April 2026

Prepared by
Ethan Worrall

Project
No 1983

Blockage Risk Assessment

Charles Street, Manchester

10489-CS-DCE-A180-RP-XX-9046

Feb 2026

DeSimone Consulting Engineering
Suite 3, Unit 8,
Pennine Industrial Park,
Valley Road
Hebden Bridge,
HX7 7BZ

T. +44 (0) 1422750070
www.desimone.com

DeSimone

Report prepared by Ethan Worrall
BEng IEng MICE



Report checked and approved by Mohammad Mollazadeh
PhD C.Eng MIStructE



Rev	Date	By	Comment
P01	13 April 2026	EW	First Issue

Content

Blockage Risk Assessment 5

Blockage Risk Assessment

Proposed Residential Development, Charles Street, Manchester (M1 7DE)

Planning Application Reference: 138808/FO/2023

Blockage Risk Assessment

Blockage Risk Assessment
Proposed Residential Development, Charles Street, Manchester (M1 7DE)
Planning Application Reference: 138808/FO/2023

1. Introduction

This blockage risk assessment report relates to the proposed residential development located at Charles Street, Manchester (M1 7DE) and planning application reference 138808/FO/2023.

The proposed discharge rate to the public sewer network of 2.5 l/s has been assessed as part of this report, and it has been confirmed that this restricted rate does not present an unacceptable risk of blockage, surcharge or flooding. The drainage strategy is consistent with the drainage and flood risk management policies and guidance produced by Manchester City Council (MCC).

This assessment has been informed by reviewing MCC surface water management policies and guidance, the Manchester Strategic Flood Risk Assessment (SFRA) and relevant best-practice guidance such as the CIRIA SuDS Manual (C753). Consideration has been given to MCC policy on low discharge rates from developed sites.

2. Policy and Guidance Context

Manchester City Council advocates for sustainable drainage solutions that incorporate source control, attenuation and controlled discharge, where appropriate, to reduce surface water flows entering the public sewer network and better manage surface water flood risk. MCC policy and the SFRA states that drainage solutions with discharge rates lower than the commonly referenced minimum rate of 5.0 l/s can be acceptable if there is clear evidence to show that:

* The drainage system is suitably robust;
* Good maintenance practices are in place; and
* Exceedance of the controlled discharge rate can be safely managed on site.

The CIRIA SuDS Manual C753 also highlights that blockage risk should be considered based on debris ingress, complexity/accessibility of drainage components, maintenance arrangements, and consequences of failure, rather than focusing on discharge rates alone.

3. Proposed Drainage Strategy

Surface water runoff from the proposed development will be controlled and attenuated at source via a roof-level blue roof system before being discharged to the existing combined sewer network. Flow rate from the site will not exceed 2.5 l/s. This will be achieved by installing an appropriately sized proprietary flow control device (such as a JFC valve or similar MCC approved solution) within an accessible manhole chamber.

The drainage system is designed to convey rainfall intensities generated by the 1 in 100 year rainfall event, plus 45% for climate change in accordance with MCC and Environment Agency guidance. The attenuation/storage provided by the blue roof system is sufficient to manage rainfall exceedances safely on site.

The surface water drainage system only serves roof and internal courtyard areas associated with the new building. Vehicular hard standing, external pavement runoff and runoff from the public highway are not permitted to discharge into the surface water drainage system. This significantly limits the ingress of sediment, hydrocarbons and other debris, and improves long-term operational resilience.

4. Likelihood of Blockage

Blockage of the surface water drainage system is not expected to occur given the design and layout of the proposed system. The factors contributing to this conclusion are detailed below:

Blue roof – The majority of surface water runoff will be collected from a blue roof system. Blue roof systems prevent the ingress of larger items such as leaves, litter, soil and wind-blown debris entering downstream drainage pipework. By limiting debris ingress at source, the likelihood of blockage is minimised. Details of the blue roof construction and storage/outlet also provide a level of control, ensuring only limited flows and fine material enter the below-roof drainage pipework.

Limited debris sources – In addition to blue roof details, surface water runoff is collected from an internal courtyard area that is not exposed to external influences. This significantly reduces likelihood of organic debris, sediment or litter entering the system. The proposal also precludes external paved areas or areas of vehicular hardstanding that can be difficult to manage in the long term. Limiting uncontrolled runoff from hardstanding areas and external paved areas will substantially reduce blockage potential.

Easy maintenance and inspection – The flow control device will be installed within an accessible manhole. Accessible locations have been selected in accordance with manufacturer recommendations and MCC best-practice guidelines. Devices of this nature are also manufactured to minimise blockage risk and provide predictable outcomes when regularly inspected and maintained.

5. Consequence of Blockage and Exceedance Management

The consequences of blockage have been considered in accordance with MCC guidance and CIRIA C753. Should the flow control device become partially or fully blocked during extreme rainfall events, surface water runoff would be temporarily held within the blue roof storage before being slowly released at a manageable rate. This avoids uncontrolled discharge into the public sewer network and/or flooding of third party property.

Surface water runoff would only exceed from the site once the storage capacity of the blue roof has been reached. Therefore, any onsite flooding would occur before offsite flooding, limiting consequences to the development itself. Exceedance of the system does not impact neighbouring properties, the public highway or nearby surface water features, and as such any consequences of blockage are considered to be controlled, temporary and manageable.

6. Flood Risk Context

The development site falls within Flood Zone 3. Flood risk resilience measures have been incorporated into the design proposals, including flood refuge areas within the building at upper floor levels. A Flood Evacuation Plan has been prepared in accordance with MCC guidelines and Environment Agency expectations.

The proposed surface water drainage strategy will not impact fluvial flood mechanisms elsewhere in the catchment. Please refer to the FRA produced by DeSimone Doc: 10489-CS-DCE-A180-RP-XX-9041.

7. Maintenance and Management

Maintenance responsibilities for the surface water drainage system will be retained by the client. The surface water drainage system will remain private property in ownership. A planned maintenance regime will be implemented to regularly inspect and maintain the flow control device and associated manholes. Inspections will take place every six months to remove any debris, sediment or other potential blockages.

This formal inspection regime supports MCC expectations and recognises this measure as key to ensuring long-term performance where discharge rates have been intentionally restricted.

8. Conclusion

After reviewing Manchester City Council guidance documents and policies, the Manchester Strategic Flood Risk Assessment, and technical guidance such as the CIRIA SuDS Manual, I conclude that the proposed surface water drainage strategy does not present an unacceptable risk of blockage.

The proposed discharge rate of 2.5 l/s is lower than rates typically recommended in policy documents; however, the risk of blockage has been managed by incorporating roof level attenuation through the use of a blue roof system, limiting access points where debris can enter the drainage system, excluding runoff from external hard standing areas and paved surfaces, installing an accessible proprietary flow control device and implementing a planned inspection/maintenance regime. Any instances of blockage should be both manageable and would only result in surface water runoff exceeding onto site, with no impacts to third parties or the wider sewer network.

The proposed controlled attenuation strategy is therefore considered to be in line with MCC expectations and confirms the discharge rate of 2.5 l/s to be acceptable.