

# DRAINAGE STRATEGY REPORT

Garden House Close, Monk Bretton  
For Big City Co MB



Date 20/06/2022  
Ref **4019/DSR001**



## Report Details

<b>Client</b>	<b>Big City Co MB</b>
<b>Report Title</b>	DRAINAGE STRATEGY REPORT
<b>Project</b>	Garden House Close, Monk Bretton
<b>Ref.</b>	4019/DSR001
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## Quality Assurance

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1	Approval	20/06/2022	-		
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## INTRODUCTION

### Project Understanding

Big City Co MB intend to develop a parcel of land at Garden House Close, Monk Bretton, Barnsley, in accordance with design proposals developed by Niemen Architects to provide 76 new build houses and apartments.

Bright Young Consulting Ltd have been engaged to prepare a Drainage Strategy Report in support of a detailed planning application for the development.

### Scope of Works

- Review existing conditions including sewer plans, infiltration test results, survey information and available topographical information
- Review LLFA drainage policies
- Estimate existing and proposed impermeable areas
- Estimate existing greenfield runoff rates
- Review appropriate methods of surface water runoff disposal
- Evaluate site suitability for infiltration solutions
- Estimate required attenuation volume using Microdrainage software
- Advise on suitable storage options
- Advise on suitable range of drainage system maintenance measures
- Advise on likely constraints for foul water drainage
- Prepare outline drainage strategy proposals

### Sources of Information

The following sources of information have been reviewed and assessed for the purpose of this Drainage Strategy Report:

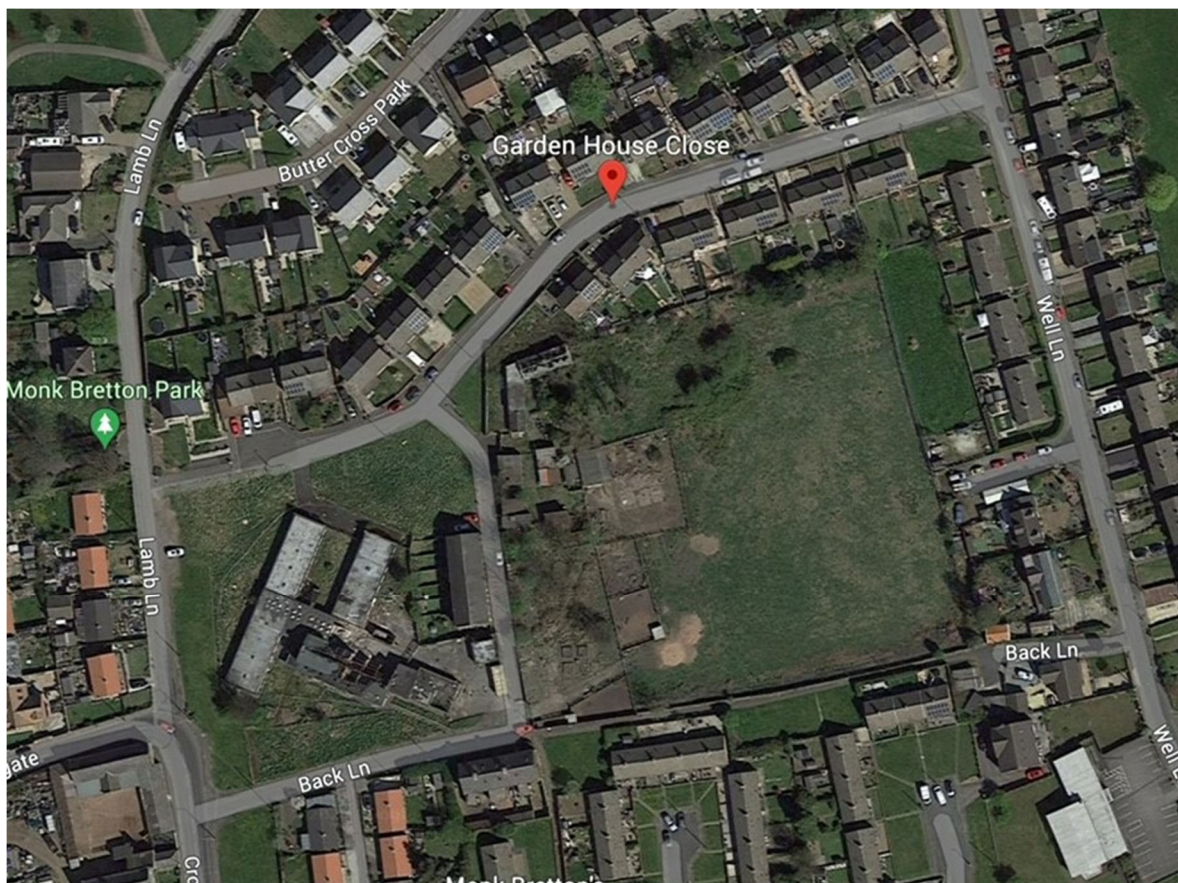
- Yorkshire Water public sewer records
- Site survey by CT Surveys
- Drain survey by GP Drains
- Infiltration Assessment by Delta Simons

## SITE DESCRIPTION

The pre-development site comprises of 3 portions of land. The upper portion is occupied by derelict former school buildings with access from Garden House Close and Back Lane. The central portion of the site is occupied by former farm buildings and a terrace of cottages (to remain) with access from Garden House Close and Back Lane. The lower portion of the site is open land with access onto Well Lane.

A topographical survey has been undertaken of the site and the gross area of the development site is 1.9 Hectares. Over the upper portion of the site, the general landform has been remodelled with earth embankment having been formed, resulting in levels differences over the school site of approximately 3m. Within the original farmstead levels vary from 102 AOD on the northern boundary to 105 AOD on the southern boundary. The remainder of the site to the east of the original farmstead however falls sharply from west east, with a minimum level at the eastern boundary of 95.00 AOD.

An aerial location plan of the site is shown below.



## RELEVANT POLICY AND GUIDANCE

### Introduction

The aim of this section of the report is to discuss the main aspects of the local and national planning policies that are relevant to any proposed development on the site and relevant guidance and legislation.

### Local Policy

The Lead Local Flood Authority (LLFA) is Barnsley MDC who is responsible for approving the surface water system on the development to ensure that it complies with current standards and will remain satisfactory for the lifetime of the development.

### Consultations

No consultation has taken place at this point with the approving local authorities in respect of surface water and foul drainage. Public sewer records have been obtained and used as part of this report. It is expected that detailed consultation will take place as the scheme develops with the LLFA, in respect of surface water and Yorkshire Water for proposed sewers.

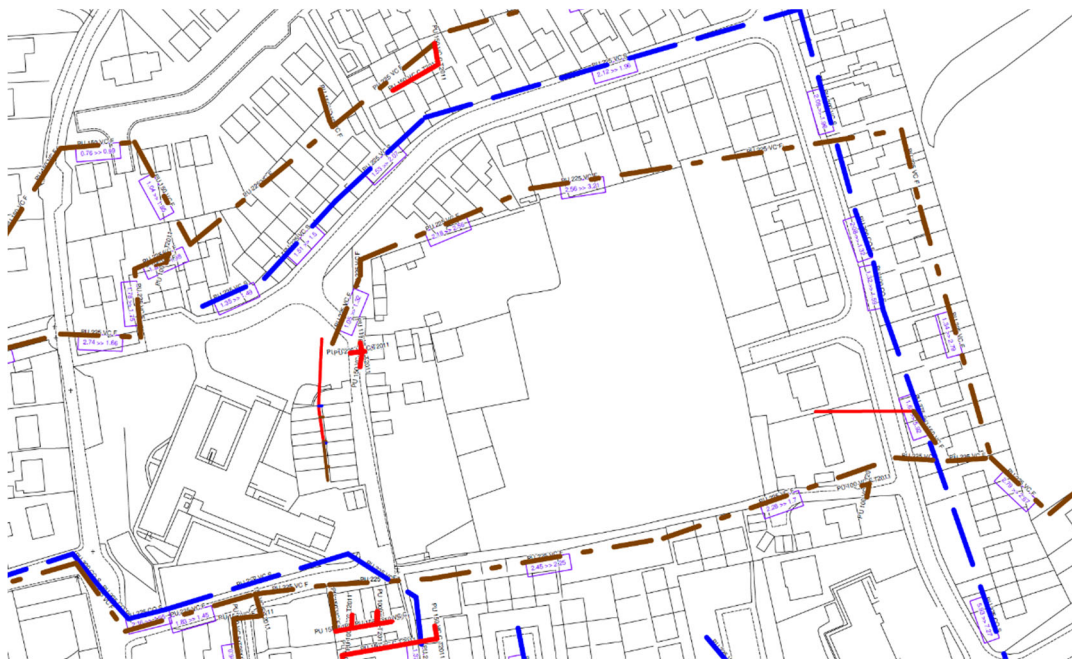
## DRAINAGE STRATEGY

### Predevelopment Site

The pre-development site is partly developed and positive drainage connections to the public sewer system have been proven (see drainage survey below). Foul and surface water public sewer systems are accessible by gravity.

### Public Sewer Records

The public sewer records for the development area have been obtained from Yorkshire Water and a copy of these is shown below.



Public Sewer Records

### Pre-Development Sewer Survey

To confirm the sewer records for the site, a sewer survey was undertaken. A plan of the findings is shown below.

The survey confirms the existing foul and surface water public sewer system within the vicinity of the site along with positive connections from the existing cottages and the former school development.



Pre Development Sewer Survey

### Post Development Site

The site is proposed to be developed with 76 new houses and apartments and a plan of the development is shown below.



Post-Development Site

### Post Development Foul Drainage Strategy

The foul and surface water systems will be separate systems on site.

It is proposed that foul drainage from the development will connect to the public foul sewerage system under gravity with a single connection to the existing 225 diameter public sewer located in the rear gardens to properties along Well Lane.

The existing foul connections from the cottages will be collected into the site drainage with foul sewers being offered for adoption under a s104 agreement.

### Surface Water Drainage Hierarchy

The recommended surface water drainage hierarchy (Paragraph 080 of the NPPG: Flood Risk and Coastal Change) is to utilise soakaway systems or infiltration as the preferred option, followed by discharging to an appropriate watercourse. If this is not feasible, the final option is to discharge to an existing public sewer.

Consideration should therefore be given to one or more of the following, in this order of priority.

- **Discharge to the ground (infiltration).**
- **Discharge to a surface water body.**
- **Discharge to a surface water sewer, highway drain or other drain.**
- **Discharge to a combined sewer.**

#### Surface Water Discharge to Ground (Infiltration)

The first consideration for the disposal of surface water is by infiltration (soakaways and permeable surfaces).

To test the suitability of the site to accept infiltration as a means of disposal of surface water, comprehensive infiltration testing to BRE Digest 365 was undertaken. The details of the testing is appended to the rear of this report.

The tests show that the site is unsuitable for infiltration and an alternative means of surface water disposal is required.

#### Surface Water Discharge to Watercourse

Where soakaways are not suitable, a connection to watercourse is the next consideration.

The nearest recorded watercourse is over 150m to the north of the site and is inaccessible due to existing development.

#### Surface Water Discharge to Sewer

Where disposal of surface water to watercourse is not possible, a connection to the public sewer system is the final consideration. The existing surface water public sewer system has been proven by investigation and shown to comprise of a continuous system with a 225 diameter sewer in Garden House Close that discharges into a 300 diameter system running from north to south within the front gardens of existing properties along Well Lane.

### Pre-Development Surface Water Run-off

The pre-development surface water system has been calculated based on the roof area of the former school buildings as follows:

Roof area = 1218 sq.m

1 in 1 year run-off = 17l/s

Limit on discharge =  $17 - (0.3 \times 17) = 11.9$  l/s

### Post Development Surface Water Strategy

The main surface water sewerage system on site is to be offered for adoption through a Section 104 agreement with Yorkshire Water, including the necessary attenuation and flow control installations which have been sized and located in accordance with YW requirements as outlined below.

This main sewerage system is to be provided by an attenuation tank installation (Carlow or similar approved). The discharge from the surface water system will be attenuated by the use of a Hydrobrake. The discharge rate to the public sewer system is to be 11.9l/s.

The surface water system of the proposed development needs to satisfactorily manage the 1 in 100 year storm plus 40% climate change.

### Post Development Surface Water Design

The Microdrainage program shows that 665 Cu m of storage is satisfactory based on a the following criteria:

Post Development impermeable area = 10,600 sq.m

1 in 100 year storm + 40% CC

Discharge = 11.9l/s

FEH rainfall data Cv=0.84 winter, 0.75 summer

A plan of the outline drainage strategy is shown below. A larger plan is provided as Bright Young Consulting drawing 4019/SK001 (appendix C).



Post-Development Outline Drainage Strategy (see also appendix C)

### Climate change

This drainage strategy includes an allowance for climate change where 40% has been added to rainfall events.

### Urban Creep

This drainage strategy includes an allowance for urban creep, where 10% has been added to rainfall events. The urban creep allowance should be included in detailed design calculations.

### Surface Water Maintenance

The post-development surface water system should be maintained for the lifetime of the development. It is proposed to offer the main sewerage system to Yorkshire Water for adoption and

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

- Foul drainage will connect to the existing public foul sewer under gravity
- Existing connections from cottage properties will be picked up and taken into the new site sewers within the access roads
- Surface water will connect to the public sewer system along Well Lane
- Post-development surface water flows will be limited to 11.9l/s.
- Surface water storage will be provided in attenuation tanks positioned close to the eastern boundary
- Surface water storage has been estimated as 665Cu m for the 1 in 100 year storm plus CC

### Recommendations

- Complete consultations with regulators through the planning process, including agreement of the surface water discharge rate based on the Drainage Strategy assessment.
- All surface water storage volumes to be confirmed through the detailed design process.
- Develop design to adoptable standards in preparation for submission for technical approval under s104.

## APPENDICES

Appendix A – Topographical survey and drainage survey results

Appendix B – Infiltration test Results

Appendix C – Drainage Strategy Drawing

Appendix D - Limitations

APPENDIX A – TOPOGRAPHICAL SURVEY AND DRAINAGE SURVEY









Public Waste Water Network 02/08/2021 06:59:14 OS Grid Coordinates: 435971 : 407675 Map Name : SE3507NE svcGISSafeMoveP

APPENDIX B – INFILTRATION TESTING RESULTS

APPENDIX C – DRAINAGE STRATEGY DRAWING

**SURFACE WATER**  
 PRE-DEVELOPMENT  
 EXISTING SCHOOL DISCHARGES TO PUBLIC SW SEWER.  
 ROOF AREA = 12.18 sq m - 1 in 1 year Run-off = 171ls  
 POST-DEVELOPMENT  
 LIMIT DISCHARGE TO 171ls - 30% = 119ls  
 SW STORAGE REQUIRED ON 1in 100year storm + 40% CC  
 Discharge: 11.9ls FEH RAINFALL DATA Cv = 0.84 winter, 0.75 summer  
 STORAGE ESTIMATE = 665 Cu.m



Checked	Rev #	Description	Date
	1	ISSUED FOR CLIENT APPROVAL	15/06/22

ASGF CONSTRUCTION LTD

Client  
 GARDEN HOUSE CLOSE  
 MONK BRETTON  
 BARNLSLEY

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Drawing Title  
 HIGHWAYS AND DRAINAGE  
 DRAINAGE STRATEGY

Scale	Date	Drawn	Checked
1:500 @ A1	JUNE 2022	HM	JB

Dwg No. 4019/SK001  
 Rev 1

## APPENDIX D – LIMITATIONS

The discussion, conclusions and recommendations contained in this Report represent the professional opinions of Bright Young Consulting Limited (BYC), based upon the information listed in the Report, exercising the duty of care required of an experienced Engineering Consultant. BYC does not warrant the accuracy of the information or data forming the basis of the report and will not be responsible for any opinions which BYC has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

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