



Rochdale Corner Plot

14834-BKP-V1-XX-RP-C-011

Drainage Strategy Report

For



RIBA: Stage 2
Status: S1
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Date: 01/12/2023



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Document Control

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1. Project Overview

1.1. Overview

Booth King Partnership Limited (BKPL) have been appointed by Rochdale Development Agency to act as Civil and Structural Engineers for the development of Rochdale Corner Plot.

The proposed site is located close to Rochdale railway station, on the corner of Station Road and Maclure road (postcode OL11 1DN, grid reference SD 89926 12705)).

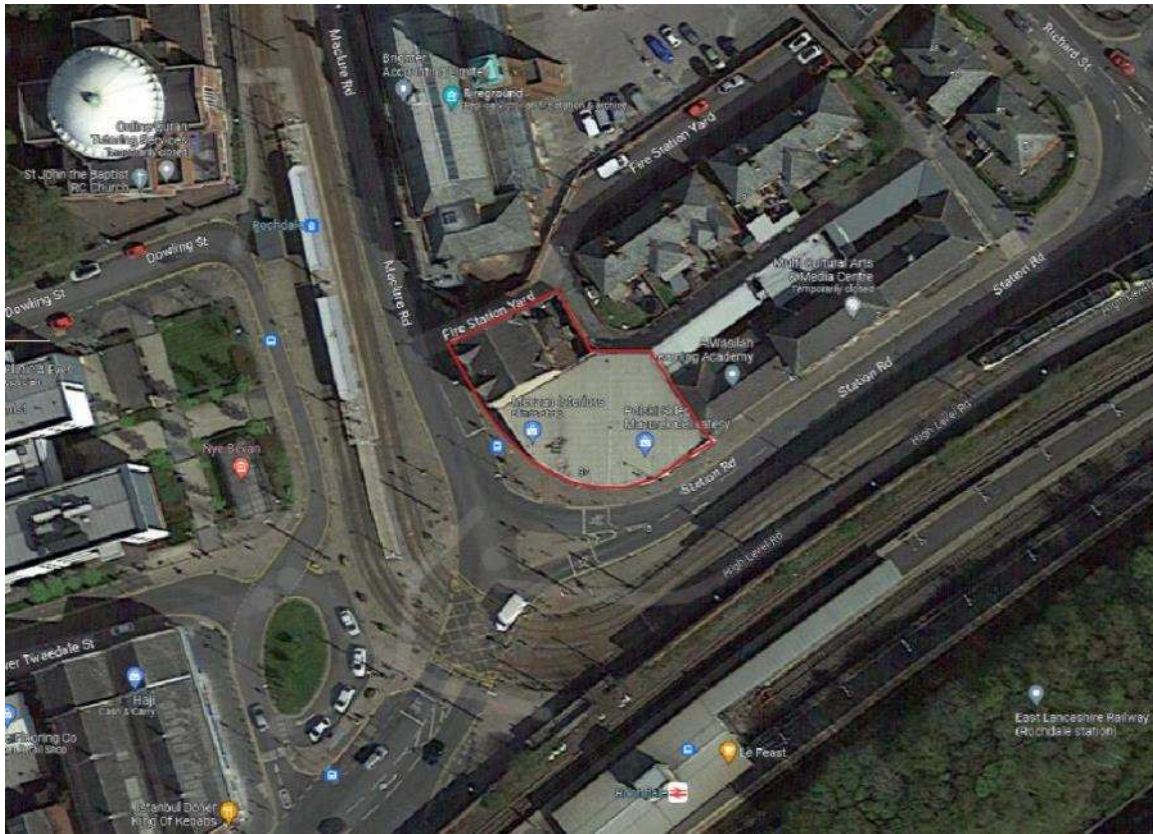


Figure 1 – Site Location

1.2. Existing Site Description

The proposed development site currently consists of the following;

- Existing 3-storey brick built building (constructed circa 1900), current containing food outlet / restaurant area at ground floor and residential apartment space at both 1st and 2nd floor levels. This building contains a basement covering part of the building and a number of lean-to structures to the rear of the building provide stair access, bathroom spaces and general storage areas.
- Existing single-storey retail building with curved frontage, currently divided into 3No. separate units. At the time of production of this report, it is noted that former carpet store and café premises to the west of this building are unoccupied; Polish delicatessen premises to the east is currently occupied.



Figure 2 – View on Existing Buildings (Looking North)

The site is bounded to the east by the existing brick build single-storey / 2-storey Deen House and has a number of residential properties in close proximity to the rear of the development site, accessed via Fire Station Yard.

The existing buildings fronts onto the junction of Station Road and Maclure Road. It is noted that the building is in close proximity to Rochdale Railway Station to the south and Rochdale Railway Station Metrolink station to the west.

It is understood that the area to the front of the proposed development is subject to a separate planning application to partially pedestrianize the junction of Station Road and Maclure Road and provide improved external realm local to the existing railway station and Metrolink station.

1.3. Proposed Development

Proposed development of the Rochdale Corner Plot site is due to include the following;

- Demolition of the existing single-storey retail building
- Refurbishment of the existing 3-storey building; consisting reconfiguration of upper floor residential spaces (including connection to adjacent new-build element), internal structural alterations at ground floor to accommodate reconfigured retail space and general repairs / refurbishment of the existing structure. Proposals also include for removal of existing rear lean-to structures and addition of new plant space to the rear of the building.
- Construction of new 6-storey building with curved frontage on the footprint of the former single-storey building; to consist of ground floor retail and amenity spaces (including cycle storage, refuse storage and residential entrance lobby) and residential space at upper floors (with connection through to the adjacent existing 3-storey building).



Figure 3 – Architect’s Proposed 3D View

The completed development will include 4No. ground floor commercial units, with 38No. residential units provided at upper floor levels. Architectural information for the proposed development is contained in Appendix A of this report.

1.4. Project Design Team

Client	Rochdale Borough Council
Principal Designer	Safer Sphere
Principal Contractor	TBC
Project Manager	Cityheart
Architect	Leach Rhode Walker (LRW)
Civil & Structural Engineer	Booth King Partnership Ltd (BKPL)
MEP Consultant	Tace
Fire Engineer	OFR Consultants
Acoustic Engineer	SRL Technical Services Limited
Planning Consultant	Plan Red Ltd

1.5. BKPL Drainage Strategy Report

BKPL report is intended to provide information on the nature of flood risk at the proposed development site and follow relevant guidance regarding development and flood risk. The assessment is to be undertaken in accordance with the

standing advice and requirements of the Environment Agency (EA) for Flood Risk Assessments as outlined in the Communities and Local Governments Planning Policy Guidance to the National Planning Policy Framework (NPPF).

BKPL report is also intended to provide review of strategy for new foul and surface water drainage of the proposed development. Strategy for disposal of surface water run off will consider NPPF guidance, Rochdale Borough SFRA requirements and be based on SuDS discharge hierarchy as contained in CIRIA 753 SuDS Manual guidance.

This Flood Risk review and Drainage Strategy reviews the following information:

- Environment Agency flood maps for rivers and sea flooding.
- National Planning Policy Frameworks (NPPF) guidance relating to flood risk
- Rochdale Borough SFRA 2014-2024
- United Utilities Public Sewer Records dated November 2018.
- CCTV Drainage Survey/Utilities Survey by Drain Alert (dated November 2023) and Subscan Surveys (dated April 2021)
- Services subscan survey provided by Malcolm Hughes (dated August 2021)

Proposals contained or forming part of this report represent the design intent and may be subject to alteration or adjustment in completing the detailed design for this project.

2. Existing Site Information

2.1 Existing Water Courses / Water Bodies

Record information provided by Rochdale Lead Local Flood Authority (LLFA) notes the presence of an existing culverted watercourse is present in reasonable proximity to the development site within Milnrow Road (at approximately 390m to the north of the site). This watercourse is recorded as a 350mm x 750mm brick culvert and flowing south from Rochdale Town centre towards Milnrow Road. As part of works for an adjacent Rochdale Development Agency development site, it is understood that this existing culvert has been investigated, however these investigations were inconclusive and no evidence of the existing watercourse were encountered. Based on the conclusions drawn from the adjacent site development, it is understood that this watercourse is not present.

The River Roch watercourse is also present, at approximately 600m to the north of the proposed development site (at its closest point).

The Rochdale Canal is located at approximately 475m to the south-east of the proposed development site (Lock 50, former connection to historic infilled canal basin which was located to the north-east of the development site).

2.2 Existing Drainage Infrastructure

Existing service survey and records information has been provided for the areas directly adjacent to the existing building as follows;

- UU sewer record information – indicating the presence of combined public sewers within Station Road (running east-to-west), Maclure Road (running north-to-south) and Fire Station Yard car park. Note UU sewer records do not provide details of existing sewer depths, connections to third-party land, etc.
- Drainage manhole survey information provided by Subscan, picking up details of the existing main UU chambers within Station Road and Maclure Road
- Subscan services survey information provided by Malcom Hughes Land Surveyors, identifying a significant number of existing services to the front of the building within both highways and footpaths.
- Drainage CCTV survey information provided by Drain Alert covering areas to the rear of the proposed development

Copies of all survey / drainage records information is included in Appendix B and Appendix C of this report.

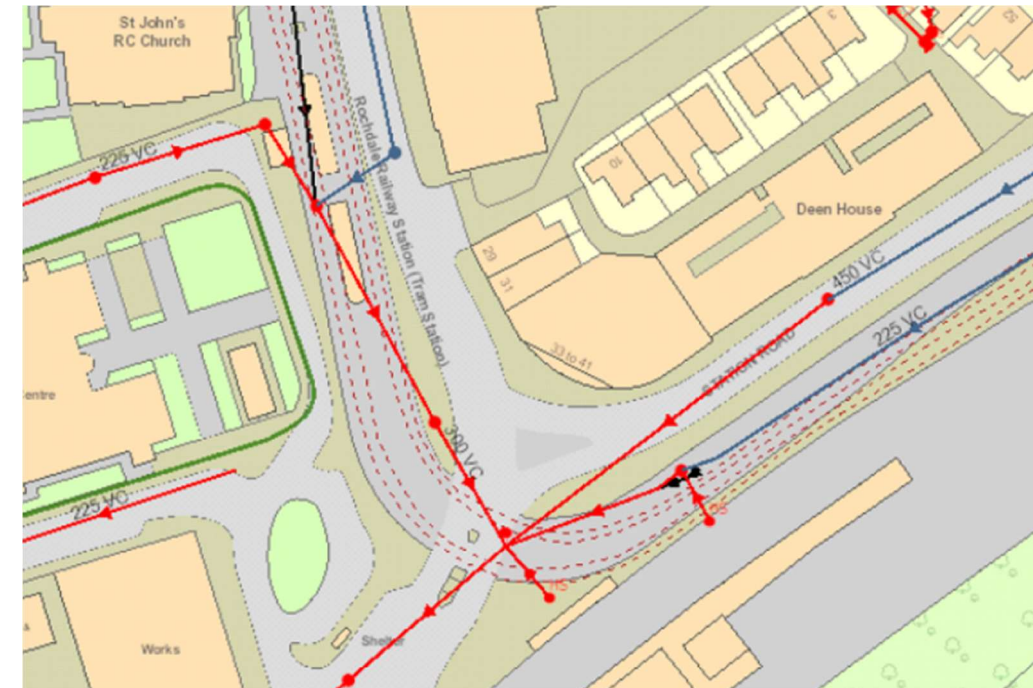


Figure 4 – Extract from UU Sewer Records Information

Public Sewer Information - Existing UU drainage information notes presence of 2No. combined sewers within Maclure Road and Station Road. These combined sewers converge at a location to the south of the development site (appearing to be located under existing Metrolink infrastructure) and outfall sewer flows to the south-west along westerly section of Station Road). Further Subscan survey of the existing UU drainage in this area notes that combined drainage runs are at approximate depth of 3.8m within Maclure Road and 2.7m within Station Road. No information was provided in terms of connections to third party land as part of either UU sewer records.

Additional UU combined drainage is also present within the car parking area to the adjacent Fire Station Yard (refer to Figure 6 below), with outfall to combined sewer in Richard Street.

Private Sewer Information to South of Site – Malcolm Hughes Land Surveyor subscan survey information indicates the presence of significant services within both Maclure Road and Station Road; this includes a number of existing road gully surface water connections taken directly into existing UU combined sewer within these areas. No surface water or foul drainage connections from the proposed development site are identified in subscan survey information.

Private Sewer Information to the North of Site – Further drainage CCTV survey has been provided by Drain Alert for areas to the north of the proposed development site (including within Fire Station Yard and unnamed access road to the rear of the existing buildings). This survey identified privately owned 225mm diameter combined sewer serving the rear of both the existing 3-storey building (to be retained as part of the development) and the existing single storey commercial building (to be demolished as part of the development). Depth of this existing combined sewer was identified as approximately 0.5m to the east (directly adjacent to the existing building) and at approximately 1.9m at existing chamber within Fire Station Road. Outfall of this sewer appears to be to existing UU sewer within adjacent Fire Station Yard car parking area (refer to below Figure 6), to be verified by further survey. Ownership of this existing combined sewer system is understood to fall under Rochdale Borough Council Highways, however formal confirmation of ownership is in the process of being confirmed at time of production of this report.

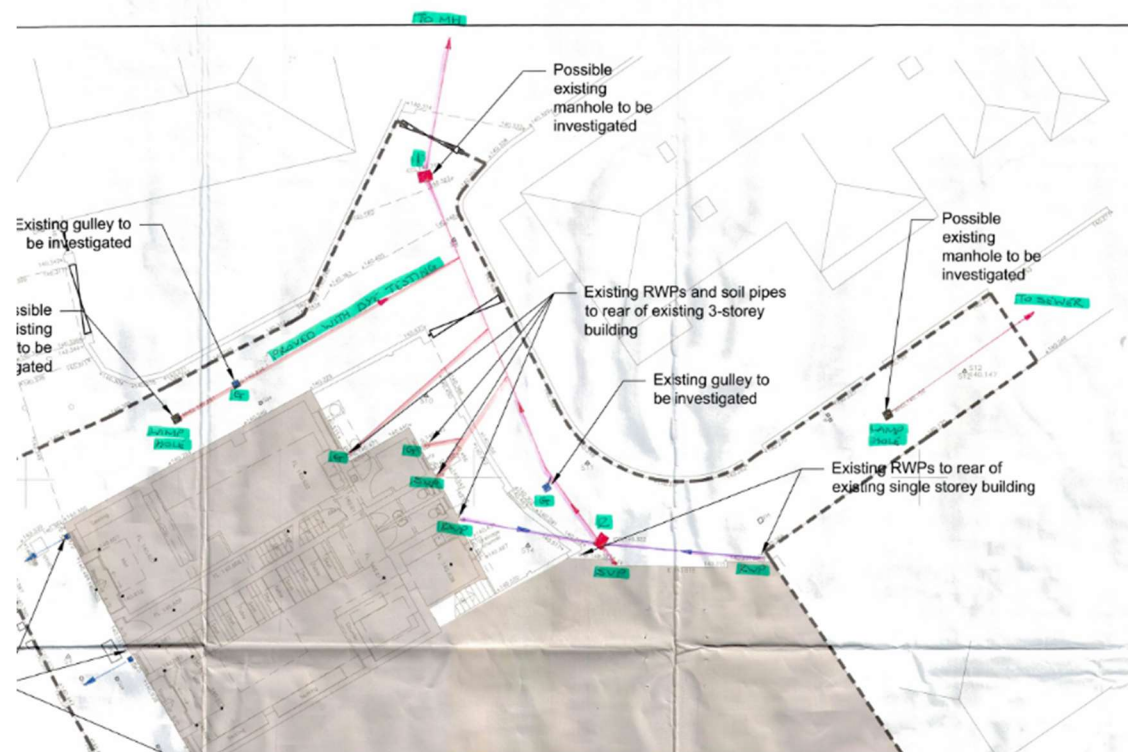


Figure 5 – Mark Up Sketch from Drain Alert CCTV Survey

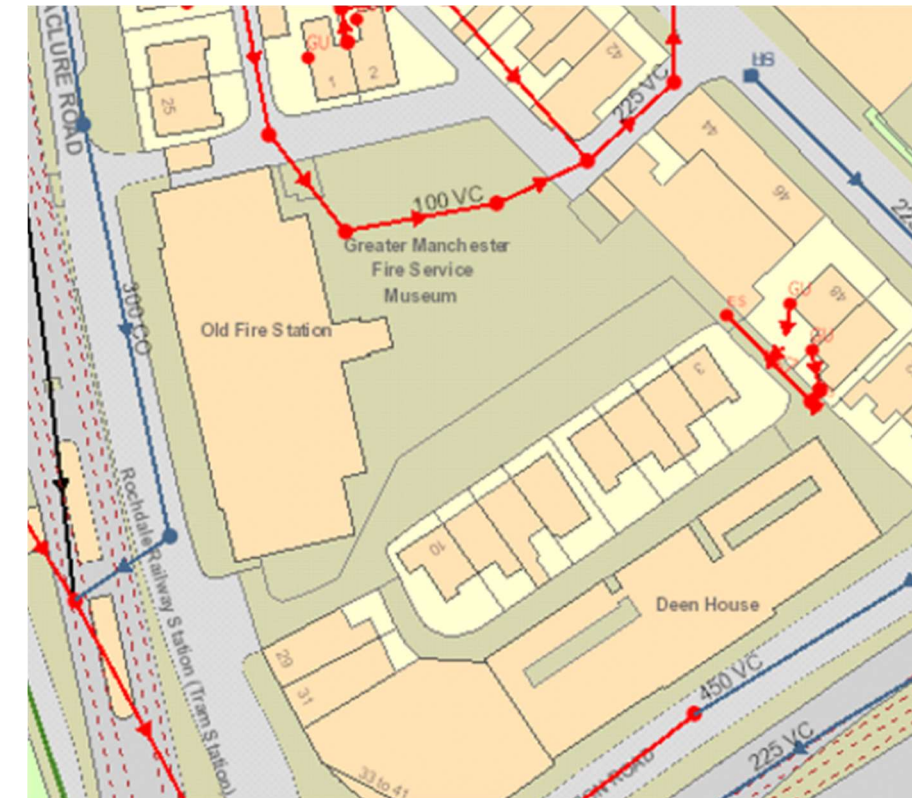


Figure 6 – Further UU Record Extract Indicating Sewer in Fire Station Yard Car Park

Survey information above is included in Appendix B and C of this report.

2.3 Topography

Topographic survey of the area local to the proposed development site has been provided by Haycock and Todd (dated February 2023). Survey information indicates that the area directly adjacent to the development is relatively flat, varying from approximately 140.330m to 140.500m along the front of the building / 140.450m to 140.250m to the rear of the building.

Limited topographical information has been provided for areas surrounding the development site, however interrogation of topographical survey information and drainage survey information notes general nominal fall in topographical levels from west-to-east as follows;

- Manhole cover levels within westerly section of Station Road indicated at approximately 140.950m
- Manhole cover levels within Lower Tweedale Road (to west of site) indicated at approximately 141.400m
- Manhole cover levels at junction between Station Road and Richard Street (to east of development site) indicated at approximately 139.200m



Areas in close proximity to the development site generally consist of paved hard-standings; consisting of existing adopted highways / related footpaths to the south, west and east of the site, with section of unnamed access road to the north of the site. The development site is also bounded by existing Deen House building to the north, and is in close proximity to both Rochdale railway station and Metrolink station.

Copies of topographical survey information is included in Appendix D of this report.

2.4 Geology

At the time of production of this report, no intrusive ground investigation works have been carried out, however Phase 1 Geoenvironmental Desk Study has been provided by NX Consulting and includes review of available geological information, summarised as follows;

- Made ground not recorded, however it is anticipated that shallow made ground may be present within the building footprint following demolition of single storey commercial building. Given that the site was previously undeveloped prior to construction of current 3-storey building and adjacent single storey commercial building, deep made ground is not anticipated (to be verified by instructive site investigation works)
- Groundsure information and BGS borehole information indicate superficial glacio-fluvial deposits (sand and gravel materials) on site
- Sandstone / mudstone bedrock material is anticipated to be encountered at depth
- Site is indicated to sit within coal mining area (as defined by the Coal Authority); NX Consulting assessment notes that the site is considered low risk of related instability / ground gas and that no further action is required relating to coal mining risks

Ground investigation works for nearby Rochdale Development Agency site (approximately 150m to the north) has been carried out, albeit it is noted that this development site is located in a former canal basin area, with related deep made ground identified. Whilst ground conditions to the proposed development site are not anticipated to encounter deep made ground, it is noted that boreholes closest to the proposed development site generally encountered natural gravel / sand materials to depths of 9-10m, with underlying sandy clay material to minimum depth of 20m (end of boreholes). Whilst this is not conclusive, this gives a reasonable estimation of anticipated ground conditions for the proposed development and is consistent with NX Consulting desk top review.

Copy of NX Consulting Phase 1 Desk Top report is included in Appendix E of this report.

3. Flood Risk Review

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF), under the Planning and Flood Risk section states;

“Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.”

The advised method by which this is to be achieved is set out in paragraph 161;

“All plans should apply a sequential, risk-based approach to the location of development – taking into account the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:

- applying the sequential test and then, if necessary, the exception test as set out below;
- safeguarding land from development that is required, or likely to be required, for current or future flood management;
- using opportunities provided by new development to reduce the causes and impacts of flooding (where appropriate through the use of natural flood management techniques); and
- where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.”

Further in paragraph 162 and 163;

“The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.”, and paragraph 159, “If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance.”

Annex 3 of NPPF includes guidance relating to specific development flood risk vulnerability classifications. In accordance with NPPF guidance, the proposed development is classified as follows;

- Ground floor commercial spaces – classified as less vulnerable “Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the ‘more vulnerable’ class; and assembly and leisure”
- Upper floor residential space – classified as more vulnerable “Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels”

3.2 Rochdale Borough SFRA

Rochdale Borough Strategy for Floor Risk Management 2014-2024 document provides specific guidance relating to flood risks within Rochdale town centre, including area of the proposed development site. The aim of this document is to ensure that future development do not increase flood risks, whilst also contributing to sustainable drainage and the reduction of flood risk. This document includes details of locations considered to be at high risk from flooding, including fluvial flooding from natural watercourses, localised surface water flooding from drainage systems, ground water flooding and flooding from other water bodies (including reservoirs, canals, etc), along with definition of flood risk priority areas within the borough.

Review of Rochdale Borough SFRA notes that the proposed development site notes that the proposed development site is located outside of flood risk priority areas (refer to Figure 7 below). The development site does not sit within defined areas at risk of fluvial flash flooding and is indicated as low / moderate risk of surface water flooding from sewers and ground water flooding.

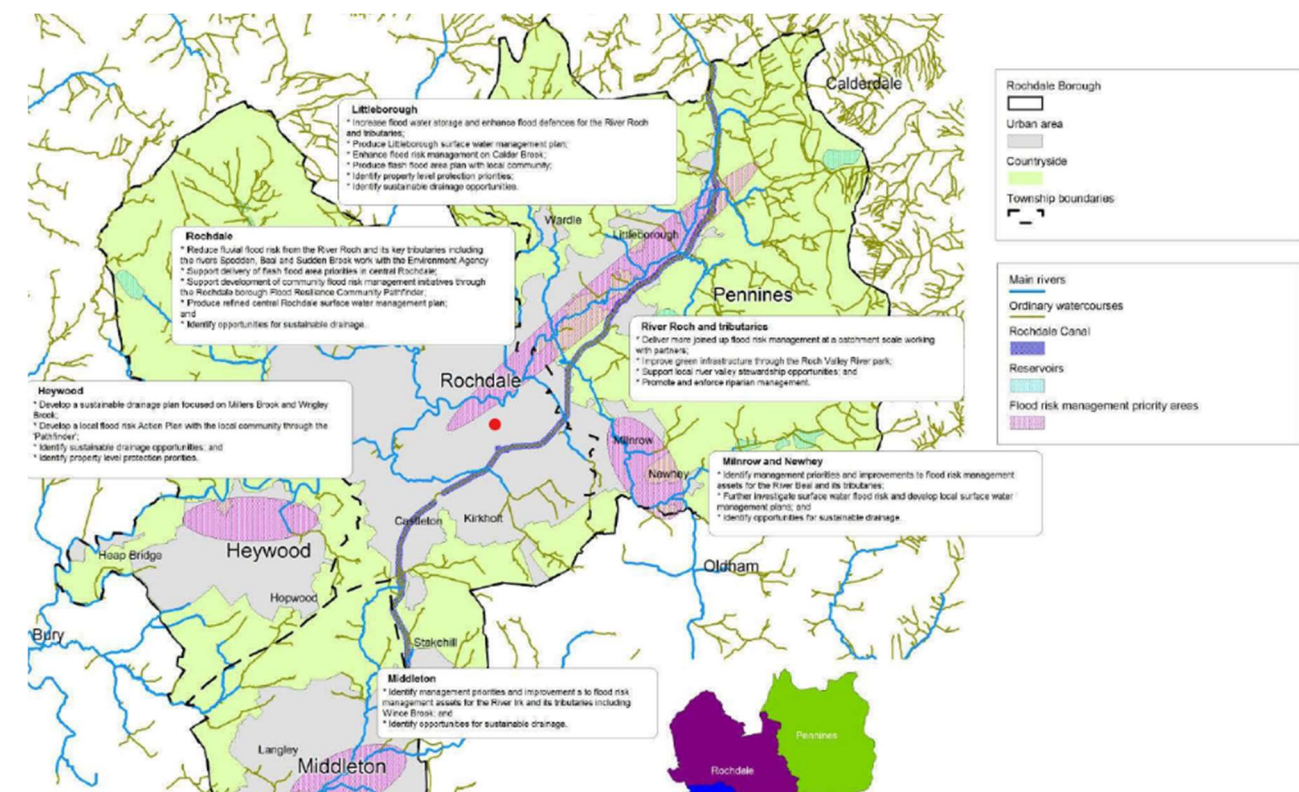


Figure 7 – Extract from SFRA Indicating Flood Risk Priorities (Proposed Site Location Shown in Red)

3.3 Proposed Site Flood Risk Categorisation

Environment Agency flood mapping information indicates that the proposed development site is located in Flood Zone 1 (area with low probability of flooding).

As such, the development is deemed to be appropriate and sequential test approach is not required.

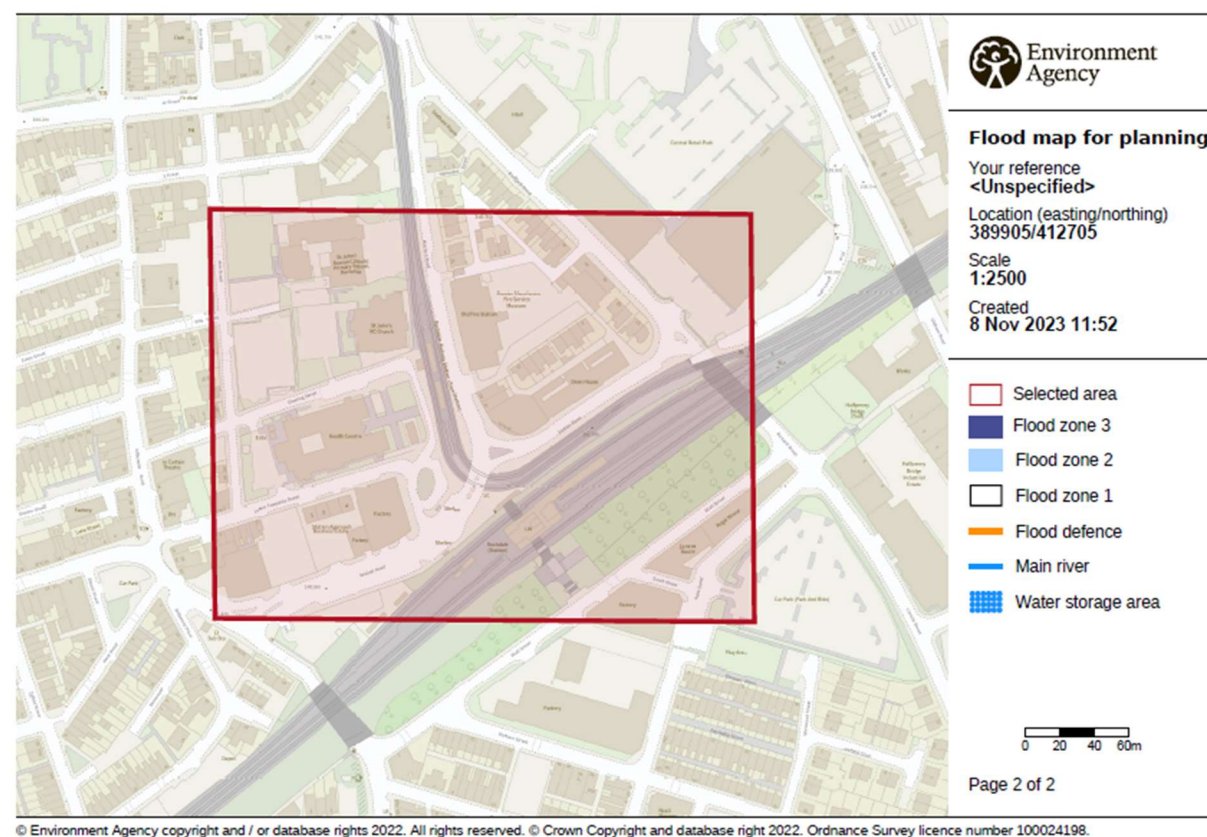


Figure 8 – Extract from Environment Agency Flood Map

3.4 Flood Risk Statement

It is noted that the proposed development site area is approximately 700m², is not located within an area defined with critical drainage problems (as defined by the Environment Agency) and is not located within Rochdale SFRA flood risk priority area.

As such, the proposed development does not require a formal site-specific flood risk assessment, being defined as within Flood Zone 1 and less than 1 hectare in accordance with NPPF guidance.

4 Drainage Strategy

4.1 Existing UU Drainage

As noted in above Section 2, existing UU drainage is present in close proximity to the proposed development site as follows;

- Existing 450mm diameter combined sewer to south of site within Station Road, approximate depth 2.7m running east-to-west with connection to 525mm combine sewer within westerly section of Station Road
- Existing 300mm diameter combined sewer to west of the site within Maclure Road / under Metrolink infrastructure, approximate depth 3.8m running north-to-south with connection to 525mm combine sewer within westerly section of Station Road
- Existing 100mm / 225mm combined sewer to north of site within Fire Station Yard parking area, running north-east into system within Richard Street

It is also noted that 3No. existing UU surface water drainage runs are indicated on UU sewer records in close proximity to the development site; within Maclure Road, Station Road and the former High Level Road (now part of Metrolink infrastructure). It is noted however that these 3No. surface water drainage runs connect into the combined system noted above.

It is understood that future development of the external realm areas to the south and west of the development site is currently being progressed at planning stage (under separate planning application). Whilst these improvements will impact on drainage infrastructure in this area (relocation of external works gulleys, etc), it is understood that no changes to existing UU infrastructure are planned as part of these works.

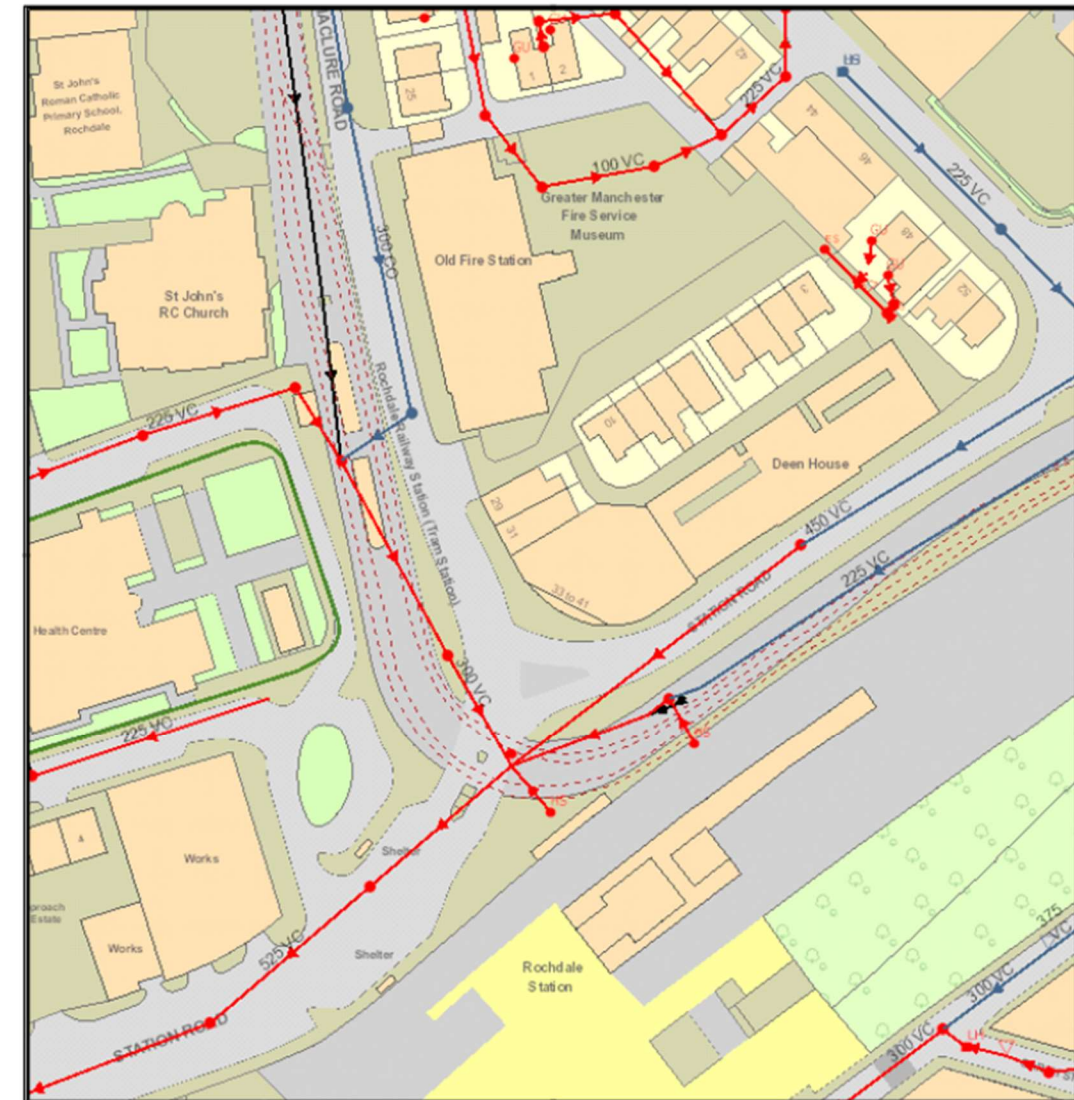


Figure 9 – UU Sewer Records for Development Site and Surrounding Area

4.2 Existing Third Party Owned Drainage

As noted in above Section 2.2, surveys of existing third party owned drainage systems local to the development site have been provided by Malcolm Hughes Land Surveyors and Drain Alert.

Subscan survey information to the south and west of the development site has identified a significant amount of existing services with the existing highways and related footpaths, including drainage infrastructure as follows;

- Existing surface water road gully connections within both Maclure Road and Station Road, with connections to existing UU sewers. It is assumed that these gully connections fall under the ownership of Rochdale Borough

Council Highways (confirmation being sought at time of production of this report). Refer to below Figure 10; UU sewer shown in green, third party owned highways drainage shown in blue.

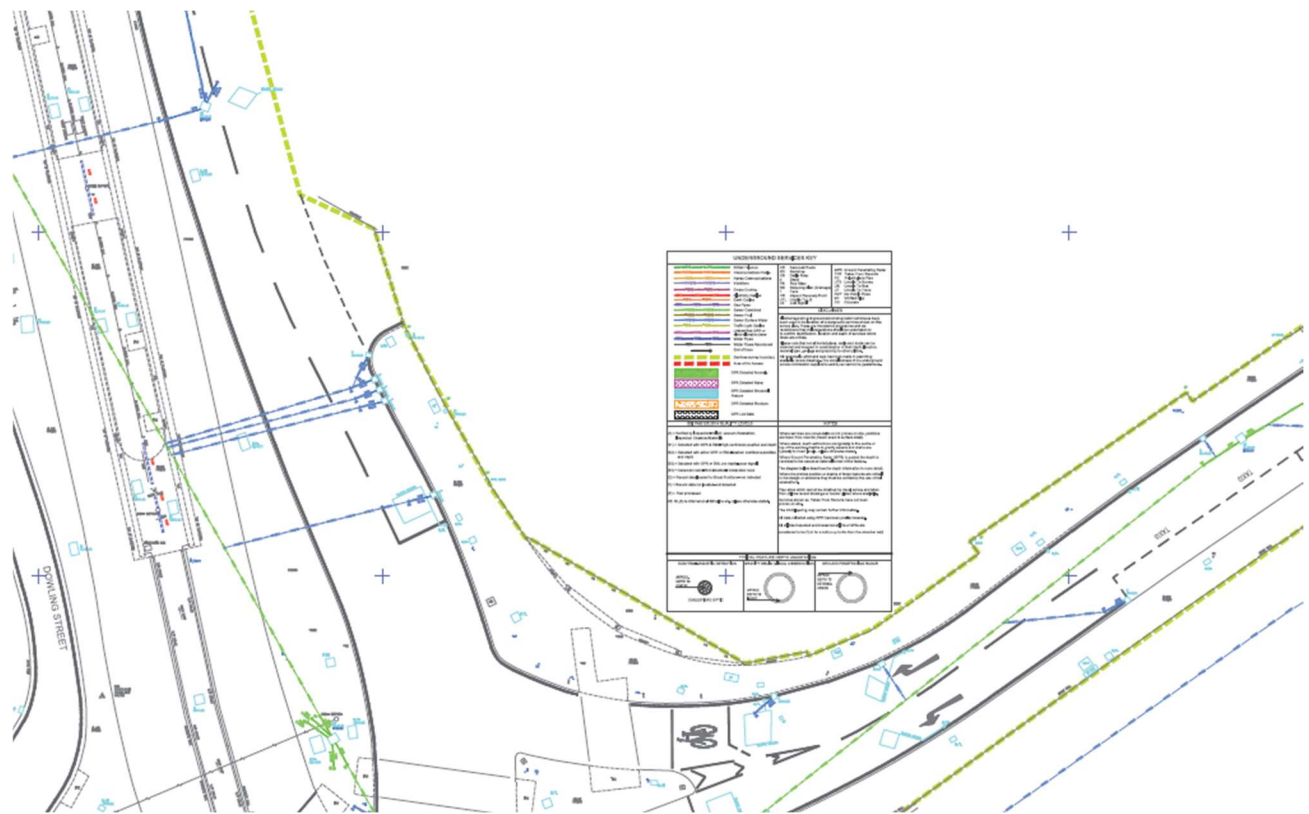


Figure 10 – Extract from Malcolm Hughes Subscan Survey (Non-Drainage Services Removed for Clarity)

Further drainage CCTV survey has been provided by Drain Alert, covering areas directly to the north of the proposed development site. Drainage infrastructure in this area has been identified as follows;

- 225mm surface water drainage run within Fire Station Yard roadway (access road to the side of the existing 3-storey building), serving existing gulleys, running west-to-east
- 225mm diameter combined drain within unnamed access road, from existing manhole MH02 to MH01 (running south-to-north, picking up a number of surface water and foul connections from the existing 3-storey building and adjacent single storey commercial building.
- Existing combined manhole MH02 located directly adjacent to rear wall of the existing single storey building, brickwork chamber with approximate depth 530mm. It is assumed that this chamber picks up surface water run off from the adjacent Deen House building.
- Existing combined manhole MH01 located within Fire Station Yard access road, brickwork chamber with approximate depth 1860mm, outfall to the north-west (assumed to existing UU combined sewer within Fire Station Yard car park)
- Ownership of the above private drainage is assumed to be with Rochdale Borough Council Highways, however confirmation is being sought at the time of production of this report.
- Minor defects to the above system have been identified in Drain Alert CCTV survey; it is intended that new drainage works in this area will include repairs to the existing system where required

4.3 Proposed Foul Drainage

Proposed above ground foul drainage to the proposed development is to be developed by the project architect / M+E consultant as part of the overall building services strategy. It is anticipated that the above ground system will generally collect from upper floor bathroom / kitchen areas close to the centre of the existing 3-storey building / new 6-storey building and be taken towards the rear of both buildings within ground floor ceiling space.

Below ground drainage system is to be designed by BKPL; this will pick up above ground system towards the rear of the existing / new buildings, along with additional foul wash-down gulleys located within ground floor M+E Tank room and bin store areas. It is intended to provide below ground foul drainage system to the rear of the existing 3-storey building, outfalling to new combine manhole chamber at the north-east corner of the development site.

Outfall from the new combine manhole chamber is to be taken to existing third party owned combined manhole within Fire Station Yard access road (understood to fall under Rochdale Borough Council Highways ownership), with eventual outfall to existing UU combine sewer in Fire Station Yard car parking area (subject to further investigation to prove connection).

Indirect connection of new combined drainage to existing UU system within Fire Station Yard car park area will be subject to S106 agreement with UU.

Refer to Appendix G of this report for initial BKPL drainage layout information.

4.4 Proposed Surface Water Drainage

In accordance with requirements of Rochdale Borough SFRA and SuDS guidance information (including CIRIA C753), consideration of treatment of surface water run-off from the proposed development plot has taken into consideration discharge hierarchy as below.

- Does the design meet the following discharge hierarchy (with acceptable justification for moving between levels):
- 1 infiltration to the maximum extent that is practical – where it is safe and acceptable to do so
 - 2 discharge to surface waters
 - 3 discharge to surface water sewer
 - 4 discharge to combined sewer (last resort)

Figure 11 – Extract from CIRIA C753 SuDS Manual (Discharge Hierarchy for Surface Water Run Off)

Infiltration Review

In accordance with SuDS Manual guidance, preferred option for discharge of surface water run off should be use of a suitable infiltration system, whereby roof / external area surface water run-off is collected and allowed to naturally infiltrate into natural ground within the site (via suitable SuDS infrastructure, such as soakways, bioretention systems, permeable paving or infiltration basins / ponds).

In order to provide a suitable infiltration system for proposed development site surface water run-off, the below considerations have been reviewed;

- Ground conditions – whilst no intrusive ground investigation works have been carried out on site at the time of production of this report, review of available desk study information and investigation findings for nearby Rochdale Development Agency site has indicated that underlying soils are likely to comprise of generally sand / gravel materials to reasonable depths. Whilst exact infiltration characteristics of these soils have not been carried out to date, it is possible that this material may be considered suitable for infiltration of surface water run-off
- Available space for SuDS infrastructure – proposed development is very tight; site boundary for the development covers area of the existing 3-storey building (to be renovated as part of the works), proposed footprint of the new 6-storey building, along with small area of external realm to the rear of the new building (approximate external area of 63m² maximum). This limited available external space would mean that consideration of infiltration system would be limited to use of a suitable below-ground infiltration system, in accordance with SuDS good practice guidance, below ground soakways should be a minimum of 5m from the existing / new building. Given the tight nature of the site, this 5m minimum distance effectively sits outside of the proposed site boundary to the rear of the building.
- Adjacent domestic property boundary to the rear of the proposed development is approximately 4m from the development boundary. As such, consideration of soakway in this area is not considered viable without risk to adjacent properties
- Area to front of the proposed development lies outside of the development boundary and contains a significant number of existing services. As such, consideration of soakway within this third party land is not considered viable

Based on the limited site space available and related potential risks to properties of infiltration system, use of infiltration system for discharge of surface water run-off is not considered practical.

Discharge to Watercourse Review

As noted in above Section 2.1, closest existing watercourses to the development site are located as follows;

- River Roch – located at approximately 600m to the north of the site
- Rochdale Canal – located at approximately 475m to the south-east of the site

Whilst a further watercourse is recorded on information provided by Rochdale LLFA (indicated as located within Milnrow Road 390m to the north of the site) it is noted that investigation works carried out as part of the nearby Rochdale Development Agency works have been unable to locate this watercourse.

Given the significant distance to existing watercourses noted above, along with significant third party land that any new connection would need to cross (including Network Rail and Metrolink infrastructure, existing highways, etc), connection of new surface water system from the proposed development to these watercourses is not considered practical.

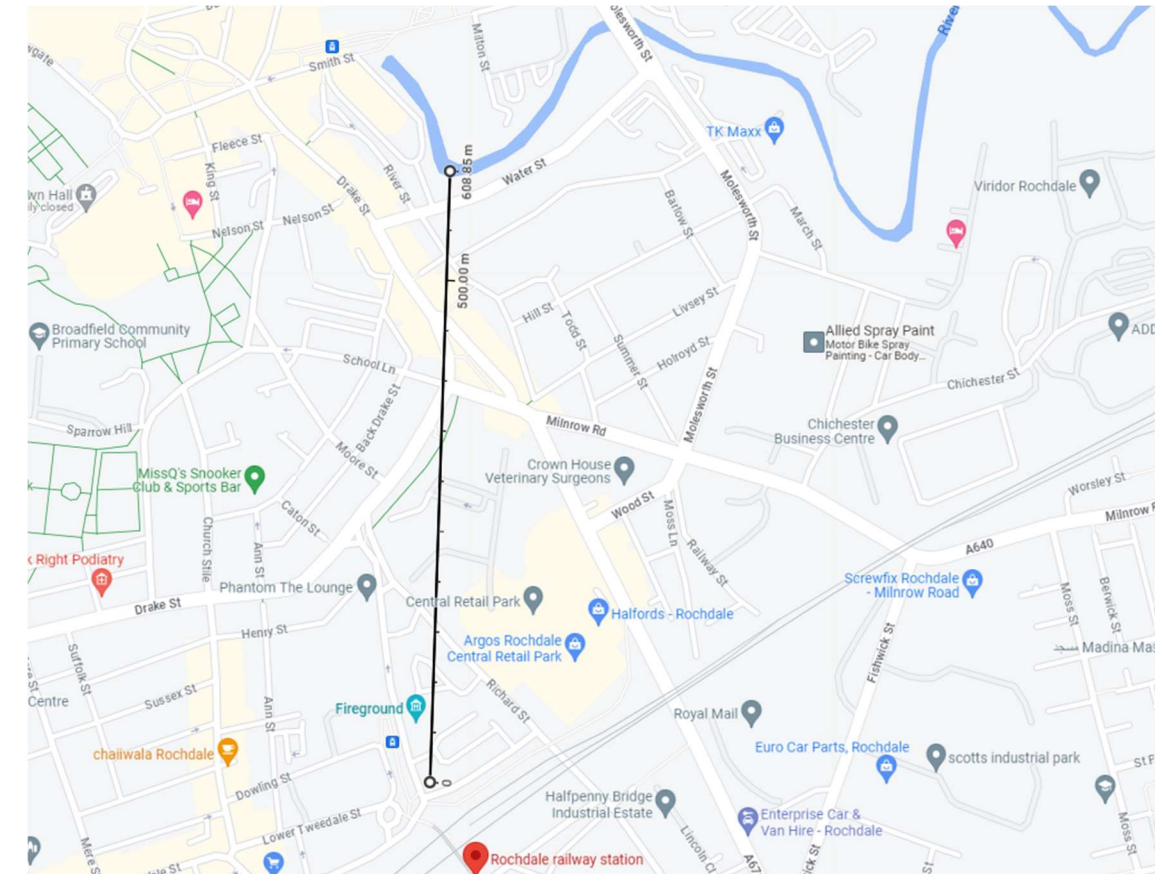


Figure 12 – GoogleMaps Extract Showing Distance from Development Site to River Roch

Discharge to Surface Water Sewer

UU sewer record information indicated the presence of existing UU surface water sewers in 3No locations in close proximity to the development site as follows;

- Within Maclure Road approximately 30m to the north of the site
- Within Station Road approximately 30m to the east of the site
- Within former High Level Road (now part of Metrolink infrastructure approximately 15m to the south of the site)

As shown on above Figure 9, it is noted that each of these UU surface water drainage runs connects into the existing UU combined drainage system, with eventual outfall to the westerly section of Station Road.

Based on the above, it is not considered practical to provide new surface water connection to any of these existing UU surface water sewers, noting that would involve significant localised disruption within the adjacent highways (with likely impact on significant amount of existing services in this area), particularly noting that these UU surface water sewers connect directly to UU combined system to the south of the development site.

Discharge to Combine Sewer

SuDS guidance states that discharge to combined sewer should only be considered when other options noted in the discharge hierarchy have been exhausted.

As noted above, CCTV survey of the area to the rear of the development site has identified an existing third party owned combined drainage system. This system collects surface water run-off and foul drainage from the existing 3-storey building and adjacent single storey commercial building, with outfall to the existing UU combined system located within Fire Station Yard car park area.

As noted above, consideration has been given to other discharge options in the discharge hierarchy, however these are not considered to be practical. As such, it is proposed to discharge surface water run-off from the new development to this existing third party owned combined drainage system, with eventual outfall to UU combined sewer.

In order to comply with Rochdale Borough SFRA requirements to contribute to sustainable drainage and reduction in flood risk locally, it is proposed that the new build element of the development be considered as Brownfield Site, with off-site surface water run-off rate restricted from the new building to 50% of current run-off rates (to include section of the existing 3-storey building roof run-off that will also drain to the back of the site). With reference to BKPL initial drainage design calculations (included in Appendix F of this report), this results in maximum surface water flow rate from the proposed development of 5l/s (provided by suitable flow restriction device to be included in the surface water drainage system, with related below slab attenuation tank.

With reference to the surface water run-off from the existing 3-storey building roof, it is noted that this is currently picked up by 3No. rainwater pipes to the front of the building. Below ground drainage serving these downpipes to the front of the building has not been encountered during investigation works (assumed to consist of connections to existing combined sewer within Maclure Road), however it is not intended to change these outfalls as part of the works (noting these pick up relatively small roof area of approximately 75m² only).

Indirect connection of new combined drainage to existing UU system within Fire Station Yard car park area will be subject to S106 agreement with UU.

Refer to Appendix G of this report for initial BKPL drainage layout information.

Residual risk of localised flooding relating the new surface water drainage system is to be managed by the proposed development owners, typically by an appointed management company.

4.5 Proposed Surface Water Quality

In accordance with Ciria C753 SuDS Manual guidance, surface water runoff from the site is considered to be low risk of pollution (residential roof run off), with requirements consisting of removal of gross solids and sediments considered to be main pollution mitigation measures.

It is also noted that small rear yard area to the building is considered slightly higher risk of pollutants; this is considered as individual property driveway for the purposes of this exercise (low risk). It is noted however that this area is relatively small in comparison to the main building roof areas and is not generally to be used for vehicle access (within locked gated pedestrian access road) and as such, this area is not considered critical to consideration of pollutants entering the surface water system.

Mitigation measures to ensure water quality is maintained are included in BKPL SuDS Maintenance Strategy document, including details of main sources of pollutants, maintenance requirements, suggested maintenance frequency, etc, to ensure that these are properly implemented. Measures are summarised as follows;

- Regular cleaning of rubbish, debris and dust / silt build-ups to external areas
- Regular cleaning of roof areas
- Regular inspection and maintenance of below ground drainage infrastructure (including gulleys, manholes, catchpits, etc)
- Maintenance and cleaning of specialist drainage infrastructure, including attenuation tanks and flow control devices (in accordance with manufacturer recommendations)
- Regular maintenance and cleaning of above ground drainage infrastructure (including gutters, downpipes, etc)

BKPL SuDS Maintenance Strategy document also includes details of prohibited actions which may impact on the surface water drainage system (including use of detergents / chemicals to clean the building fabric, PV panels, etc where this runoff would enter the surface water system) and emergency procedures in the event of potentially contaminating materials entering the drainage system.

Responsibility for carrying out and recording future maintenance to the drainage system lies with the building owner / appointed management and maintenance specialist.



5 Summary

As noted above, the proposed development site is located within Flood Zone 1 as defined by the Environment Agency and has a total area of less than 1 Hectare. The site is also located outside of Rochdale Floor Priorities Area as defined in Rochdale Borough SFRA. Based on this, the proposed development does not require a formal Flood Risk Assessment to be carried out.

Discharge of surface water run-off from the proposed development has been reviewed, taking into account discharge hierarchy requirements as defined in CIRA C753 SuDS Manual. Due to tight nature of the site, use of suitable infiltration system for surface water run-off is not considered practical and significant distance through third party land to closest watercourses is also not considered practical. Review of local UU surface water sewers notes that these are available in relatively close proximity, however these discharge into UU combined sewer directly adjacent to the proposed development; as such, significant disruption in forming new connections to UU surface water sewers is not considered practical where these connect to combined sewers. Given the above, the only practical option available would consist of surface water discharge to UU combined sewer system located within Fire Station Yard car park area to the north of the site (via existing third party owned system directly to the rear of the proposed development). Surface water discharge is to be restricted to 5l/s to offer a 50% betterment of existing off-site flow rates and related below slab attenuation provided.

Discharge of foul drainage is intended to be to the existing UU combined sewer within Fire Station Yard car park area, via existing third party owned drainage system to the rear of the proposed development.

Development works are also to include retaining / reinstatement of roof drainage to the adjacent Deen House building (by way of formal Party Wall Agreement), along with repairs to minor defects to the existing third party owned system to the rear of the building as identified in site survey information.

APPENDIX A – Architectural Information





APPENDIX B – Existing Services Information



APPENDIX C – Drain Alert CCTV Information



APPENDIX D – Topographical Survey



APPENDIX E – NX Consulting Phase 1 Desk Top Report



APPENDIX F – BKP SW Drainage Calculations



APPENDIX G – BKP Drainage Strategy Drawings



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