/120 Winter				59.241	0.026
1.001	TANK	120 Winter	30	+40%	30/30 Summer				59.239	0.214
5.000	SW05	15 Winter	30	+40%	100/15 Summer				59.249	-0.046
1.002	SW06	120 Winter	30	+40%	30/15 Summer				59.235	0.235
6.000	SW07	120 Winter	30	+40%	30/15 Summer				59.232	0.257
1.003	JUNCTION	15 Summer	30	+40%	30/15 Summer				58.927	0.002
1.004	SW08	120 Winter	30	+40%	30/15 Summer				59.225	0.490
1.005	SW09	120 Winter	30	+40%	1/15 Summer				59.217	0.687
1.006	SW10	15 Summer	30	+40%					58.411	-0.079

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SW01	0.000	0.29		5.0	SURCHARGED	
2.000	SW02	0.000	0.08		1.8	OK	
3.000	SW03	0.000	0.09		1.8	OK	
4.000	SW04	0.000	0.06		1.4	SURCHARGED	
1.001	TANK	0.000	0.32	64	4.5	SURCHARGED	
5.000	SW05	0.000	0.78		26.0	OK	
1.002	SW06	0.000	0.25		9.7	SURCHARGED	
6.000	SW07	0.000	0.10		1.3	SURCHARGED	
1.003	JUNCTION	0.000	0.36		19.0	SURCHARGED*	
1.004	SW08	0.000	0.14		6.5	SURCHARGED	
1.005	SW09	0.000	0.40		5.0	SURCHARGED	
1.006	SW10	0.000	0.46		5.0	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 4
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.378 Cv (Winter) 0.840

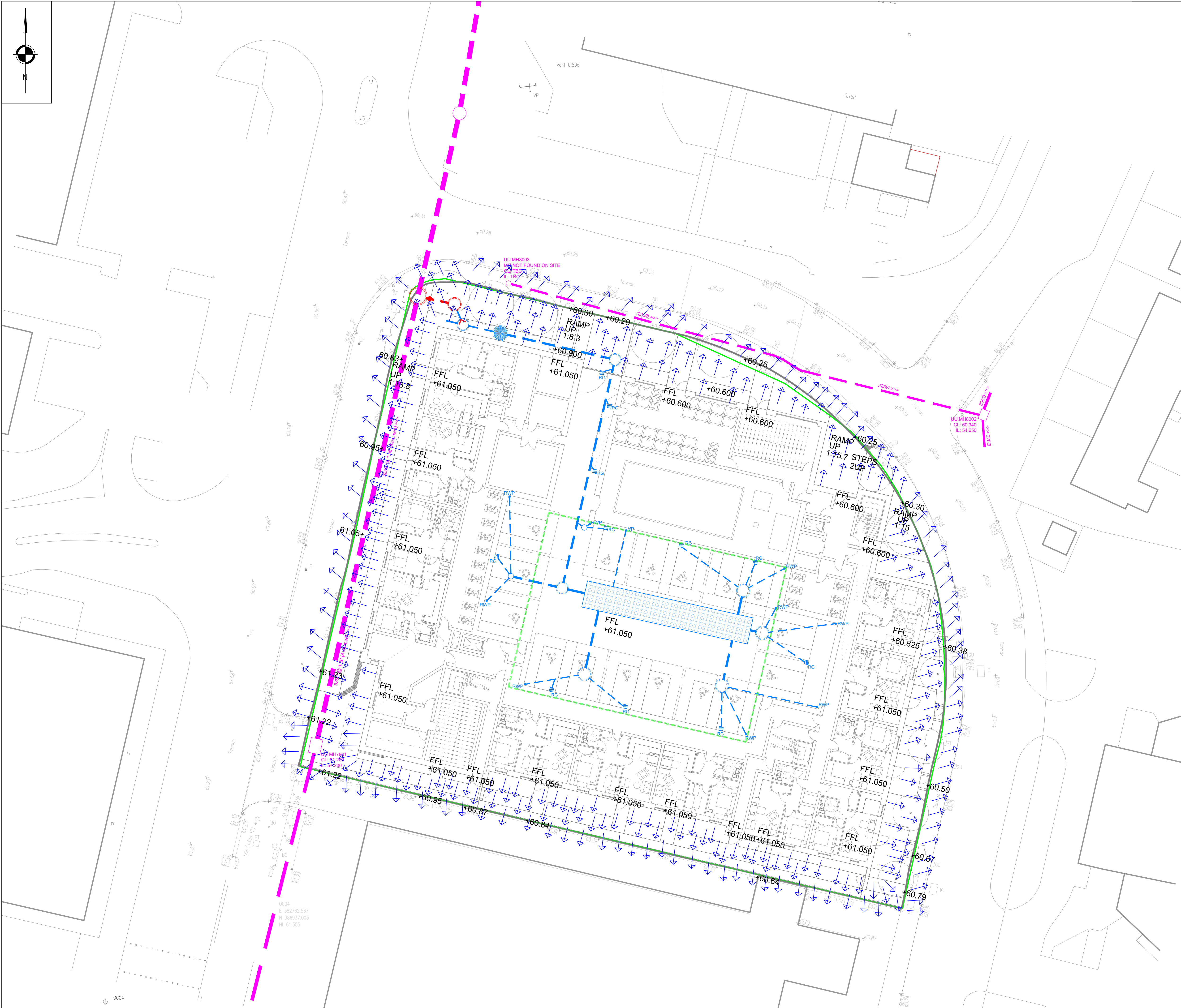
Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status OFF
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	SW01	120 Winter	100	+45%	30/30 Summer				59.533	0.493
2.000	SW02	120 Winter	100	+45%	100/120 Winter				59.534	0.049
3.000	SW03	120 Winter	100	+45%	100/120 Winter				59.534	0.034
4.000	SW04	120 Winter	100	+45%	30/120 Winter				59.535	0.320
1.001	TANK	120 Winter	100	+45%	30/30 Summer				59.532	0.507
5.000	SW05	120 Winter	100	+45%	100/15 Summer				59.531	0.236
1.002	SW06	120 Winter	100	+45%	30/15 Summer				59.527	0.527
6.000	SW07	120 Winter	100	+45%	30/15 Summer				59.523	0.548
1.003	JUNCTION	15 Summer	100	+45%	30/15 Summer				58.927	0.002
1.004	SW08	120 Winter	100	+45%	30/15 Summer				59.515	0.780
1.005	SW09	120 Winter	100	+45%	1/15 Summer				59.507	0.977
1.006	SW10	480 Summer	100	+45%					58.411	-0.079

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	SW01	0.000	0.39		6.7	SURCHARGED	
2.000	SW02	0.000	0.09		1.9	SURCHARGED	
3.000	SW03	0.000	0.09		1.9	SURCHARGED	
4.000	SW04	0.000	0.07		1.6	SURCHARGED	
1.001	TANK	0.000	0.33	107	4.5	SURCHARGED	
5.000	SW05	0.000	0.35		11.7	SURCHARGED	
1.002	SW06	0.000	0.25		9.8	SURCHARGED	
6.000	SW07	0.000	0.13		1.8	SURCHARGED	
1.003	JUNCTION	0.000	0.37		19.5	SURCHARGED*	
1.004	SW08	0.000	0.15		6.5	SURCHARGED	
1.005	SW09	0.000	0.40		5.0	SURCHARGED	
1.006	SW10	0.000	0.46		5.0	OK	

APPENDIX I – EXCEEDANCE FLOW PATHS DRAWING



LEGEND

- PROPOSED SURFACE WATER MANHOLE
- PROPOSED COMBINED WATER MANHOLE
- PROPOSED SURFACE WATER PPIC
- PROPOSED SURFACE WATER DRAINAGE
- PROPOSED COMBINED WATER DRAINAGE
- PROPOSED HYDROBRAKE CHAMBER
- PROPOSED CELLULAR ATTENUATION TANK
- EXISTING PUBLIC COMBINED WATER DRAINAGE
- SITE BOUNDARY
- PROPOSED ROAD GULLY
- EXCEEDANCE FLOOD ROUTES

P01	21.01.2026	PRELIMINARY ISSUE		JLJ	JRS	KOB
REV	DATE	DESCRIPTION		BY	CHK	APP

DRAWING STATUS: **PRELIMINARY**

CLIENT: MUSE PLACES

ARCHITECT: LEVITT BERNSTEIN

PROJECT: ALPHA HOUSE, WYTHENSHAW

TITLE: EXCEEDANCE FLOW PATHS

STATUS:	PROJECT No:	PROJECT	ORIGIN	FUNCT.	SPACIAL	FORM	DISC.	DRAWING No.	REV:
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SCALE @ A1: 1:200

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JLJ	JLJ	JRS	KOB	JAN 2026

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