RIDGE

Flood Risk Assessment and Outline Drainage Strategy

Octagon House, Hathersage Road, Manchester

PLYMOUTH GROVE RESIDENTIAL LLP

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OCTAGON HOUSE, HATHERSAGE ROAD, MANCHESTER
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1. EXECUTIVE SUMMARY

1.1. This report details the Flood Risk Assessment and Outline Drainage Strategy for the *Full planning application for the refurbishment and extension of Octagon House and the erection of buildings of up to 11 storeys in height to accommodate a mix of uses comprising Purpose Built Student Accommodation bedrooms (205 studios and 35 apartments accommodating 255 bedrooms) (Sui Generis Use Class); Key Worker accommodation (Sui Generis Use Class) (211 units); Residential units (16 no) (Use Class C3); 2,568 sq m of healthcare use (including the retention of an existing healthcare facility on site) (Use Class Ee); and 394 sq m of commercial or community uses (Use Classes Ea, Eb, Eciii, Ee, Ef, F1e, F2b, F2c) with associated site access, car and cycle parking and landscaping.* **Table 1** below provides a summary of the Flood Risk and Drainage / SuDS Strategy for the scheme.

Table 1 – Drainage and Flood Risk Summary

Item	Brief Description
Flood Zone	The site is located within Flood Zone 1 (low probability) and is therefore at minimal risk of fluvial flooding. Surface water flood mapping indicates low risk, with localised ponding of external areas during extreme events that coincide with areas in the topographic survey that are low-lying. The site is also at low risk from groundwater, artificial sources, and infrastructure failure. See Appendix E for EA correspondence.
Geology	A Phase 2 intrusive investigation has not been undertaken yet. A completed Phase 1 Desktop Study indicates the likely superficial presence of low permeability glacial till, with sandstone bedrock at depth.
Infiltration Rate	A Phase 2 intrusive investigation has not been undertaken yet. Ground conditions are expected to limit infiltration potential across the site.
Nearest Watercourses	There are no watercourses or surface water features located within 250m of the site. Discharge to a watercourse is not considered feasible.
Nearest Public Sewers	Several public combined sewers are present adjacent the site. Existing connections from the site have been proven by CCTV survey.
Surface Water Outfall and SuDS Hierarchal Approach	The drainage strategy follows the SuDS hierarchy: ▪ Infiltration: unlikely due to expected ground conditions ▪ Watercourse: none located near the site ▪ Surface Water Sewer: none located near the site ▪ Combined Sewer: Several public combined sewers surround the site

Existing Discharge Rate	Existing site drainage has been proven to discharge to adjacent public combined sewers. Given the brownfield nature of the site, discharge rates have been calculated accordingly.
Proposed Discharge Rate	Octagon House will continue to drain surface water as it currently does unrestricted as justified in Section 7.8, 1.85. Surface water discharge for the remaining new-build areas of the site will discharge surface water limited to existing 1year brownfield rate with a 50% reduction as betterment in accordance with LLFA requirements. Proposed restricted discharge rate total for new-build surface water runoff is 41.55 l/sec accepted by United Utilities, for all rainfall events.
Allowance for Climate Change	In accordance with current Environment Agency climate change guidance for the Upper / Lower Irwell management catchment: ▪ 3.3% AEP (+40%) ▪ 1% AEP (+45%) The proposed development has been assessed using these latest Environment Agency climate change allowances. The surface water drainage system has been designed to remain operational and ensure the development is safe for its lifetime, taking account of future climate change impacts.
Proposed Attenuation Method and Volume	Surface water will initially be managed with source control rain gardens and bioretention features for new development area. Where additional attenuation is required to contain volume then this will be in the form of shallow sub-base replacement geocellular solution and oversized pipes where required. Attenuation to be provided expected to be up to 460 m³ storage for the 1 in 100 year +45% climate change event. Volume is subject to detailed design.
SuDS features	The development will incorporate rain gardens and bioretention as methods of source control with potential for sub-base replacement geocellular storage and oversized pipes to provide attenuation where required.
Maintenance Responsibility	Maintenance of the drainage network and SuDS features will be undertaken by a management company or site owner, ensuring long-term performance of the system.
Foul Drainage Outfall	Proposed foul water flows will discharge to the public combined sewer network at an unrestricted rate, confirmed by United Utilities PDE response dated 18/05/2026. Foul water from the existing Octagon House building will continue to be via the existing site drain connection into Carmoor Road if feasible in the new development layout. The new-build development will have multiple discharge connections to utilise existing connections where possible with additional point of connection to the existing public combined sewer running through the site where required.

Residual Risk and Exceedance	Residual risks are low and relate primarily to extreme events exceeding the 1 in 100 year + climate change design standard or system blockage. These are mitigated through levels design and exceedance flow routing, ensuring floodwater remains on-site and away from buildings.

1.2. The proposed development will reduce runoff rates and volumes compared to the existing brownfield condition and will not increase flood risk on-site or elsewhere. The scheme is compliant with NPPF and LLFA requirements and represents a sustainable and robust drainage solution.

1.3. The development will be safe for its lifetime without increasing flood risk elsewhere and, where possible, will reduce existing flood risk through improvements to the surface water drainage regime.

2. INTRODUCTION

1.4. Plymouth Grove Residential LLP have appointed Ridge & Partners LLP Ltd to prepare this Flood Risk Assessment (FRA) and Outline Drainage Strategy Report to support a *Full planning application for the refurbishment and extension of Octagon House and the erection of buildings of up to 11 storeys in height to accommodate a mix of uses comprising Purpose Built Student Accommodation bedrooms (205 studios and 35 apartments accommodating 255 bedrooms) (Sui Generis Use Class); Key Worker accommodation (Sui Generis Use Class) (211 units); Residential units (16 no) (Use Class C3); 2,568 sq m of healthcare use (including the retention of an existing healthcare facility on site) (Use Class Ee); and 394 sq m of commercial or community uses (Use Classes Ea, Eb, Eciii, Ee, Ef, F1e, F2b, F2c) with associated site access, car and cycle parking and landscaping*.

1.5. The assessment has been prepared having regard to Chapter 18 (Managing Flood Risk and Coastal Change) of the National Planning Policy Framework (2026), specifically Policies F1 to F9. The development has also been assessed against Annex F Flood Zone definitions, Flood Risk Vulnerability Classification and Flood Zone Compatibility requirements. Surface water drainage proposals have been developed in accordance with Policy F8 and the National Standards for Sustainable Drainage Systems (2025).

1.6. The assessment is based on the development proposals as provided by the Architectural site masterplan that is included in **Appendix A**.

1.7. The report has been commissioned to identify any drainage-related issues associated with the proposed development and which are subsequently addressed within this report;

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

3. PLANNING POLICY AND CONSULTATION

3.1. Planning Policy Framework

1.8. The assessment has been prepared having regard to Chapter 18 (Managing Flood Risk and Coastal Change) of the National Planning Policy Framework (2026), specifically Policies F1 to F9. The development has also been assessed against Annex F Flood Zone definitions, Flood Risk Vulnerability Classification and Flood Zone Compatibility requirements. Surface water drainage proposals have been developed in accordance with Policy F8 and the National Standards for Sustainable Drainage Systems (2025).

1.9. The Environment Agency's Flood Map for Planning (FMfP) identifies the site as located within Flood Zone 1, which is defined as having a low probability of fluvial flooding (less than 1 in 1,000 annual probability, or <0.1%). In accordance with the National Planning Policy Framework (NPPF), development proposals should be directed to areas of lowest flood risk. As the site lies within Flood Zone 1, the Sequential Test is satisfied. Where applicable, development must also be assessed against the Exception Test.

1.10. Sequential Test:

The NPPF defines Flood Zone 1 as land with a low probability of flooding. The residential and residential-led elements of the development are classified as 'More Vulnerable' development within Annex F, Table 2 of the NPPF (2026).

1.11. The proposed development comprises a mix of residential, healthcare and commercial uses. For the purposes of flood risk assessment, the most vulnerable relevant classification has been applied when considering compatibility with Flood Zone 1. All proposed uses are compatible with Flood Zone 1 and the development therefore satisfies Annex F Table 3 requirements.

Annex F, Table 3 of NPPF (2026) confirms that 'More Vulnerable' development is appropriate within Flood Zone 1.

1.12. Accordingly, the proposed development is considered acceptable in flood risk terms, subject to the implementation of appropriate drainage and mitigation measures where required.

1.13. Exception Test:

As the proposed development is located within Flood Zone 1 and is appropriate for its flood risk vulnerability classification, the Exception Test is not required.

3.2. Strategic Flood Risk Assessment (SFRA)

1.14. Strategic Flood Risk Assessments (SFRAs) assess the risk from all sources of flooding and provide the evidence base to inform spatial planning decisions. They support the application of the Sequential and Exception Tests set out in the NPPF and guide the location, type, and design of development. Manchester City Council, as the Local Planning Authority (LPA) and Lead Local Flood Authority (LLFA), has prepared SFRAs in consultation with the Environment Agency (EA) to inform local planning policy and decision-making.

1.15. Manchester City Council use the Level 1 and Level 2 SFRAs, dated 2010 and 2011 respectively, prepared by JBA Consulting, alongside subsequent updates and EA mapping. The SFRA identifies and maps all sources of flood risk, including fluvial, surface water, sewer,

groundwater, and artificial sources, and considers the potential impacts of climate change using current Environment Agency guidance.

1.16. Key principles from the SFRA and Local Authority policies relevant to the development site are summarised below:

- Surface water drainage from new developments is identified as critical in reducing localised flood risk across Manchester,
- Development proposals must be in areas of lowest flood risk where practicable, in accordance with the Sequential Test, and where required, demonstrate compliance with the Exception Test,
- A site-specific Flood Risk Assessment (FRA) must be informed by the latest SFRA, Environment Agency flood mapping, and climate change allowances,
- Development on brownfield sites should achieve a minimum 50% reduction in surface water runoff rates,
- Development must be designed to ensure no flooding of the site during a 1 in 30 year rainfall event and no flooding of buildings during a 1 in 100 year event, including appropriate climate change allowances, in line with Environment Agency guidance.
- Development should incorporate Sustainable Drainage Systems (SuDS) and seek to attenuate runoff to minimise increases in flow rates and runoff volumes, prioritising multi-functional, above-ground features in accordance with Greater Manchester SuDS guidance,
- Freeboard should be incorporated into development design to account for modelling uncertainty, climate change and residual risk
- Surface water and foul drainage systems must be designed on a separate system, with discharge rates and connections agreed with United Utilities and the LLFA.

4. THE SITE

1.17. The site details are summarised in **Table 2** below:

Table 2 - Site Details

Item	Brief Description
Site name	Octagon House
Site address and location	Hathersage Road, Manchester
Planning Authority	Manchester City Council
Lead Local Flood Authority	Manchester City Council
Drainage Statutory Undertaker	United Utilities
Site Area	1.253 ha
Approximate Grid Reference	E: 385610, N: 395931
General Locality	The site occupies the corner adjacent the junction of Carmoor Road with Hathersage Road. It is bounded by student accommodation to the east and housing on Upper West Grove to the north.

4.1. Site Description

1.18. The existing site and surrounding boundary conditions are shown **Figure 1**. The redline boundary denotes the detailed application boundary. The site area is approximately 1.253 hectares.

1.19. The site is predominantly Brownfield, being occupied by Octagon House, a derelict building and hardstanding areas.

1.20. The site is bound:

- to the north by housing on Upper West Grove
- student housing to the east on Bax Road
- Hathersage Road to the south
- Carmoor Road to the west
- the northwest corner of the site boundary wraps around an existing electricity facility

1.21. An existing vehicle access point is located off Hathersage Road into the Renal Unit patient/visitor car park. A further access point is located off Carmoor Road for staff parking and access to the energy facility, known as Curzon Street, that is a private road.

1.22. The topographic survey of the site indicates that the maximum ground level of the site of 44.15m AOD is located to the north. The lowest recorded ground level of the site is located at the far southwest corner with a recorded level of 43.51m AOD at the existing back of adopted footway line.

1.23. The site is generally level with a gentle longitudinal fall from north to southwest. Hardstandings within the site fall to valley lines served by drainage channels where large areas are effectively level with no longitudinal fall.

1.24. The topographic survey is provided in **Appendix B**.

Figure 1 - Aerial Photograph of Existing Site



4.2. Proposed Development

1.25. As described fully in the Introduction, 2.1.3, this report is prepared to support a Full Planning application for the development and associated works.

1.26. The site is approximately 1.253 hectares in total area.

1.27. Accesses into the development parcel will be from:

- Improved Carmoor Road access to Colwell Road that will be for deliveries/service vehicles only

- New access off Carmoor Road for proposed multi-level Renal Unit staff car parking
- existing and improved site access point for the Renal Unit patient/visitor car park off Hathersage Road

1.28. The current outline Architectural site Master Plan in **Appendix A** provides a visual indication of the proposals for the site.

5. DEFINITION OF FLOOD HAZARD

5.1. Sources of information

1.29. The NPPF requires the developer to consider the impact of runoff generated by the proposed development onto the downstream catchment, and to assess the risk of runoff from the surrounding district impacting on the development footprint. Further, the report is to consider flood risk from all other sources. The following section defines the flood risk receptors and anticipated flood risk. Section 5 then discusses in further detail the probability of flooding and the likely impacts.

Table 3 - Sources of information used in the identification of flood risk

Source of Information	Details
Environment Agency Flood Map for Planning Service	Indicative Flood Maps
Environment Agency Flood Data Request Service	Response to request for data
United Utilities	Sewer Records Extract
Historic Maps	From various websites
Manchester City, Salford City and Trafford Councils Hybrid SFRAs	Reports & Various Maps from SFRA

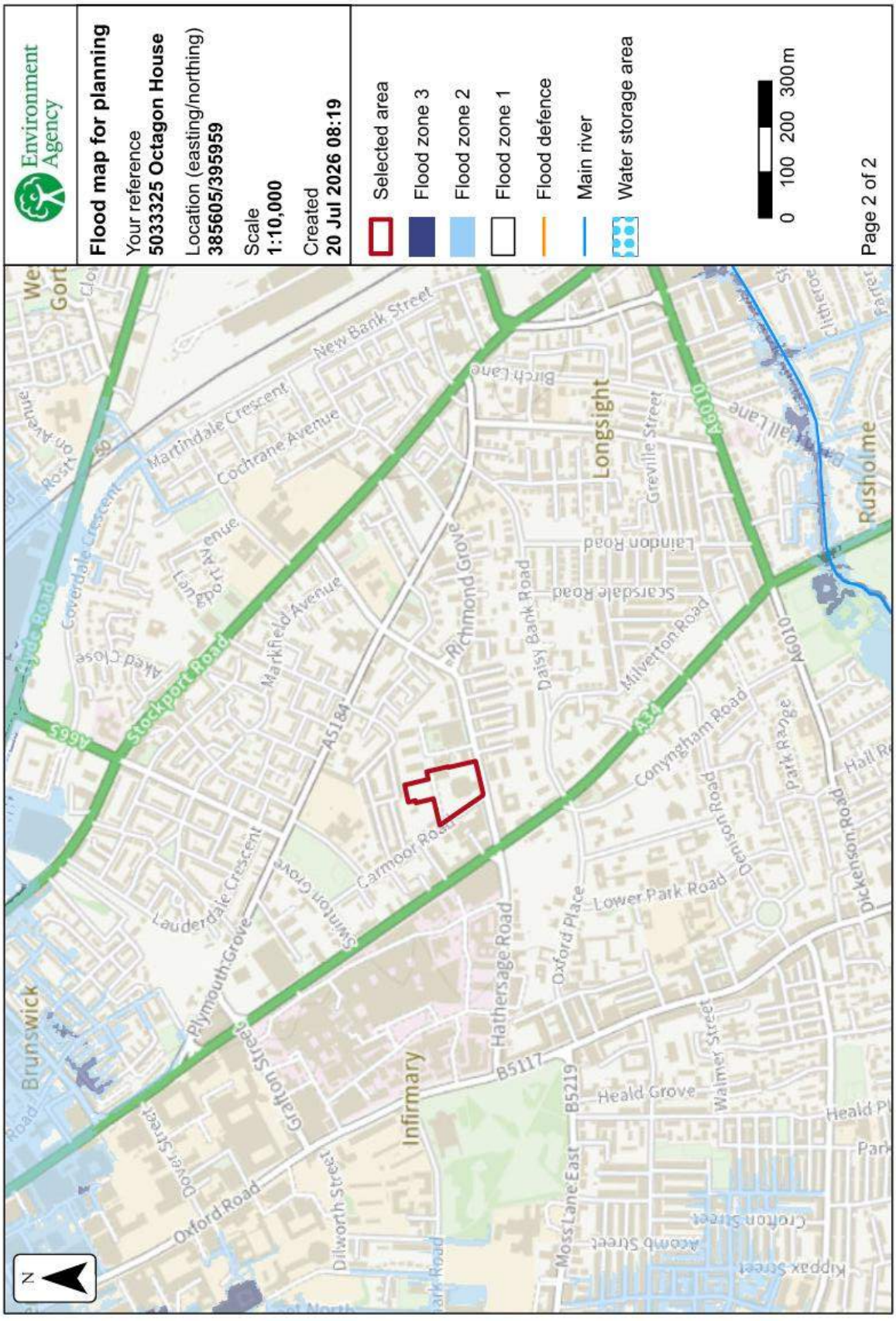
5.2. Flooding from Rivers (Fluvial)

1.30. The EA Flood Map for Planning (FMfP) indicates that the site is situated in Flood Zone 1 (>1000 year). **See Figure 2** on the following page.

1.31. The flood risk to the site from Fluvial generators is considered low.

1.32. A flood data request to the EA for this specific area was requested. The EA responded that no data is available.

Figure 2 - The EA's Flood Map for Planning



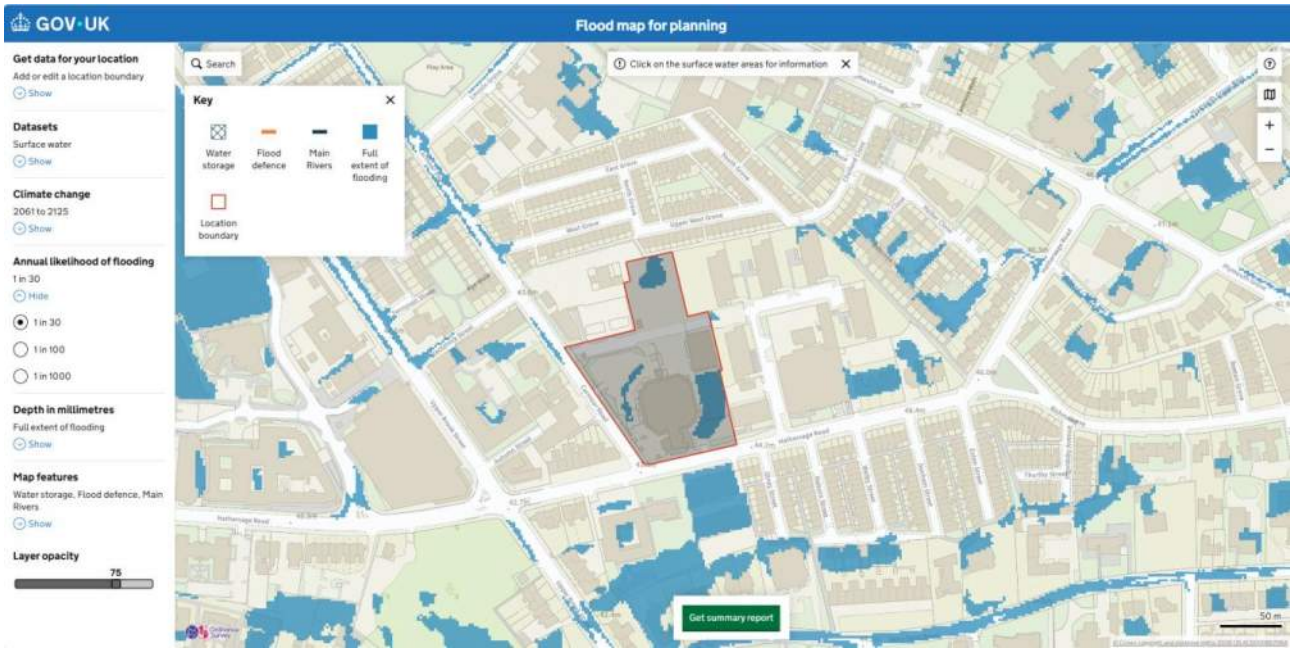
5.3. Flooding From Land (Overland Flow)

1.33. The Environment Agency Flood Map for Planning (FMfP) surface water dataset has been reviewed to inform this assessment and to establish the baseline surface water flood risk affecting the site.

1.34. The most recent available dataset (May 2026) identifies isolated areas of low-risk ponding affecting external hardstanding only for the 1 in 30 year plus climate change scenario. See **Figure 3** below.

1.35. Review of the Environment Agency Risk of Flooding from Surface Water mapping indicates that predicted flooding is principally confined to external areas of the site and does not materially affect the proposed development parcels. Any residual risk will be further mitigated through detailed levels design, exceedance routing and surface water management measures.

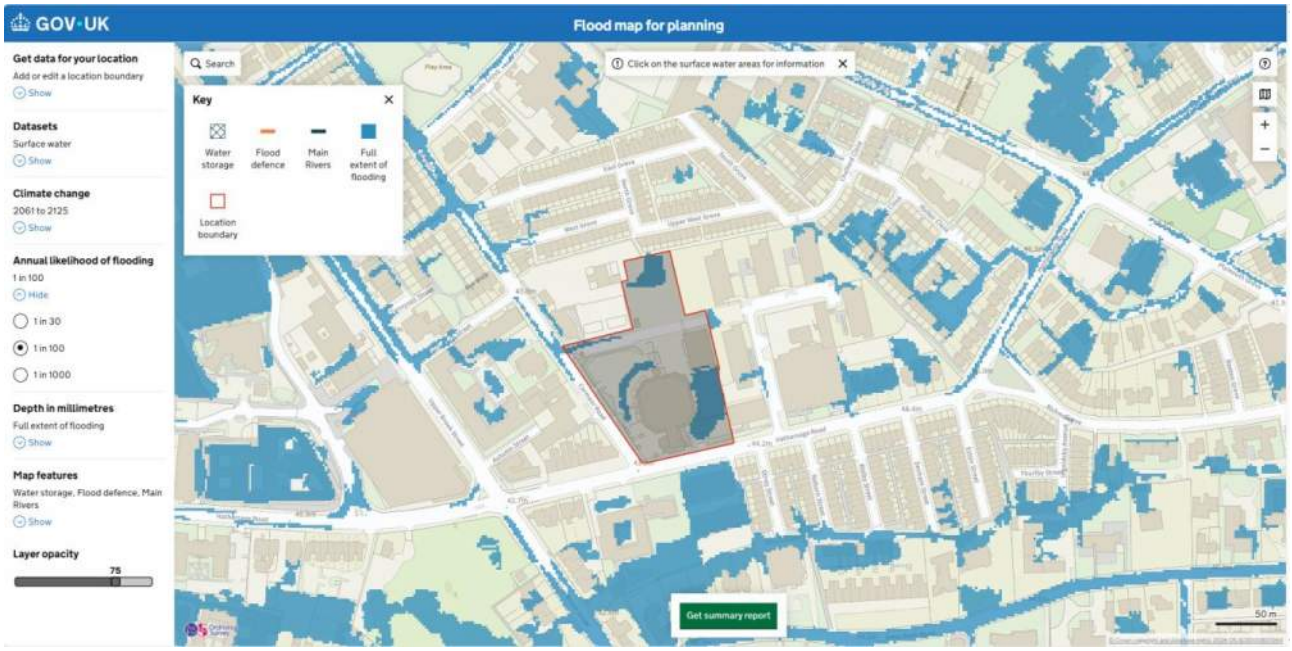
Figure 3 – 1 in 30 year plus climate change Surface Water Flooding



1.36. Similar flooding with a greater extent and depth is identified in the 1 in 100 year plus climate change scenario. See **Figure 4** on the following page.

1.37. No flooding in the 1 in 100 year plus climate change scenario is predicted to affect proposed buildings, critical infrastructure, emergency access routes or areas of vulnerable development. The predicted flooding is therefore considered to be limited in extent and consequence.

Figure 4 – 1 in 100 year plus climate change Surface Water Flooding

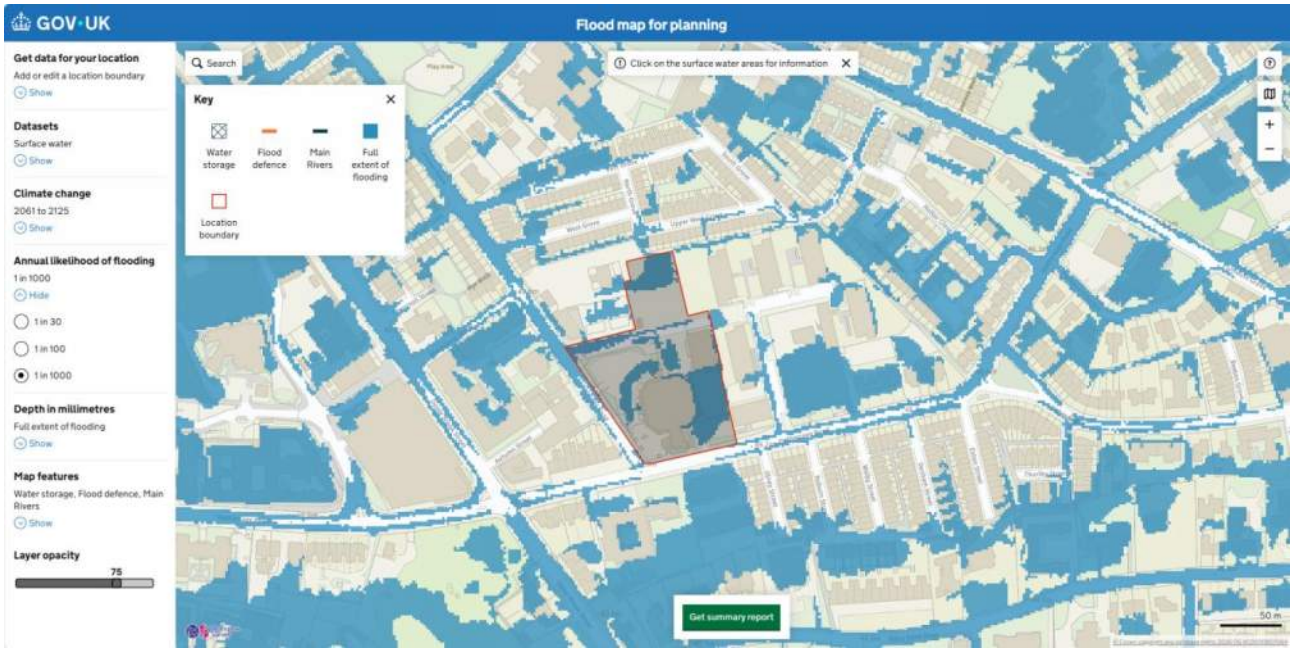


1.38. Flooding with a greater extent and depth is identified in the 1 in 1000 year plus climate change scenario. See **Figure 5** on the following page.

1.39. No flooding in the 1 in 1000 year plus climate change scenario is predicted to affect proposed buildings, critical infrastructure, emergency access routes or areas of vulnerable development. The predicted flooding is therefore considered to be limited in extent and consequence.

1.40. Such exceedance conditions are anticipated for a brownfield site of this nature. However, they reinforce the need for a robust drainage strategy. The proposed development will incorporate appropriate exceedance design measures to safely manage and route flows during extreme events, ensuring that property flooding is avoided and that there is no increase in flood risk on-site or to adjacent land, in accordance with LLFA requirements and best practice guidance. See Figure 5 on the following page.

Figure 5 – 1 in 1000 year plus climate change Surface Water Flooding



1.41. Although the Environment Agency mapping identifies surface water flooding affecting parts of the site in the 30, 100 and 1000 year , the flooding is predominantly confined to external circulation and hardstanding areas. The flood extents do not indicate a significant risk of internal building flooding, and the development can incorporate exceedance flow routing and temporary storage areas within the external landscape. Consequently, the residual surface water flood risk is considered manageable and does not constitute a constraint to the proposed development, subject to implementation of the proposed drainage strategy and surface water management measures.

1.42. The proposed development will be designed in accordance with the principles of the NPPF and National Standards for Sustainable Drainage Systems (2025), alongside LLFA guidance. The site layout, finished floor levels, and drainage strategy will be developed to ensure that:

- Surface water runoff will be effectively managed on-site for all rainfall events up to and including the critical 1 in 100 year event plus climate change;
- There will be no increase in flood risk on-site or elsewhere, with discharge rates restricted to agreed greenfield-equivalent or betterment rates;
- Existing areas of surface water ponding will be mitigated through the introduction of a managed drainage network, providing an overall betterment in surface water flood risk compared to the pre-development scenario;
- Exceedance flows will be safely routed through the site without causing flooding to buildings or critical infrastructure.

1.43. Accordingly, the proposed development is compliant with LLFA requirements and is not expected to adversely impact surface water flood risk, while delivering a measurable improvement to existing site conditions.

5.4. Flooding from Artificial Drainage

1.44. There are no canals, reservoirs, or other significant artificial water bodies located within the vicinity of the site. A review of the Environment Agency's Technical Map (Reservoirs) confirms that the site does not lie within an area at risk of flooding associated with reservoir failure.

1.45. The extract of United Utilities (UU) sewer records in Figure 6, indicates the presence of public sewer infrastructure in the vicinity of the site and a public sewer crossing through the development site. These records confirm the presence of public combined sewers serving the surrounding area.

1.46. From intrusive drainage investigation it is confirmed that the existing site and hardstandings discharge both foul water and surface water runoff to the public combined sewers, which forms part of an established drainage catchment.

1.47. Based on the available information, the risk of flooding from artificial sources, including reservoirs and the public sewer network, is considered low.

The proposed development will be designed in accordance with the National Standards for Sustainable Drainage Systems (2025) and relevant LLFA guidance to ensure that surface water runoff is appropriately managed on-site, with discharge rates restricted to betterment rates of existing brownfield less 50% for new development area. This will ensure that there is no increase in flood risk on-site or elsewhere, including to the receiving sewer network.

1.48. Any proposed connections to the public sewer network will be subject to agreement with the statutory undertaker, United Utilities, and will be undertaken in accordance with the relevant requirements and asset protection standards.

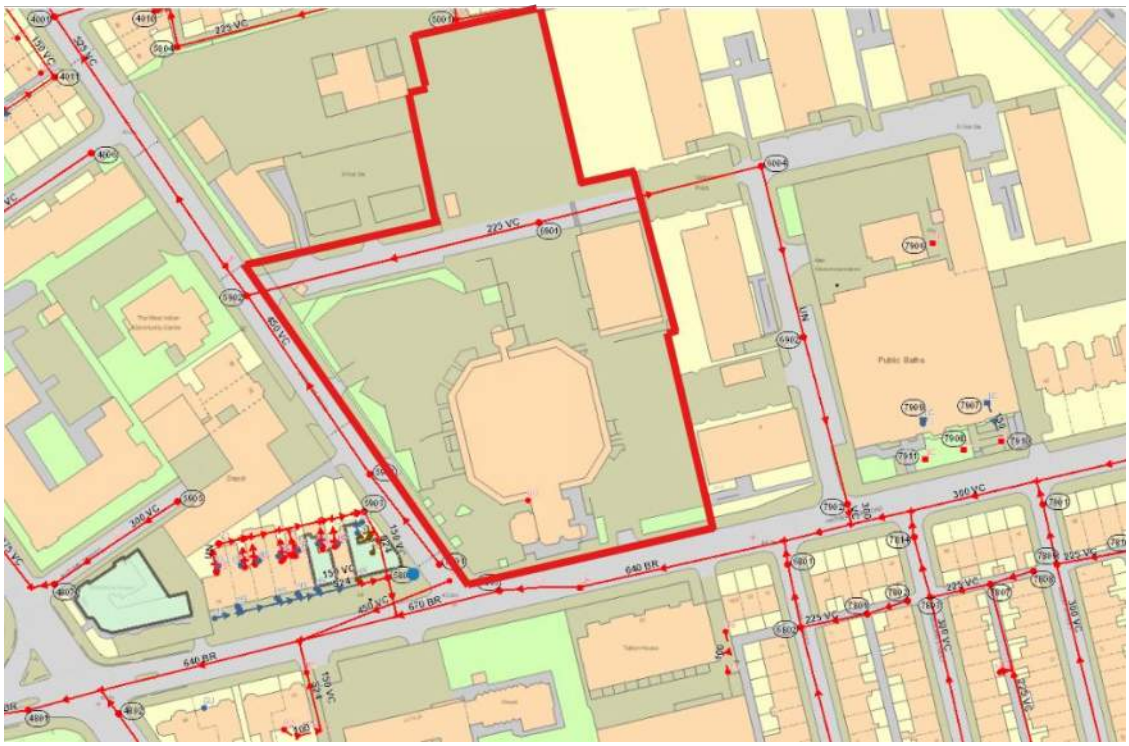


Figure 6 - Extract of United Utilities Sewer Records

5.5. Flooding from Groundwater

1.49. Review of the Manchester, Salford and Trafford SFRA groundwater mapping indicates that the site is not located within an area identified as being particularly susceptible to groundwater flooding.

1.50. Below-ground structures do not form part of the proposals.

1.51. Accordingly, groundwater flooding is considered to present a low risk to the development and is not expected to represent a significant constraint to the proposed development.

5.6. Flooding from Infrastructure Failure

1.52. The proposed site levels and finished floor levels (FFLs) will be designed to ensure that buildings are set above the surrounding ground levels. This approach provides a degree of resilience to potential flooding associated with infrastructure failure, such as surcharging of drainage systems or localised service failure events.

1.53. In addition, the wider drainage strategy incorporates appropriate surface water management and exceedance routing to further reduce reliance on any single element of infrastructure. This ensures that, in the unlikely event of system failure, flood pathways are managed without resulting in property flooding.

1.54. On this basis, and considering the proposed mitigation measures and design approach, the risk of flooding from infrastructure failure is considered to be low. The development is therefore compliant with relevant planning policy and is not expected to increase flood risk on-site or elsewhere.

6. FLOOD RISK SUMMARY

6.1. Summary

1.55. Section 5 has defined the anticipated flood risks from all sources. **Table 4** below considers each of the sources and defines in tabular format the Probability of Flood Risk associated to each and the likely impacts to the development. Below is a table summary of the flood risks associated with the development site.

Table 4 - Flood Risk Summary

Source	Flood Risk	Likely Impacts	Remarks
Tidal	Low	Low	Site is not tidally influenced.
Fluvial (Watercourse)	Low	Low	Site located in Flood Zone 1 (low risk).
Overland Flow	Low	Low	No defined existing overland flood flow routes through the existing site, localised areas of surface water flooding up to and including the 1 in 1000yr (0.1%), including climate change, will be mitigated by the completion of proposed development
Artificial Sources	Low	Low	No canals or reservoirs are located near the site.
Groundwater	Low	Low	No below ground structures are proposed and risk to be mitigated through appropriate levels design.
Infrastructure Failure	Low	Low	Risks from infrastructure failure will be managed by appropriate levels design and maintenance policies.

7. OUTLINE DRAINAGE STRATEGY

7.1. Existing Surface Water Run Off

1.56. The existing site is approx. 1.253 hectares in size. The site is considered a brownfield site with existing buildings and hardstandings occupying much of the plot area.

1.57. A CCTV survey report dated June 2026 has confirmed the presence of existing positive drainage on the site.

1.58. The existing site has been assessed for run off using the Modified Rational Method with location specific rainfall intensities for respective return periods. Given the Brownfield nature of the site and urbanisation in the locality, at this stage the calculated rates provide a conservative estimate from which betterment on the Brownfield existing runoff rates can be calculated.

1.59. Existing runoff rates are summarised below in **Table 5**. Calculation outputs, including Greenfield Volume, are provided in **Appendix D** for information.

Table 5 - Pre-development Brownfield Runoff Rates for New Development Area

Site area Ha	Q1 (years) L/sec	Q30 (years) L/sec	Q100 (years) L/sec
0.939	83.1	210.4	266.6

1.60. The CCTV report survey plan provided in **Appendix C**, provides evidence that existing foul water connections and surface water runoff connections from the site discharge to the adjacent public combined sewers.

7.2. Geology

1.61. An intrusive ground investigation has not yet been undertaken at the site. A Phase 1 Desktop Study by Ridge and Partners LLP informs Sections 7.2 to 7.6 of this FRA in relation to ground conditions.

1.62. The site is underlain by natural Glacial Till deposits, with sandstone bedrock at depth.

- Potential for granular made ground across the site
- Natural superficial strata consists of Glacial Till, typically unstratified, unsorted mixtures of clay, gravel and boulders.
- Bedrock (Collyhurst Sandstone Formation) is classified as Principal Aquifer

7.3. Hydrogeology and Groundwater

1.63. A Phase 2 intrusive investigation has not yet been undertaken. Therefore, no ground water monitoring results are available.

1.64. The Glacial Till recorded in BGS mapping could act as a low permeability barrier, with limited vertical and lateral groundwater movement.

1.65. The underlying sandstone bedrock is classified as a Principal Aquifer, although it is likely to be hydraulically separated from surface processes by the overlying potentially cohesive deposits.

7.4. Permeability and Infiltration

1.66. The site is potentially dominated by low permeability cohesive soils:

1.67. Glacial Till typically exhibits very low permeability, restricting infiltration and groundwater flow.

1.68. Overall, in the absence of infiltration testing results, the infiltration potential is poor, and soakaways are not considered suitable for surface water disposal. Test results to confirm this should be undertaken prior to detailed design.

7.5. Hydrology

1.69. There are no surface water features within 250m of the site.

7.6. Existing Drainage

1.70. A survey of the existing drainage has been undertaken. An overview plan of the findings is provided in **Appendix C.**

1.71. Octagon House is served by combined water connections to adjacent public combined sewers. Existing external hardstandings in the site are served by channel drains and gullies that also discharge to the adjacent public combined sewers.

7.7. Sustainable Drainage Systems

1.72. SuDS Objectives

The drainage strategy has been considered in accordance with NPPF Policy F8 and the National Standards for Sustainable Drainage Systems (2025), whilst following CIRIA C753 principles.

The primary objectives of SuDS within this scheme are to:

- Manage surface water runoff rates and volumes to ensure there is no increase in flood risk on or off-site
- Improve the quality of runoff prior to discharge

- Provide, where practicable, enhancements to amenity and biodiversity

The drainage strategy has therefore been developed to minimise the impact of the proposed development on both the quantity and quality of surface water runoff while seeking to deliver wider environmental benefits.

1.73. SuDS Design Principles

The proposed SuDS strategy has been designed to integrate with the overall site layout, ensuring that drainage features complement the development form whilst making efficient use of the available land.

In line with best practice, SuDS elements are coordinated with plot layouts, landscaping, and public realm areas to maximise multifunctional benefits where feasible. Given site constraints, however, the strategy prioritises functional performance, with an emphasis on below-ground solutions.

1.74. The SuDS Management Train

The drainage strategy follows the SuDS "Management Train" approach, which promotes the treatment and control of runoff as close to its source as practicable. This ensures progressive reduction in runoff rates, volumes, and pollutant loads prior to discharge, thereby protecting receiving water environments.

The following hierarchy has been applied in the scheme design:

- **Prevention**
  Good site design and construction practices will be implemented to reduce runoff and prevent pollution. Opportunities for rainwater harvesting and reuse will be considered where feasible.
- **Source Control**
  Measures to manage runoff at or near its source are included where practicable, such as lined permeable paving, rain gardens and bioretention features.
- **Site Control**
  Surface water will be managed across the site through below-ground attenuation systems designed to control discharge rates and store runoff during peak rainfall events.
- **Regional Control**
  Regional SuDS features (e.g. ponds or wetlands) are not proposed due to site constraints; however, the strategy ensures that discharge from the site is appropriately controlled to greenfield-equivalent or agreed brownfield runoff rates.

1.75. SuDS Constraints and Considerations

A review of site-specific constraints has been undertaken to inform the SuDS strategy, as summarised below:

- **Land Use**
  Large-scale above-ground SuDS features such as ponds, detention basins and swales are constrained by the site layout and development density. However, smaller integrated source control measures including rain gardens and bioretention features can be accommodated within the landscape design.

- **Ground Conditions**
  A detailed ground investigation has not yet been completed. While infiltration techniques may be feasible, their application is expected to be limited due to restricted available area and potential ground constraints. Further testing will be undertaken to confirm infiltration suitability.
- **Site Status**
  The site is classified as brownfield, and the drainage strategy seeks to improve the existing runoff characteristics where practicable.

- **Environmental and Amenity Considerations**
  Although opportunities for above-ground SuDS are constrained, the proposed system will still contribute to water quality treatment and will be designed in accordance with best practice guidance.

All SuDS components will be designed with due regard to health and safety, ensuring no unacceptable risks to future users. A maintenance and management plan will be prepared to ensure the long-term performance and functionality of the drainage system.

1.76. SuDS Methods

Tables 6 and 7 on the following pages present an assessment of a range of both above-ground and below-ground SuDS techniques that can provide water quality treatment and controlling surface water runoff rates and volumes. Each method has been appraised to determine its suitability for incorporation within the proposed development.

The purpose of this assessment is to identify and justify appropriate drainage solutions at the planning stage, considering site-specific constraints, design feasibility, construction viability, and long-term maintenance requirements. This ensures that the selected SuDS approach is both practical and compliant with relevant guidance, while delivering effective and sustainable surface water management for the lifetime of the development.

1.77. Results from previous soakaway testing undertaken at the site indicate that infiltration rates recorded were very low. In addition to Ground Investigation reporting of groundwater levels encountered at approximately 2.0m below ground level, it is characteristics is considered to constrain the effectiveness of infiltration-based drainage solutions.

As a result, the use of soakaways as a primary means of surface water attenuation across the site is not considered feasible, and an attenuation-led drainage strategy has been adopted in accordance with best practice and LLFA guidance.

1.78. Notwithstanding the above, localised source control SuDS measures may be incorporated, where feasible, to reduce runoff volumes entering the wider drainage network. Any such features would be designed with a maximum depth of approximately 800mm to base level, ensuring that a minimum 1.0m unsaturated zone is maintained above the groundwater table, in line with best practice requirements.

Table 6 - Surface SuDS Methods

Method	Comment	Suitability for Development
Green/Blue Roofs	Can be implemented on suitable low-rise buildings to provide interception, attenuation, and treatment of rainfall. They also promote evapotranspiration and can contribute to urban biodiversity.	*Not Suitable:* The proposed building roof areas are required to accommodate plant, mechanical equipment and outdoor terrace space, ongoing maintenance constraints further limit feasibility. As such, green/blue roofs cannot be effectively incorporated within this development.
Water Butts	Small-scale storage devices connected to rainwater downpipes, providing limited rainwater reuse at a domestic scale.	*Not Suitable:* The scale of the development limits opportunities for effective reuse, and water butts offer negligible attenuation benefit, particularly where storage is already full during rainfall events.
Rainwater Harvesting	Collects and reuses roof runoff, reducing potable water demand and lowering overall runoff volumes from the site.	*Potentially suitable*: Proprietary systems are available and could be explored further at detailed design stage. However, the infrastructure requirements, maintenance obligations, and potential viability implications may constrain adoption. Alternative SuDS measures providing attenuation are preferred as part of the primary drainage strategy.
Infiltration Options	Reduces runoff volumes by allowing water to soak into the ground close to source. Can provide both attenuation and water quality benefits where ground conditions permit.	*Not suitable:* Shallow source control features such as tree pits, permeable paving, and shallow swales or basins may be utilised to provide localised infiltration. However, given the identified groundwater constraints and limited available area, their use will be restricted and they will not form the primary means of surface water management.
Permeable Surfacing (Infiltration)	Reduces runoff volume and can improve water quality through filtration. Allows water to infiltrate directly into underlying soils where conditions are permeable.	*Not suitable:* Due to expected ground conditions, infiltrating permeable surfacing is not currently considered to be viable.

Lined Permeable Surfacing (Standard)	Provides water quality treatment and storage within a sub-base layer, reducing peak flows and downstream storage requirements. Typically incorporates an impermeable membrane to control discharge.	*Potentially suitable:* This system may be used in areas where infiltration is not feasible, including trafficked areas, subject to detailed design. Suitability may be constrained in areas subject to refuse vehicle loading or heavy trafficking, and will require further assessment at detailed design stage.
Swales, basins, ponds, rain gardens & bioretention	Provide above-ground storage, conveyance, and treatment of surface water. These features can also enhance water quality and biodiversity through filtration and natural processes.	*Suitable:* Rain gardens and bioretention features subject to integration with the final landscape design will be most suited. Use of swales, basins and ponds are limited by site layout and space constraints.

Table 7 - Sub-Surface SuDS Methods

Method	Comment	Suitability for Development
Geocellular Storage	Suitable for sites where space constraints limit the use of above-ground SuDS features such as basins. Provides efficient below-ground attenuation storage and can achieve a high storage volume within a relatively small footprint. May also allow infiltration where ground conditions are suitable.	*Potentially suitable:* Development layout and constraints with outfall preclude the use of large geocellular attenuation systems. However, due to depth constraints of outfall sewers, shallow geocellular attenuation such as sub-base replacement solution in hardstandings may be suitable where required.
Large Diameter Pipes, Culverts, or Tanks	Provide below-ground storage with a high volume-to-footprint ratio. Can be designed to allow for maintenance access and are typically suitable for adoption by the statutory undertaker, subject to compliance with relevant standards.	*Suitable:* Oversized pipes may be utilised to provide additional attenuation storage within the drainage network. These systems are well suited to the site constraints and offer a robust, maintainable solution to meet the requirements of the LLFA.

1.79. SuDS Hierarchal Approach

Based on the SuDS assessment presented in **Tables 6 and 7**, together with site-specific constraints, the surface water drainage strategy has been developed in accordance with the SuDS hierarchy.

In line with best practice, opportunities for rainwater reuse have been considered as a means of reducing runoff volumes at source. However, such measures are not relied upon as a

primary method of surface water disposal due to their limited storage reliability during storm events.

The preferred methods of surface water management and discharge for the proposed development are therefore set out below and summarised within **Table 8**.

Table 8 - SuDS Hierarchal Approach

Method	Suitability	Suitability for Development
Rainwater Reuse	**Yes (supplementary)**	Rainwater reuse has been considered as part of the SuDS hierarchy to reduce overall runoff volumes and potable water demand. However, such systems cannot be relied upon during storm events where storage may already be at capacity. As such, they are not proposed as a primary means of surface water disposal but may be explored further at detailed design stage as a supplementary measure.
Infiltration to Ground	**No**	Localised source control SuDS features may be utilised to provide limited infiltration for small areas of the site. However, a site-wide infiltration strategy is not feasible due to the combination of low infiltration rates and elevated groundwater levels identified during site investigations.
Discharge to Watercourse	**No**	There are no watercourses near the site.
Discharge to Surface Water Sewer	**No**	There are no surface water sewers available in the vicinity of the site capable of receiving the proposed discharge.
Discharge to Combined Sewer	**Yes**	Discharge to the combined sewer network is the only viable method of discharge for this development site. Existing Octagon House to drain as existing with betterment in sewer network provided by focussed reduction in surface water discharge from the new-build areas.

1.80. Rainwater Harvesting

Advanced rainwater harvesting (RWH) systems, including intelligent or forecast-driven systems that actively manage storage capacity in advance of rainfall events, have been considered as part of the SuDS hierarchy.

Whilst such systems can provide enhanced water efficiency and improved utilisation of storage volumes, their performance is inherently dependent on operational reliability, forecasting accuracy, and ongoing maintenance. As such, they cannot be relied upon to provide a guaranteed level of attenuation during all design storm events.

1.81. In accordance with LLFA expectations and the National Standards for Sustainable Drainage Systems (2025), the proposed drainage strategy has therefore been designed on a passive, attenuation-led basis that functions independently of rainwater reuse systems.

Intelligent RWH may be incorporated at detailed design stage as a supplementary measure to provide additional sustainability benefits and runoff reduction, but it is not relied upon for flood risk management or compliance with discharge rate and storage requirements.

1.82. SuDS Design Philosophy

The SuDS assessment and hierarchical approach set out in Tables 6, 7 and 8 have informed the overall drainage strategy for the proposed development.

The adopted SuDS philosophy follows the principles of the SuDS management train, prioritising prevention, source control, and site control measures wherever practicable. Given the identified site constraints, the strategy adopts an attenuation-led approach, with surface water discharge rates restricted to brownfield runoff rates with a 50% reduction as betterment.

This approach ensures that the proposed development will effectively manage surface water runoff, reduce the risk of flooding both on-site and elsewhere, and accord with relevant national guidance and LLFA requirements. Opportunities for rainwater reuse have also been considered; however, such measures are not relied upon for primary drainage control and are treated as supplementary to the overall strategy.

1.83. The following design principles will be incorporated into the development:

- **SuDS Management Train**
  Surface water runoff will be treated using a management train approach, providing sequential treatment stages to improve water quality and reduce pollutant loading prior to discharge.
- **Source Control Measures**
  Source control techniques, including rain gardens and bioretention features, will be incorporated to manage runoff from localised hardstanding areas and adjacent roofs to provide initial attenuation and treatment.
- **Site Control Measures**
  Attenuation storage will be provided through below-ground systems where required, potentially including attenuating hardstanding sub-base and oversized collector pipes, to control runoff rates and volumes prior to discharge.
- **Discharge Strategy**
  Surface water will discharge to the public combined water sewer network at controlled rates, in accordance with LLFA requirements and statutory undertaker acceptance.
- **Exceedance Management**
  The site will be designed to safely convey exceedance flows, ensuring that any overland flow routes do not result in flooding to buildings or critical infrastructure.

7.8. Surface Water Drainage Strategy

1.84. This section should be read in conjunction with the outline drainage strategy drawing in **Appendix F.**

1.85. A drainage strategy has been considered in accordance with NPPF Policy F8 and the National Standards for Sustainable Drainage Systems (2025), whilst following CIRIA C753 principles, and demonstrates that surface water runoff can be effectively managed within the site, without increasing the risk of flooding to the site or elsewhere. Due to the limitations imposed on the site from existing site levels all surface water will be attenuated below ground.

1.86. The proposed runoff rates for the developable areas are shown in **Table 9**. It is intended to restrict proposed surface water discharge to existing brownfield calculated rate with a 50% betterment.

1.87. The existing 1 year Brownfield rate with 50% reduction stated in Table 9 as the proposed discharge has been accepted by United Utilities through Pre-development Enquiry process. Correspondence is provided as Appendix E.

Table 9 - Post-Development Runoff Rates

Return Period	Proposed Discharge	Comment
1 year	41.55 l/s	Existing 1 year Brownfield rate with 50% reduction applied
30 year	41.55 l/s	Existing 1 year Brownfield rate with 50% reduction applied
100 year	41.55 l/s	Existing 1 year Brownfield rate with 50% reduction applied

1.88. The flows from the proposed site are to be collected via RWP, rain gardens, bioretention features, and gullies before being stored in attenuating hardstanding sub-base and oversized collector pipes if required.

1.89. Retained Building Drainage Strategy Justification

The existing Octagon House building is to be retained and upper derelict floors refurbished, with its footprint remaining substantially unchanged from the current arrangement. As the building accommodates an operational NHS Renal Unit, the existing drainage infrastructure serving the facility must remain active throughout the construction and operational phases of the development to ensure continuity of healthcare services. Significant modification or diversion of the existing drainage network associated with the retained building would introduce unnecessary operational and service continuity risks, together with potential disruption to a critical healthcare facility.

In recognition of these constraints, surface water betterment measures have been focused on the proposed new development areas where drainage interventions can be implemented safely and effectively. Notwithstanding the continued use of the existing drainage connection serving the retained building, the redevelopment proposals incorporate attenuation and flow

control measures across the wider site, resulting in an overall reduction in peak discharge rates and surface water runoff volumes compared with the existing site baseline. This approach is considered proportionate, practicable and consistent with the objective of securing a betterment in the site's overall surface water drainage performance whilst maintaining the uninterrupted operation of essential healthcare services.

Table 10 - National Standards for SuDS (2025) - Peak Flow Control

	Statement	Comments	Compliance
S2	For greenfield developments, the peak runoff rate from the development to any highway drain, sewer, or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event.	Site is previously developed	See S3 below
S3	For developments which were previously developed, the peak runoff rate from the development to any drain, sewer, or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event but should never exceed the rate of discharge from the development prior to redevelopment for that event.	The site is previously developed. The proposed strategy restricts discharge to the agreed brownfield runoff rate for all return periods from the proven existing discharge to the public combined sewers. Having regard to site constraints, this will not exceed the pre-development discharge rate for the equivalent event and therefore provide significant betterment and capacity to the receiving sewer network.	Complies with Standard S3. The proposed discharge rate does not exceed the agreed pre-development runoff rate and provides a measurable betterment through a 50% reduction in discharge to the public sewer network.

1.90. **Table 11** below defines the outline post-development attenuation volumes. The volumes identified below are preliminary for this outline assessment and may alter at detailed design stage.

1.91. A Quick Storage Estimate (QSE) indicates an indicative attenuation requirement of up to approximately 460m³ for the 1 in 100 year plus 45% climate change event, based on a conservative discharge restriction of 41.55 l/s for all return periods. The final attenuation volume will be confirmed through detailed hydraulic modelling during the detailed design stage.

Table 11 - Attenuation Volume

	Estimated Volume Attenuation (m^3)	Long term storage
Main Site Drainage (100year +climate change)	Up to 460 (subject to detailed design)	Long Term Storage not required

Table 12 - Sustainable Drainage Technical Standards Volume Control

	Statement	Comments	Compliance
S4	Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer, or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.	The site comprises previously developed land and therefore volume control has been assessed against Standard S5 applicable to redevelopment sites.	See S5 below.
S5	Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer, or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event but should never exceed the runoff volume from the development site prior to redevelopment for that event.	The site is previously developed and the proposed development reduces impermeable surfacing compared with the existing site. Runoff volume from the critical duration 1 in 100 year plus climate change event will be reduced relative to the existing condition. Given the constrained urban setting, existing utility infrastructure and the need to retain operational surface water connections, achieving full greenfield runoff volume control is not considered reasonably practicable. The proposed strategy therefore provides the maximum practicable reduction in runoff volume whilst delivering a significant betterment over the existing condition.	Complies with S5: runoff volume will be reduced below the existing brownfield condition and constrained as close as reasonably practicable to greenfield volume, having regard to site constraints.
S6	Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer, or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk.	The drainage strategy has been developed to achieve compliance with S5 through reduction in impermeable area, on-site attenuation and restricted discharge. Whilst S6 is not relied upon, the proposed discharge regime nevertheless ensures runoff is released at rates that will not increase flood risk on-site, off-site or within the receiving sewer network.	S5 achieved. S6 also satisfied as a secondary compliance check.

1.92. The proposed drainage layout for the new development will be designed in accordance with Design & Construction Guidance (DCG), BS EN 752: 2008 and Building Regulations Part H guidance, i.e., up to the 30-year storm return period including 40% climate change increase and tested for the 1 in 100 year return period including a 45% increase to account for climate change to confirm that there is no additional flood risk.

1.93. Flooding can occur on a local scale beyond the 30-year criterion due to runoff exceeding the capacity of the minor system during extreme events and it can only be addressed on a site-specific basis. Design & Construction Guidance states that developments should be protected against flooding from extreme events (1 in 30 year) and that flood pathways are identified when the drainage system is exceeded.

1.94. In the case of this development, exceedance flows will be all those over and above the 30-year design criterion set by Design & Construction Guidance. Using storage within the external areas would be achievable and would prevent flood water from entering proposed buildings, with flows directed back into the surface water drainage network as water levels in the drainage network receded. The exceedance flows and volumes can be calculated for the new development drainage layout. In the case of this development and due to the fall across the site, consideration will be given to make sure all water is controlled so that it does not impact on any adjoining properties.

1.95. Any future drainage calculations conducted as part of a site-wide drainage strategy or for the development layouts themselves must include the appropriate increase in rainfall to satisfy the future Climate Change allowances.

7.9. Pollution Control

1.96. The proposed development is considered to present a low pollution hazard in surface water drainage terms, with runoff generated principally from roof areas, public open space pedestrian hardstandings and low traffic access road.

1.97. The drainage strategy will incorporate an appropriate SuDS management train, including source control and below-ground attenuation, to provide treatment and settlement prior to controlled discharge.

1.98. On this basis, and subject to detailed design in accordance with the CIRIA SuDS Manual and relevant LLFA requirements, no additional specialist pollution control measures are considered necessary.

7.10. Foul Water Strategy

1.99. The foul water drainage strategy is to utilise the proven drain connections from within the site for Octagon House. Based on survey, gravity connections are feasible to serve the new-build areas of development and proven existing connections to the sewer network will be used where possible. New connections to the public combined sewers may be required and subject to approval by United Utilities through S106 connection applications at the appropriate time.

8. MANAGEMENT MEASURES, OFF SITE IMPACTS AND RESIDUAL RISKS

1.100. The development has been designed to ensure safe access and egress can be achieved during design flood events and that exceedance flows are managed without posing a risk to building occupants.

8.1. Flood Risk Management Measures

1.101. The proposed development incorporates a range of mitigation measures to manage flood risk and ensure compliance with national policy and LLFA requirements.

1.102. Surface water runoff from the new development area will be attenuated on-site and discharged at a restricted rate of existing calculated brownfield 1 year rate with a 50% reduction for all return periods. This represents a significant betterment over the existing brownfield condition and reduces pressure on the receiving sewer network.

1.103. The drainage strategy adopts a SuDS management train approach, including:

- Source control: rain gardens, bioretention and localised SuDS features
- Site control: below-ground attenuation via geocellular storage and oversized pipes where required
- Managed discharge: controlled outfalls to the combined water sewer

1.104. Finished floor levels will be set above surrounding ground levels, with external levels designed to fall away from buildings, reducing the risk of surface water ingress. Exceedance flows will be managed through designed overland routing, ensuring that water is directed away from buildings and towards landscaped or hardstanding areas.

1.105. A maintenance regime will be implemented to ensure long-term system performance, including regular inspection and cleansing of gullies, pipework, and attenuation systems. Responsibility will lie with a management company or site owner.

Table 13 – Example maintenance regime summary

Asset	Activity	Frequency
Gullies	Inspect and clean	6 monthly
Rain gardens	Vegetation maintenance	Quarterly
Pipework	Jetting/CCTV	5 yearly
Flow controls	Inspection	Annually
Attenuation storage	Inspection	Annually

8.2. Off Site Impacts

1.106. The proposed development will not increase flood risk to adjacent land or infrastructure.

1.107. Runoff rates and volumes will be reduced compared to the existing site, in accordance with best practice for brownfield redevelopment. Controlled discharge and on-site attenuation ensure that peak flows to the receiving network are reduced, thereby improving downstream conditions.

1.108. The drainage system will be designed to accommodate rainfall events up to and including the critical 1 in 100 year + climate change event, ensuring no off-site flooding occurs under design conditions.

1.109. Accordingly, the development is compliant with the requirements of the NPPF and LLFA guidance in relation to off-site flood risk impacts.

8.3. Residual Risks

1.110. While the proposed drainage strategy minimises flood risk, several residual risks remain, as is typical for developments of this nature.

1.111. These include:

- Exceedance events greater than the 1 in 100 year + climate change rainfall event
- Blockage or partial failure of the drainage network including flow controls
- Surcharging of the receiving combined sewer network
- Extreme groundwater conditions during prolonged wet periods
- Emergency maintenance response

1.112. These risks are mitigated through design measures, including:

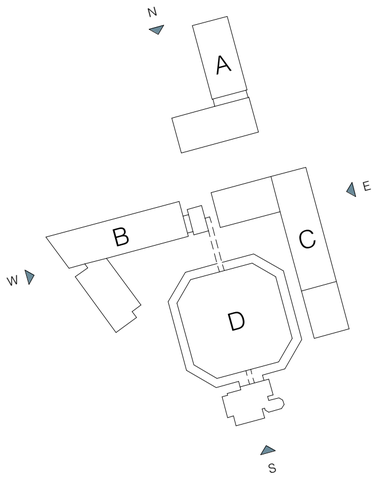
- Safe exceedance flow routing across the site
- Levels design to prevent water entering buildings
- Redundancy within the drainage system
- Maintenance and management procedures

1.113. During extreme events, temporary surface water ponding may occur within designated external areas; however, this will be contained within the site and directed away from buildings, ensuring no risk to life or property.

1.114. On this basis, residual risks are considered low and acceptable, and the development is safe in accordance with planning policy.

Appendix A – Architectural Site Plan

DO NOT SCALE
Work to annotated dimensions only. Read drawings in conjunction with relevant specification, Structural Engineers' and Services Engineers' drawings. Confirm all dimensions before commencement of any work on site or fabrication.



Cycle Store
Amenity
WC
Amenity
Entrance
43750
Entrance
43750
WC
Amenity
Amenity
Amenity
Parcel Store
Entrance
43750
Parcel Store
Management
Amenity
Amenity
Entrance
43750
Parcel Store
Laundry
WC
Cycle Store
Carmoor Road
42900
Entrance
43750
Fresenius (Staff Entrance)
Fresenius
Commercial
49.0 m²
44500
Commercial
138.9 m²
Entrance
44500
44500
44500
Hathersage Road

0 2 5 10 20 30 METERS

0 10 50 100 200 300 400 500

Unit Type

- Studio
- Cluster
- LKD
- Cluster Corridor
- Residential aimed at Key Worker
- Back of House

Rev:	Details:	Date:
04	Updated prior to planning for design freeze. Duplex floor added to Octagon House to client request. Car park updated. Layouts coordinated with consultant comments. RLB updated.	15/07/26
03	Ground Floor layouts updated as per consultant comments. Laundries & cycle stores added.	08/06/26
02	GA Plans updated to design team coordination. Plant locations updated to M&E comments. Cores updated to fire engineers comments. New building levels updated.	28/04/26
01	First issue for information	21/04/26

client:
Octagon Project

project:
Octagon House

job number:
0670

status:
Planning

title:
Proposed GA Plan - Level 00

scale:
1 : 250
@ A1

drawn by:
RM

drawing number:
0670-HOD-XX-00-DR-A-20200

current revision date:
15/07/26

revision:
04

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15/07/2026 16:53:23

Appendix B – Topographic Survey

TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS

AH	Arch Head Level	ET	EP+Transformer	RSD	Roller Shutter Door
AB	Air Brick	FB	Flower Bed	RSJ	Rolled Steel Joist
AR	Assumed Route	F/CLe	False Ceiling Level	SI	Sign Post
AV	Air Valve	FBD	Floor Board Direction	SL	Window Sill Level
BB	Bellaha Beacon	FH	Fire Hydrant	SP	Arch Spring Point Level
BH	Bore Hole	FL	Floor Level	SV	Stop Valve
BL	Bed Level	FP	Flag Pole	SW	Soil Vent Pipe
BO	Bollard	FW	Foul Water	SY	Cattle Grid
BS	Bus Stop	GG	Gully Grate	Tac	Tactile Paving
BU	Bush	GV	Gas Valve	TC	Telecom Cover
B/W	Barbed Wire Fence	HL	Window Head Level	TH	Trial Pit
BX	Box (Utilities)	IC	Inspection Cover	THL	Threshold Level
C/B	Close Board Fence	IL	Invert Level	TL	Traffic Light
CL	Cover Level	IR	Iron Railings	ToF	Top of Fence
C/L	Chain Link Fence	KO	Kerb Outlet	ToW	Top of Wall
C-Le	Ceiling Level	LP	Lamp Post	TP	Telegraph Pole
Col.	Column	MH	Manhole	TS	Traffic Signal Cover
C/P	Chestnut Paling Fence	MP	Marker Post	TV	Cable TV Cover
CR	Cable Riser	NB	Name Board	UC	Unknown Cover
C/W	Chicken Wire	OHL	Overhead Line (approx)	Uk	Unknown Tree
DC	Drainage Channel	Pan	Panel Fence	UMG	Unmade Ground
Dis.	Dilapidated	PB	Post Box	USB	Under Side Beam
DL	Door Level	PM	Parking Meter	UTL	Unable To Lift
DP	Down Pipe	PO	Post	UTS	Unable To Survey
DR	Drain	P/R	Post & Rail Fence	VP	Vent Pipe
EBx	Electric Box	P/W	Post & Wire Fence	WB	Waste Bin
EC	Electric Supply Cover	RE	Roofing Eye	WH	Weep Hole
EL	Eaves Level	RL	Ridge Level	WL	Water Level
EP	Electric Pole	RP	Reflector Post	WM	Water Meter
ER	Earth Rod	RS	Road Sign	WO	Waste Out
				△	Survey Control Station

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

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

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

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

Measured Building Surveys

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

General

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

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

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

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This drawing should only be scaled using digital methods.

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) National Grid at multiple points using GNSS with a scale factor of 1.000.

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

To avoid discrepancies within the survey, adding to the survey or setting out points from the survey, any coordinated data must be directly derived from the original survey control. Survey Solutions are not responsible for any third-party adding survey data to the existing information.

REV	DESCRIPTION	DRAWN	APPR	DATE

SURVEY SOLUTIONS

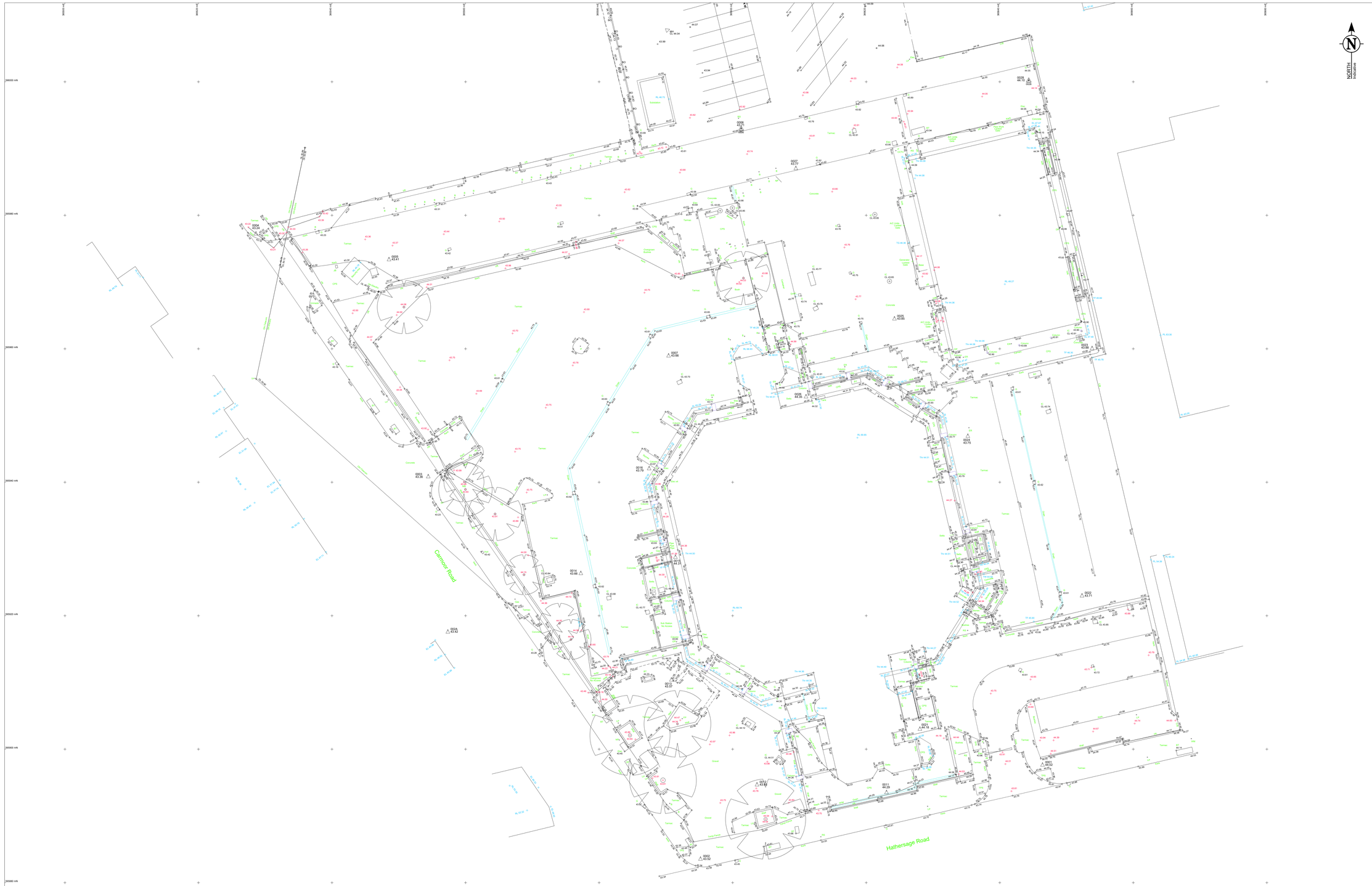
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PROJECT TITLE				
Octagon House, 62 Hathersage Road, MAnchester, M13 0FN				
DRAWING DETAIL				
TOPOGRAPHICAL SURVEY Sheet 1 of 2				
CLIENT				SCALE
Hodder & Partners				1:200
SURVEYOR	SURVEY DATE	CHECKED BY	APPROVED BY	DWG STATUS
JB	Feb 2026	SR	SR	FINAL
DRAWING NUMBER		REVISION		ISSUE DATE
85703MCLS-01				09/03/2026

ices · THE SURVEY ASSOCIATION · EUROPEAN GPR ASSOCIATION · BRITISH CARTOGRAPHIC SOCIETY · GMS · ISO 14001 : 2015 ASSESSED



TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS

AH	Arch Head Level	ET	EP+Transformer	RSD	Roller Shutter Door
AB	Air Brick	FB	Flower Bed	RSJ	Rolled Steel Joist
AR	Assumed Route	FC/Lw	False Ceiling Level	SI	Sign Post
AV	Air Valve	FBD	Floor Board Direction	SL	Window Sill Level
BB	Belisha Beacon	FH	Fire Hydrant	SP	Arch Spring Point Level
BH	Bore Hole	FL	Floor Level	SV	Stop Valve
BL	Bed Level	FP	Flag Pole	SW	Soil Vent Pipe
BO	Bollard	FW	Foul Water	SY	Cable Way
BS	Bus Stop	GG	Gully Grate	Tac	Tactile Paving
BU	Bush	GV	Gas Valve	TC	Telecom Cover
B/W	Barbed Wire Fence	HL	Window Head Level	TH	Trial Pit
BX	Box (Utilities)	IC	Inspection Cover	THL	Threshold Level
C/B	Close Board Fence	IL	Invert Level	TL	Traffic Light
CL	Cover Level	I/R	Iron Railings	ToF	Top of Fence
CL	Chain Link Fence	KO	Kerb Outlet	ToW	Top of Wall
C/Lw	Ceiling Level	LP	Lamp Post	TP	Telegraph Pole
Col.	Column	MH	Manhole	TS	Traffic Signal Cover
C/P	Chestnut Paling Fence	MP	Marker Post	TV	Cable TV Cover
CR	Cable Riser	NB	Name Board	UC	Unknown Cover
C/W	Chicken Wire	OHL	Overhead Line (approx)	Uk	Unknown Tree
DC	Drainage Channel	Pan	Panel Fence	UMG	Unmade Ground
DL	Dilapidated	PB	Post Box	USB	Under Slide Beam
DL	Door Level	PM	Parking Meter	UTL	Unable To Lift
DP	Down Pipe	PO	Post	UTS	Unable To Survey
DR	Drain	P/R	Post & Rail Fence	VP	Vent Pipe
EBx	Electric Box	P/W	Post & Wire Fence	WB	Waste Bin
EC	Electric Supply Cover	RE	Roofing Eye	WH	Weep Hole
EL	Eaves Level	RL	Ridge Level	WL	Water Level
EP	Electric Pole	RP	Reflector Post	WM	Water Meter
ER	Earth Rod	RS	Road Sign	WO	Wash Out

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

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

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

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

Measured Building Surveys

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

General

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

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

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

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This drawing should only be scaled using digital methods.

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) National Grid at multiple points using GNSS with a scale factor of 1.000.

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

To avoid discrepancies within the survey, adding to the survey or setting out points from the survey, any coordinated data must be directly derived from the original survey control. Survey Solutions are not responsible for any third-party adding survey data to the existing information.

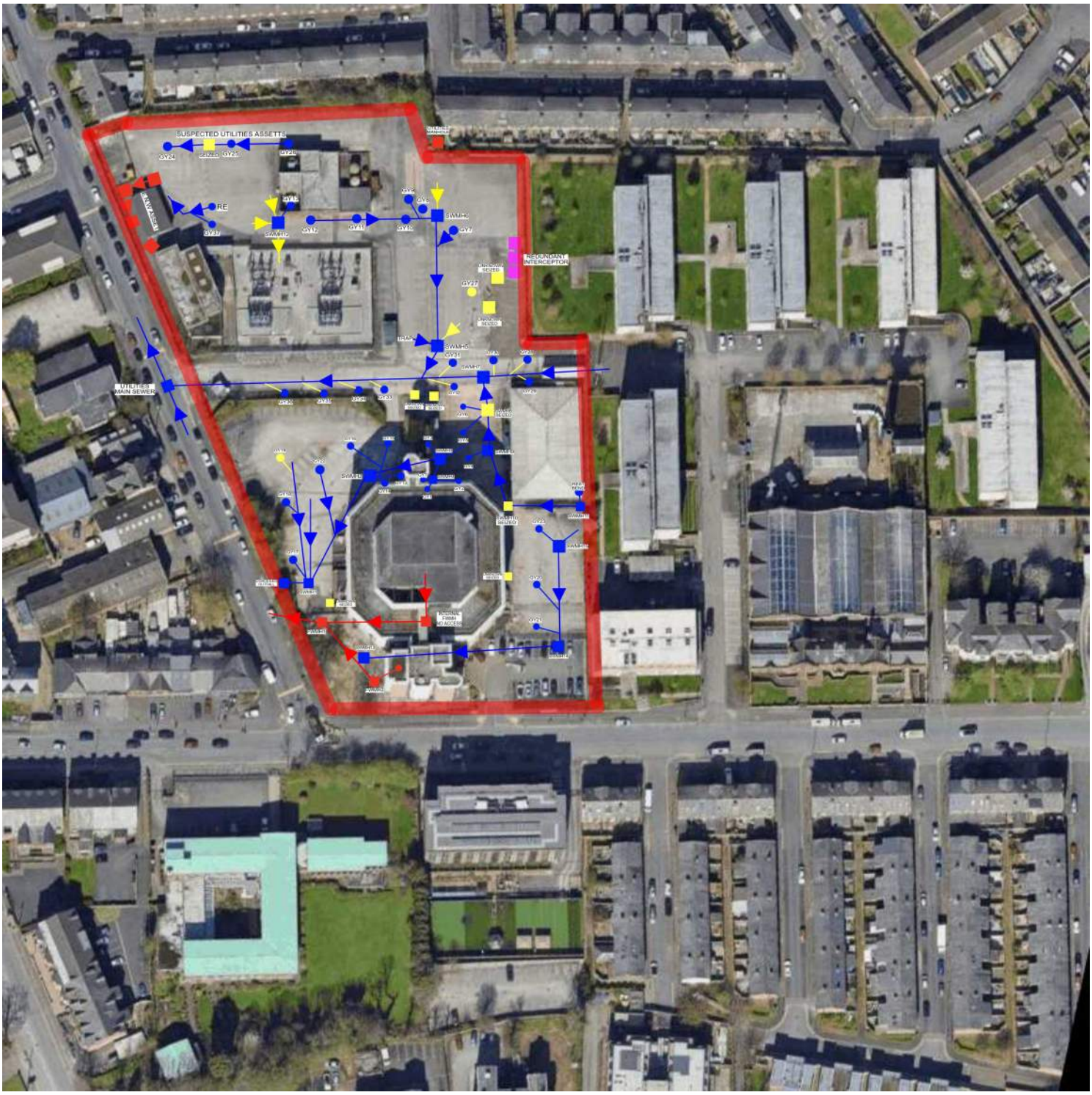
REV	DESCRIPTION	DRAWN	APPR	DATE

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PROJECT TITLE	Octagon House, 62 Hathersage Road, MAnchester, M13 0FN				
DRAWING DETAIL	TOPOGRAPHICAL SURVEY Sheet 2 of 2				
CLIENT	Hodder & Partners				SCALE 1:200
SURVEYOR	SURVEY DATE	CHECKED BY	APPROVED BY	DWG STATUS	
JB	Feb 2026	SR	SR	FINAL	
DRAWING NUMBER			REVISION	ISSUE DATE	
B5703MCLS-01				09/03/2026	

Appendix C – Existing Drainage Information

This sketch is not to scale and does not represent the exact routing of the drainage system



Appendix D – Existing Runoff Calculation Outputs

RIDGE Built Environment Consultancy	Project: **Octagon House, Hathersage Rd**			Status: Preliminary	
	Date: 13.07.2026 By: SDowning Checked: -	Job no.: 5033325	Section: -	Sheet no.: 1 of 1	Rev: P02

Rev	Date	Details	Tel
P02	21.07.26	Architect's fixed layout used, altered existing areas	0161 833 9579

Part

Brownfield Runoff Rate Calculations – Modified Rational Method 1 year Return Period

REF		OUTPUT
	DETERMINATION OF PEAK DISCHARGE - Modified Rational Method (Wallingford Procedure) Qp = 2.78.C.i.A	
	In summary, existing peak discharge for 1 year return period (Qp) Betterment of 50% reduction on existing applied, 83.1 x 0.5	**= 83.1 l/s** **= 41.55 l/s**
	SITE SPECIFICS FOR CALCULATIONS Area (A) = **0.939 ha** M5-60 (5 year, 60 minute rainfall depth) = **18 mm** r = **0.366**	**A = 0.939**
	---------- DETERMINATION OF C Volumetric runoff coefficient (Cv) = 0.9 *(taken from Ciria C753 as average of the range 0.8-1.0)* Routing coefficient (Cr) = 1.30 C = Cv × Cr = 0.9 × 1.30 = **1.17**	**C = 1.17**
	---------- DETERMINATION OF RAINFALL INTENSITY (i) Required duration (D) = 15 min — M5-D = 11.7 mm Required return period (T) = 1 year — (5-year rainfall depth for required duration) Z1 = 0.65 — Z2 = 0.62 MT-D = 7.254 mm *(rainfall depth for required return period. Table A1 England & Wales)* Point rainfall intensity: i = MT-D × 60 / D = 7.254 × 60 / 15 = 29.016 mm/hr Areal Reduction Factor: Area = 0.00939 km² ARF = 0.9375 (Figure A4) Adjusted rainfall intensity: i = 29.016 × 0.9375 = **27.203 mm/hr**	**i = 27.203 mm/hr**
	---------- PEAK DISCHARGE Qp = 2.78.C.i.A = 2.78 x 1.17 x 27.203 x 0.939	**Qp = 83.1 l/sec**
	END	

RIDGE
Built Environment Consultancy

Project				Status
Octagon House, Hathersage Rd				Preliminary
Date: 13.07.2026 By: SDowning Checked: -	Job no. 5033325	Section -	Sheet no. 1 of 1	Rev P02

Rev	Date	Details	Tel
P02	21.07.26	Architect's fixed layout used, altered existing areas	0161 833 9579

Part

Brownfield Runoff Rate Calculations – Modified Rational Method 30 year Return Period

REF		OUTPUT
	DETERMINATION OF PEAK DISCHARGE - Modified Rational Method (Wallingford Procedure) Qp = 2.78.C.i.A	
	In summary, existing peak discharge for 30 year return period (Qp) Betterment of 50% reduction on existing applied, 210.4 x 0.5	**= 210.4 l/s** **= 105.2 l/s**
	SITE SPECIFICS FOR CALCULATIONS Area (A) = **0.939 ha** M5-60 (5 year, 60 minute rainfall depth) = **18 mm** r = **0.366**	**A = 0.939**
	DETERMINATION OF C Volumetric runoff coefficient (Cv) = 0.9 *(taken from Ciria C753 as average of the range 0.8-1.0)* Routing coefficient (Cr) = 1.30 C = Cv × Cr = 0.9 × 1.30 = **1.17**	**C = 1.17**
	DETERMINATION OF RAINFALL INTENSITY (i) Required duration (D) = 15 min — M5-D = 11.7 mm Required return period (T) = 30 year — (5-year rainfall depth for required duration) Z1 = 0.65 — Z2 = 1.57 MT-D = 18.37 mm *(rainfall depth for required return period. Table A1 England & Wales)* Point rainfall intensity: i = MT-D × 60 / D = 18.37 × 60 / 15 = 73.48 mm/hr Areal Reduction Factor: Area = 0.00939 km² ARF = 0.9375 (Figure A4) Adjusted rainfall intensity: i = 73.48 × 0.9375 = **68.889 mm/hr**	**i = 68.889 mm/hr**
	PEAK DISCHARGE Qp = 2.78.C.i.A = 2.78 x 1.17 x 68.889 x 0.939	**Qp = 210.4 l/sec**
	END	

RIDGE
Built Environment Consultancy

Project				Status
Octagon House, Hathersage Rd				Preliminary
Date: 13.07.2026 By: SDowning Checked: -	Job no. 5033325	Section -	Sheet no. 1 of 1	Rev P02

Rev	Date	Details	Tel
P02	21.07.26	Architect's fixed layout used, altered existing areas	0161 833 9579

Part

Brownfield Runoff Rate Calculations – Modified Rational Method 100 year Return Period

REF		OUTPUT
	DETERMINATION OF PEAK DISCHARGE - Modified Rational Method (Wallingford Procedure) Qp = 2.78.C.i.A	
	In summary, existing peak discharge for 100 year return period (Qp) Betterment of 50% reduction on existing applied, 266.6 x 0.5	**= 266.6 l/s** **= 133.3 l/s**
	SITE SPECIFICS FOR CALCULATIONS Area (A) = **0.939 ha** M5-60 (5 year, 60 minute rainfall depth) = **18 mm** r = **0.366**	**A = 0.939**
	DETERMINATION OF C Volumetric runoff coefficient (Cv) = 0.9 *(taken from Ciria C753 as average of the range 0.8-1.0)* Routing coefficient (Cr) = 1.30 C = Cv × Cr = 0.9 × 1.30 = **1.17**	**C = 1.17**
	DETERMINATION OF RAINFALL INTENSITY (i) Required duration (D) = 15 min — M5-D = 11.7 mm Required return period (T) = 100 year — (5-year rainfall depth for required duration) Z1 = 0.65 — Z2 = 1.99 MT-D = 23.28 mm *(rainfall depth for required return period. Table A1 England & Wales)* Point rainfall intensity: i = MT-D × 60 / D = 23.28 × 60 / 15 = 93.12 mm/hr Areal Reduction Factor: Area = 0.00939 km² ARF = 0.9375 (Figure A4) Adjusted rainfall intensity: i = 93.12 × 0.9375 = **87.3 mm/hr**	**i = 87.3 mm/hr**
	PEAK DISCHARGE Qp = 2.78.C.i.A = 2.78 x 1.17 x 87.3 x 0.939	**Qp = 266.6 l/sec**
	END	

Appendix E – United Utilities & EA Correspondence

Simon Downing

From: Greater Manchester, Merseyside and Cheshire Enquiries <inforequests.gmmc@environment-agency.gov.uk>
Sent: 20 July 2026 10:32
To: Simon Downing
Subject: Request for information - Ref: EIR2026/32506
Attachments: TN1EJTW1YJAB.pdf

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Our ref: EIR2026/32506

Your ref:

Dear Simon Downing,

I am writing in response to your request for information, received 8 July 2026 regarding Request for Flood risk assessment data (product 4). Customer request reference TN1EJTW1YJAB.

We hold no record of flooding in this area.

However, this does not mean flooding has not occurred in the past or that it will not flood in future.

There is currently no detailed modelling data within your site. Please see attached for a Detailed Flood Map which displays your site in relation to the Flood Zones in that area.

There are no flood defences in the vicinity of the site.

There are no 2D levels available for this site.

We recommend that you also contact United Utilities and Lead Local Flood Authority Manchester District Council,

who may hold additional information (the former especially in relation to sewer flooding).

Lead Local Flood Authority Manchester District Council is responsible for issues relating to surface water and hold information on surface water flooding.

For further surface information: Surface water map - Check your long term flood risk - GOV.UK

For further information on your property's flood risk, visit:

Check Your Long Term Flood Risk: Check the long term flood risk for an area in England - GOV.UK

Check for Flooding: Check for flooding in England - GOV.UK

Sign up for flood warnings: Get flood warnings

Flood Map for Planning: https://flood-map-for-planning.service.gov.uk/

For additional flood risk information, advice and support in your area, please visit: https://thefloodhub.co.uk/

For more information on how the rivers and see dataset is used and its limitations, we recommend you visit How to use rivers and sea data - Flood map for planning - GOV.UK

Please refer to the Open Government Licence which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely,

Sarah Walters

GMMC Area Customers and Engagement Team

Environment Agency

Please tell us how we did

To help improve your experience as a customer we are currently gathering feedback. If you would like to take part in a short customer satisfaction survey, please click the link below:

Environment Agency FOI Customer Satisfaction Survey

Simon Downing

From: seweradoptions@uuplc.co.uk
Sent: 31 July 2026 07:58
To: Simon Downing
Subject: RE: UU REF: 09269401 - Wastewater Pre-development Enquiry - Octagon House, 62 Hathersage Road, Manchester, M13 0FN

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Good morning Simon,

Thank you for providing all the information required to asses the connection points and flow rates, I can confirm that a flow rate of 41.55 l/s is acceptable as you are providing a 50% betterment to previous rates as it is all hard standing.

Regards,

United Utilities
Water for the North West

James Darlington
Developer Engineer
Developer Services & Metering
T: [redacted]
unitedutilities.com

If you have received a great service today why not tell us?
Visit: unitedutilities.com/wow

If you are happy with the service we have provided, please consider submitting a nomination in the following link – this only takes a moment and would be greatly appreciated: **unitedutilities.com/wow**

Simon Downing

From:	Simon Downing
Sent:	23 July 2026 16:02
To:	seweradoptions@uuplc.co.uk; 'Darlington, James'
Subject:	RE: UU REF: 09269401 - Wastewater Pre-development Enquiry - Octagon House, 62 Hathersage Road, Manchester, M13 0FN
Attachments:	26.07.21 - Brownfield Runoff Calcs 1year.pdf; 26.07.21 - Brownfield Runoff Calcs 30year.pdf; 26.07.21 - Brownfield Runoff Calcs 100year.pdf; 493-LYR-XX-00-DWG-L-1000 [General Arrangement] Rev P06.pdf; 5033325-XX-XX-DR-C-000501_Brownfield_Rates.pdf
Importance:	High

Hi James,

UU REF: 09269401 - Wastewater Pre-development Enquiry - Octagon House, 62 Hathersage Road, Manchester, M13 0FN

Hope you're well.

Further to our meeting on 3rd July discussing proposals of the Octagon House development, attached is useful information to assist agreeing in principle the Brownfield discharge rates with betterment.
Apologies for slight delay as Architect's and Landscape Architect's drawings have only this week been fixed and calcs I had previously done to send on to you revised to Rev P2.

Attached are:

- Overview plan Brownfield Rates; new development areas, Octagon House existing area, summary of existing discharge rates, indicative likely points of discharge and proposal to restrict proposed surface runoff to Brownfield Q1 less 50% betterment as a total for new build development areas.
- Existing Brownfield runoff detailed calculations (Modified Rational Method with site specific rainfall intensities)
- Overview plan of CCTV survey indicating the confirmed existing drainage layout and confirmed outfalls to public combined sewers
- Landscape Architect's GA for info.

As discussed, the Landscape proposals allow a very SuDS heavy scheme to be proposed allowing betterment of Brownfield runoff rates to be prioritised in the new build areas. This offsets Octagon House being able to drain as existing unrestricted to ensure the critical healthcare facility on the lower floors can operate without disruption and fabric/contributing area of the existing building not being changed.

Would you be able to review swiftly and if acceptable confirm the Q1 betterment rate total is agreed peak rate for all return periods for new build areas and Octagon House can discharge surface as existing unrestricted as discussed please. Thank you.

Regards,

Simon Downing | Associate

RIDGE
Practical *Brilliance*

[redacted]
Ridge and Partners LLP

Appendix F – Outline Drainage Strategy Drawing



LEGEND

- DEVELOPMENT BOUNDARY AREA = 1.253 Ha
- EXISTING OCTAGON HOUSE AREA
- DEVELOPMENT AREA 1
- DEVELOPMENT AREA 2
- DEVELOPMENT AREA 3
- EXISTING PUBLIC COMBINED SEWER
- EXISTING PRIVATE COMBINED CONNECTION TO BE REUSED IF POSSIBLE
- PROPOSED SURFACE WATER DRAIN AND INSPECTION CHAMBER
- ROOF DOWNPIPE CONNECTION (INDICATIVE LOCATION SHOWN, SUBJECT TO DETAILED BUILDING DETAILS)
- PROPOSED BIORETENTION SERVING EXTERNAL OPEN SPACE AREAS
- PROPOSED BIORETENTION SERVING TRAFFICKED ACCESS (RUNOFF THROUGH KERB GAP INLETS)
- PROPOSED UNDERDRAIN
- PROPOSED EMERGENCY OVERFLOW TO DRAIN
- PROPOSED PERVIOUS SURFACE CONSTRUCTION WITH ATTENUATING SUB-BASE
- PROPOSED BELOW GROUND GEOCELLULAR ATTENUATION TANK

PROPOSED SURFACE WATER FLOWS FOR DEVELOPMENT AREAS 1, 2 & 3 (NEW-BUILD AREAS)

RESTRICT TO EXISTING BROWNFIELD RATE Q1 WITH 50% REDUCTION = 41.55 L/SEC
TOTAL RATE ACCEPTED BY UNITED UTILITIES PDE CORRESPONDENCE DATED 31/07/2026

INDICATIVE RESTRICTED RATE SPLIT (SUBJECT TO DETAILED DESIGN AND SECTION 106 CONNECTION APPLICATIONS)
- **AREA 1 - 12.5 L/SEC**
- **AREA 2 - 12.5 L/SEC**
- **AREA 3 - 16.55 L/SEC**

N

5 0 5 10 15 20 25
SCALE 1:500 m

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REV	DESCRIPTION	DATE	BY	CHKD
P01	FIRST ISSUE FOR FRA	31.07.2026	-	SD

ORIGINATOR: www.ridge.co.uk

RIDGE
Built Environment Consultancy

PROJECT NUMBER: 1234567

CLIENT:
PLYMOUTH GROVE RESIDENTIAL LLP

IN ASSOCIATION WITH:

PROJECT:
OCTAGON HOUSE
HATHERSAGE ROAD
MANCHESTER

TITLE:
OUTLINE SW DRAINAGE STRATEGY
GENERAL ARRANGEMENT

DRAWN BY: SD CHECKED BY: - APPROVED BY: SD
SCALE: 1:500 @ A2 DATE: 14.07.2026
STATUS: DESCRIPTION:
S1 FOR COORDINATION

DRAWING No: 5033325-RDG-XX-XX-DR-C-000501

PROJECT:	ORG:	FUNCTION:	SPATIAL:	FORM:	DISCIPLINE:	NUMBER:	REV:
5033325	RDG	XX	XX	DR	C	000501	P01