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Consulting Engineers

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# Report

## Drainage Strategy

**Project:** St Michaels Avenue  
Barnsley,  
S71 2SD

**Client:** NPS Group

**Reference:** S10774-JNP-XX-XX-RP-C-1001-S2-P03

**Date:** December 2019

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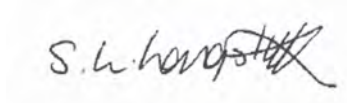
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## DOCUMENT CONTROL SHEET

# Drainage Strategy



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Approved by.....  
**Alan Steer**  
**Associate**

**FOR AND ON BEHALF OF JNP GROUP**

**Date:** December 19

### Document Issue Record

Rev	Date	Description	Prepared	Checked	Approved
~	10.05.2019	First Issue	SLL	CS	KG
P01	24.05.2019	Minor amendments requested by client	SLL	KG	KG
P02	11/10/2019	Updated to suit Site Layout updates	SLL	LC	AS
P03	05/12/2019	Foul drainage outfall route revised in Appendix E.	SLL	LC	AS

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## **1 INTRODUCTION**

### **1.1 Terms of Reference**

1.1.1 **jnp**group was instructed by NPS Group to prepare a Drainage Strategy (DS) for:

Land off St Michael's Avenue

Barnsley

South Yorkshire

S71 2SD

hereinafter referred to as 'the site' (Appendix A).

1.1.2 It is understood that the site is to be redeveloped with 31 residential properties with private gardens, with associated roads and areas of hardstanding for parking as well as a single block of 4 apartments. The site is included in the Barnsley Local Plan 2019 for residential development (site HS22).

1.1.3 The proposed redevelopment layout is shown in Appendix B. All comments given are based on the understanding that the proposed redevelopment will be as detailed above.

### **1.2 Objectives**

1.2.1 This DS has been produced in support of a planning application for the site which is 1.20ha in size.

1.2.2 The DS should be read in conjunction with the Flood Risk Assessment, which has been prepared separately (**jnp**group report reference S10774-JNP-XX-XX-RP-C-1002-S2-P01, May 2019).

## 2 SITE DESCRIPTION, GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

- 2.1.1 The site is located off St Michael's Avenue in Barnsley, South Yorkshire, approximately 3.0km north east of Barnsley town centre. The centre of the site is located at National Grid Reference 436740 408717 and the site covers an area of 1.2 hectares (ha).
- 2.1.2 The site is currently in undeveloped land.
- 2.1.3 The surrounding land uses are summarised in Table 1 below.

Table 1 Surrounding Land Use

Direction	Land Use
North	Wooded area with employment uses beyond
East	Residential
South	Residential
West	Paddock with employment uses beyond

### 2.2 Topography

#### Topography of Wider Area

- 2.2.1 To appreciate the context of the site and understand how it sits in relation to the wider area, LiDAR data has been obtained (<https://www.lidarfinder.com/>), as shown in Figure 1.

Figure 1: LiDAR Map of Wider Area



#### Site Topography

- 2.2.2 An onsite topographic survey has been carried out by HH Surveys (December 2018) and shows that the site is set on a slope with levels falling from the south east to the north west, with levels ranging from c. 76.3m above Ordnance Datum (aOD) to c. 67.2m aOD along the north western boundary. There are two large mounded areas towards the east of the site adjacent to St Michael's Avenue which range from 1.2 to 2m high.

### 2.3 Hydrology

- 2.3.1 The nearest surface water feature is a small unnamed stream c. 250m north of the site. The stream runs through the Carlton Industrial estate.

- 2.3.2 The site is located between the valley of the Cudworth Dike (to the east) and the valley of the River Dearne (to the south west), within the catchment of the Cudworth Dyke from Source to the River Dearne.
- 2.3.3 The closest surface watercourse is a small stream c. 400m to the north west, which flows through Spring Wood. This appears to disappear, and is probably culverted beneath industrial units to the north of the site.

## 2.4 Geology

- 2.4.1 The geology of the site has been determined by reference to the 1:50,000 scale British Geological Survey (BGS) online Geoindex Tool (<http://mapapps2.bgs.ac.uk/geoindex/home.html>); as well as to the BGS 1:50,000 Series published geological map, Sheet 281 Frome (Solid and Drift, scale 1:50 000, dated 2000), accessed via the website (<http://www.bgs.ac.uk/data/maps/home.html>); these were both accessed on 04/04/2019.
- 2.4.2 No artificial ground or mass movement deposits are indicated to be present underlying the site. Superficial deposits are also absent from beneath the site.
- 2.4.3 The underlying geology is indicated to be the Pennine Middle Coal Measures Formation, which is described by the BGS as “*Interbedded grey mudstone, siltstone, pale grey sandstone and commonly coal seams, with a bed of mudstone containing marine fossils at the base, and several such marine fossil-bearing mudstones in the upper half of the unit.*” A named sandstone unit in the Coal measures is located across the southern part of the site (Oak Rock). A marine band is also shown at outcrop running from north east to south west across the site. Coal seam outcrops and faults are absent from within 250m of the site.
- 2.4.4 The 1:50,000 map does not show the dip of the strata close to the site. Generally, in this area, strata dip gently towards the east or north east.

## 2.5 Ground Investigation

- 2.5.1 A ground investigation was undertaken by Met Consultancy Group in January 2019 and comprised five windowless sampling boreholes, and seven mechanically excavated trial pits located evenly across the site.
- 2.5.2 The ground conditions encountered during the intrusive investigation were generally consistent with the published geological map and the borehole records for the land immediately east of the site. Made Ground, up to 0.8m thick, was encountered in three locations across the site. In all but one location, stiff silty gravelly clay was identified beneath the whole site from between 0.15m and 0.75m bgl. Weathered mudstone was then present beneath the whole site from between 0.6m and 1.8m bgl.
- 2.5.3 Thus, with the exception of sporadic Made Ground, the site was underlain by gravelly clay overlying weathered mudstone.
- 2.5.4 Groundwater strikes were noted in four investigation points at depth between 1.8m to 2.0m bgl.

## 2.6 Hydrogeology

- 2.6.1 The Aquifer Maps accessed via the MAGiC website (<https://magic.defra.gov.uk/MagicMap.aspx>) indicates that the site is underlain by a Secondary A Aquifer (Coal Measures).
- 2.6.2 The Environment Agency define a Secondary-A Aquifer as:

*“Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.”*

- 2.6.3 The site's proximity to groundwater Source Protection Zones (SPZs) was determined by reference to the MAGiC website. These zones show the risk of contamination of major licensed groundwater abstractions from any activities that might cause pollution in the area, with the closer the activity, the greater the associated risk. The site is not located close to a SPZ.

### 3 SURFACE WATER DRAINAGE STRATEGY

#### 3.1 Existing Surface Water Run-Off Drainage Regime

- 3.1.1 The site is greenfield and there is no known surface water drainage system on the existing site.
- 3.1.2 Surface water run-off from the site will be towards the north / north west. Potentially in extreme events, some runoff could pass off-site and into the vegetated area to the north.

#### 3.2 Pre-development Surface Water Runoff Volume

- 3.2.1 The design parameters of the model and resulting run-off volume is provided below in Table 2.

Table 2: Existing Surface Water Run-Off Volume

Parameter	Value
Return Period (years)	100
Storm Duration (minutes)	360
Run-off Volume (m <sup>3</sup> )	208

- 3.2.2 Further details on the existing run-off volume calculations for the site are provided in Appendix C.

#### 3.3 Greenfield Run-Off Rates

- 3.3.1 The runoff rates from the permeable (greenfield) areas of the site have been calculated using the Institute of Hydrology Report 124 Flood Estimation for Small Catchments (1994) method within the Microdrainage Source Control module. The publication provides the essential design elements for determining the estimated Greenfield runoff rate which is based on the site area, soil type, and average annual rainfall, which is influenced by the location of the site within the United Kingdom.

Table 3: Calculated Greenfield Run-Off Rates

Return Period	Run-Off Rate (l/s)
Qbar	3.9
1in30 year	6.8
1in100 year	8.0





- 3.3.2 A copy of the greenfield run-off rate calculation and parameters has been provided in Appendix C.
- 3.3.3 As noted above, it is not anticipated that these rates represent runoff from the site area, as most flows are likely to be contained within and infiltrate into the ground within the site.

#### 3.4 General Principles for Proposed Site Run-Off

- 3.4.1 The National Planning Policy Framework (NPPF) and accompanying Technical Guidance indicate surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management.
- 3.4.2 Consideration should therefore firstly be given to using sustainable urban drainage (SUDS) techniques including soakaways, infiltration trenches, permeable pavements, grassed swales, ponds and wetlands to reduce flood risk by attenuating the rate and quantity of surface water run-off from a site. This

approach can also offer other benefits in terms of promoting groundwater recharge, water quality improvement and amenity enhancements.

3.4.3 The National Standards for Sustainable Drainage Systems (Defra, 2011) state that the following options must be considered for the disposal of surface water run-off in order of preference:

-  *Discharge to Ground*
-  *Discharge to Surface Water Body*
-  *Discharge to Surface Water Sewer*
-  *Discharge to Combined Sewer*

#### ***Discharge to Ground***

3.4.4 The GI works carried out by Met Consultancy Group (reference P19-01603, February 2019) showed that the site is underlain by topsoil / Made Ground / overlying a layer of firm to stiff silty gravelly clay across virtually the entire site. Weathered mudstone was then present beneath the whole site from between 0.6m and 1.8m bgl.

3.4.5 Groundwater strikes were noted in four investigation points at depth between 1.8m to 2.0m bgl.

3.4.6 Considering the nature of the underlying strata, infiltration drainage is unlikely to be feasible. In addition, the depth to groundwater (where present) is too shallow to allow anything other than a very shallow systems, whilst maintain at least 1m unsaturated zone below any infiltration systems.

3.4.7 Infiltration drainage is therefore not considered to be feasible.

#### ***Discharge to Surface Water Body***

3.4.8 The nearest surface water feature is a small unnamed stream c. 250m north of the site. The stream runs through the Carlton Industrial estate. There are numerous obstructions preventing discharge into the watercourse and therefore this has not been considered further.

#### ***Discharge to Sewers***

3.4.9 There are a number of public sewers within the adjacent roads and housing estates to the east. A 225mm diameter surface water sewer and 225 mm diameter foul water sewer run north east along the residential gardens to the north of St Michael's Avenue. It is proposed to discharge the foul water for the site to the sewer in the gardens between the two rows of houses.

3.4.10 There is also a combined sewer (size unknown) towards the north of the site which runs north east along Poulton Street. Yorkshire Water have confirmed surface water can discharge into this sewer at a rate of 3.5l/s, providing **jnp group** provide evidence why the other methods of discharge, mentioned above, can be discounted (Appendix D). Discharge is not proposed into the surface water sewer in St Michael's Avenue.

### **3.5 Sustainable Drainage Systems (SuDS)**

3.5.1 To maximise the potential use of SuDS at the site, a review of each SuDS component has been undertaken and is shown below in Table 4 in accordance with the SuDS Hierarchy (refer to SuDS: A Practical Guide prepared by the EA). This review highlights the components referenced in the SuDS Hierarchy and provides recommendations on the components that are suitable for incorporation into the proposed drainage strategy for the site.

Table 4: SuDS Selection Based on the SuDS Hierarchy

Component	Recommendation
Green (living) roofs	<p>Whilst the use of green roofs provides additional environmental benefits such as enhanced aesthetics and ecology, its exposure to wind and orientation must be considered. Access to undertake the construction and maintenance easily and safely is also a high priority.</p> <p>The proposed residential units will feature traditional pitched roofs, which are unsuitable for installation of a green roof.</p>
Basins and Ponds	<p>Ponds and attenuation basins can provide overland storage of surface water whilst also providing additional biodiversity and aesthetic/amenity value.</p> <p>The proposed layout does not include areas of POS however there is a landscaping buffer to the west of the site that could potentially house a basin.</p>
Filter Strips and Swales	<p>Swales are linear vegetated drainage features, which provide overland conveyance and storage of surface water whilst trapping sediments and hydrocarbons within run-off. They also create biodiverse areas for planting and habitat.</p> <p>Filter strips and swales will be unlikely to be suitable for the site due to available space.</p>
Infiltration Devices	<p>Infiltration devices, such as soakaway, are not feasible at the site due to anticipated poor ground permeability.</p>
Permeable Paving	<p>Permeable paving can be used in some of the proposed parking. This can provide treatment and attenuation for some of the surface water run-off of the site.</p> <p>Permeable paving also provides treatment through filtration of silt (and attached pollutants), settlement and retention of solids, absorption of pollutants and biodegradation of organic pollutants, including petrol and diesel.</p>
Tanked Systems	<p>This is the least sustainable option in terms of the SuDS Hierarchy. However, the use of tanked systems can still be of benefit compared to traditional drainage systems as it does allow run-off to be slowed down to an acceptable discharge rate.</p> <p>A tanked system may be the most viable option given the site proposals and constraints, including the natural steep gradients of the site.</p>

### 3.6 Proposed Surface Water Drainage Strategy

- 3.6.1 The following section should be read in conjunction with the proposed surface water drainage schematic which has been provided in Appendix E. All supporting Quick Storage Estimate calculations from MicroDrainage are provided in Appendix F.
- 3.6.2 The proposed drainage strategy for the site captures surface water run-off from the proposed roofs of the residential buildings, car parking areas and roads via a network of pipes which then discharges into a local sewer. Permeable paving is considered however it would have to be positioned within private drives and the gradient of the site will make it difficult to accommodate any storage within the system.
- 3.6.3 The proposed development will lead to an increase in the sites overall impermeable area from zero to approximately 0.64ha.

3.6.4 It is proposed to restrict the discharge from the development to the rate specified by Yorkshire Water (3.5 l/s). Attenuation storage will be provided by the use of a cellular crate tank with a Hydrobrake (or similar approved device) downstream of the tank to restrict the flow rate to the outfall to the agreed rate.

3.6.5 The required attenuation storage has been calculated using Microdrainage design software for the 1 in 100 year storm event plus a 40% allowance for climate change. The attenuation storage has been calculated at circa 425m<sup>3</sup> pending confirmation during detailed design.

3.6.6 Any increase in the level of flood risk to the proposed development from climate change is likely to be related to the increase in rainfall intensity and duration and its impact upon the surface water drainage system (see FRA report). The climate change allowance used in this Drainage Strategy (40%) is in line with updated EA guidance values published in February 2016 for increased rainfall intensities by 2115

### **3.7 Exceedance Flooding**

3.7.1 A flow route plan has been prepared to show the indicative paths that surface water run-off takes on the existing site, this plan is provided in Appendix G.

3.7.2 An exceedance flow route plan has been prepared to show the paths that surface water run-off would take across the post-development site in the event of drainage network failure or due to storms exceeding the design capacity (all storms up to and including the 1 in 100 year plus 40% allowance for climate change). This plan is provided in Appendix G.

3.7.3 The proposed exceedance flow plan shows that in the event of drainage system failure flows will be routed away from the proposed buildings and towards the north which is a wooded area.

### **3.8 Consents, Offsite Works and Diversions**

3.8.1 Any predevelopment agreements from Yorkshire Water are agreements in principal only. A section 104 and section 106 will need to be submitted to Yorkshire Water during detailed design in order for these agreements to be formalised.

### **3.9 Maintenance**

3.9.1 A maintenance plan will be required to outline the management of the proposed SuDS components as per the drainage strategy for the site. The plan should include maintenance requirements for each type of SuDS used onsite. This will be submitted as the design develops and a clear SuDS strategy is in place.

## **4 FOUL RUN-OFF**

### **4.1 Discharge to Public Sewer Network**

- 4.1.1 Yorkshire Water are the foul sewerage suppliers for the Barnsley area. Information on their local assets have been collected from them and the asset location plans are provided in Appendix D.
- 4.1.2 The two closest sewers to the site both lie within third party land. One (size unknown) lies within the back gardens of the houses south of St Michaels Avenue however given the existing topography it is not possible to discharge to this sewer via gravity. Yorkshire Water have therefore agreed in principal to allow unrestricted discharge to the foul water sewer within the back gardens between St Michael's Avenue and Poulton Street. Clauses in the right to buy contracts/deeds for the affected properties state that the council still have rights of access to undertake drainage works if required.
- 4.1.3 Negotiation will be made with the land owners regarding access and connection to the sewer. If no agreement can be made, then Yorkshire Water can exercise their rights under Section 98 (sewer requisition) to allow for the connection to be made.
- 4.1.4 A gravity drainage system will suffice, as shown in Appendix E.
- 4.1.5 The foul sewerage system will be offered to Yorkshire Water for adoption.

## 5 ADOPTION

- 5.1.1 Once constructed, the surface water and foul water systems may be offered for adoption according to Barnsley Council Adoption Model (included in Barnsley Council Flooding, Drainage and SuDS) as follows:

*Table 5: Adoption Model*

Scenario	Adoptable by Barnsley Council?	Potential alternative adopter
SuDS in private land (serving more than one property)	No	Water Company
SuDS in public open spaces	LLFA	Water Company

- 5.1.2 In the first instance, it is recommended that the Yorkshire Water are approached to adopt both parts of the system.
- 5.1.3 The detailed design of the system would need to comply with standards set by the appropriate adopting authority.

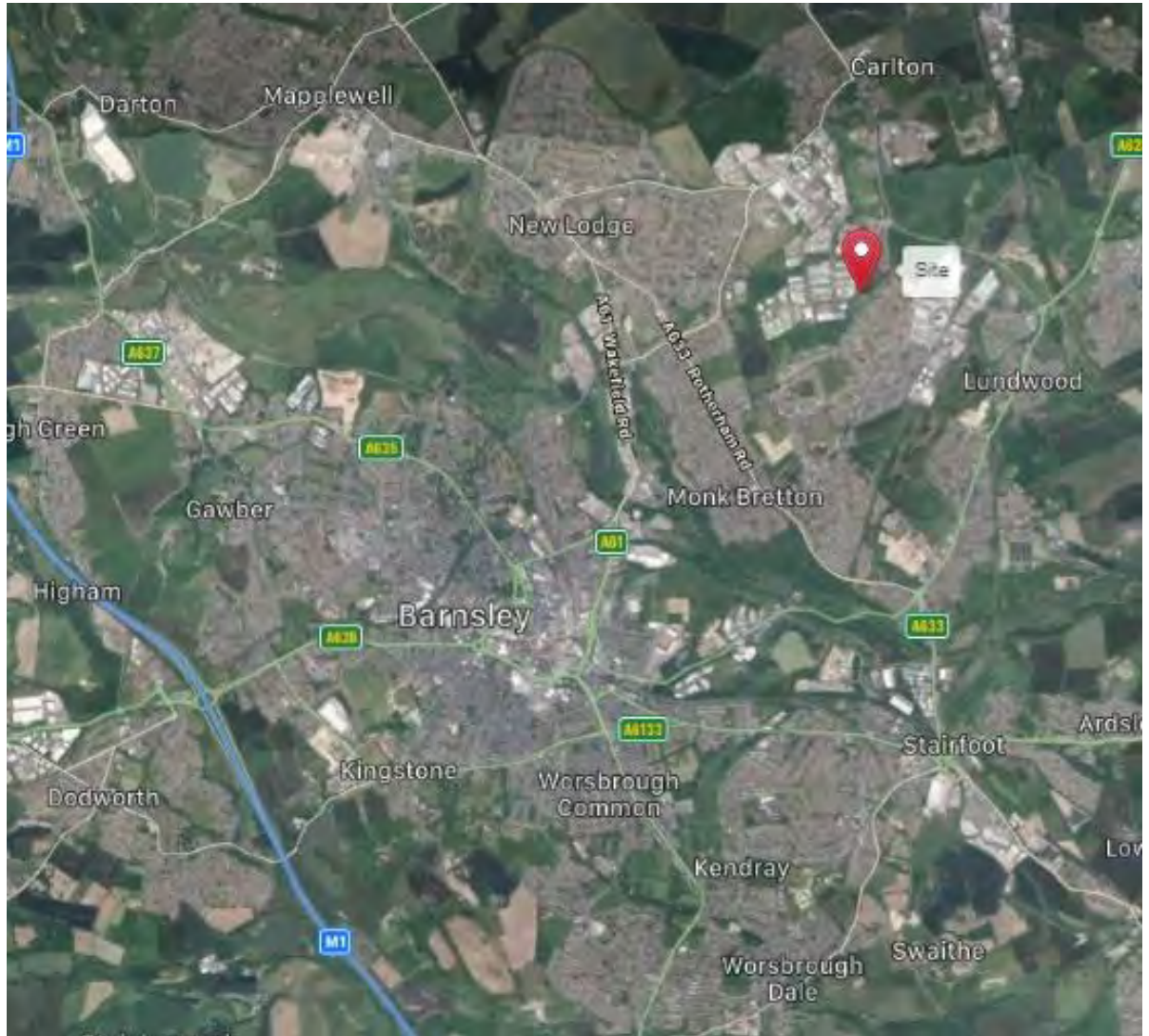
## 6 CONCLUSIONS AND RECOMMENDATIONS

- 6.1.1 The existing site is greenfield and enclosed by housing to the south and the east, a wooded area to the north and a paddock and commercial area to the west.
- 6.1.2 The site is 1.20ha in size and the proposed development consists of stripping and remodelling the site and redeveloping with a number of residential properties with private gardens, with associated roads and areas of hardstanding for parking. The site is currently undeveloped and the proposed development will result in an impermeable area of approximately 0.64 ha.
- 6.1.3 Ground Investigation works carried out identified Made Ground across parts of the site, underlain by stiff silty gravelly clay from between 0.15m and 0.75m bgl. Weathered mudstone was then present beneath the whole site from between 0.6m and 1.8m bgl. Groundwater strikes were noted in four investigation points at depth between 1.8m to 2.0m bgl.
- 6.1.4 Considering the nature of the underlying strata, infiltration drainage is unlikely to be feasible. In addition, the depth to groundwater (where present) is too shallow to allow anything other than a very shallow systems, whilst maintaining at least 1m unsaturated zone below any infiltration systems.
- 6.1.5 The nearest surface water feature is a small unnamed stream c. 250m north of the site through the Carlton Industrial estate. Discharge into the watercourse is not considered feasible.
- 6.1.6 Run-off from the post-development site will be discharged to a nearby sewer for all storm events up to and including the 1in100 year + 40% allowance for climate change event. Run-off will be attenuated in a cellular crate tank and the final discharge restricted to 3.5l/s as agreed with Yorkshire Water.
- 6.1.7 The foul water will discharge into the Yorkshire Water sewer within the back gardens to the east of the site, which is in third party land. An agreement needs to be made with the land owners or Yorkshire Water can exercise their rights to Sewer Requisition under Section 98.
- 6.1.8 In conclusion, the proposed developments surface water run-off will be managed safely onsite.
- 6.1.9 This report is intended for the use of the developer of the site in support of their planning application for the site only.

# Appendix A

## Location Map

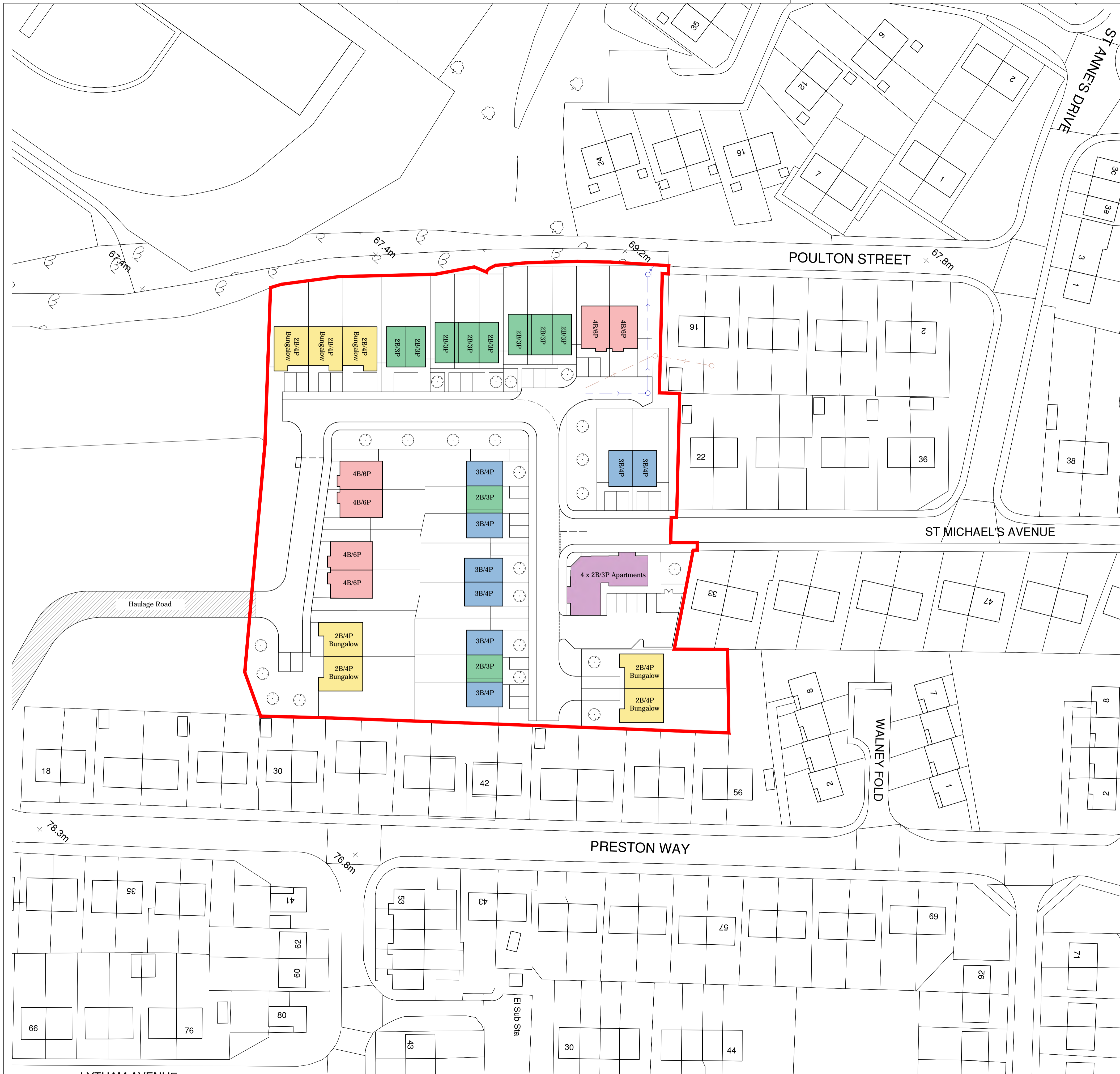




# Appendix B

## Proposed Development





RESPONSIBILITY IS NOT ACCEPTED FOR OTHERS SCALING DIRECTLY FROM THIS DRAWING. DO NOT SCALE FROM THIS DRAWING. USE WRITTEN DIMENSIONS ONLY.

0m 5 10 15 30m ORIGINAL SHEET SIZE **A1**  
1:500



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- KEY TO HOUSETYPES**
- 4 Bedroom\_6 Person Semi Detached
  - 2 Bedroom\_4 Person Semi Detached Bungalow
  - 3 Bedroom\_4 Person
  - 2 Bedroom\_3 Person
  - 4 x 2 Bedroom\_3 Person Apartments

**Notes:**

1.19 Hectare Site

**Housing Provision**


Total 35 Units

6 x 4B/6P Houses  
8 x 3B/4P Houses  
10 x 2B/3P Houses  
7 x 2B/4P Bungalows  
4 x 2B/3P Apartments

**Parking**

2 Bed properties = 1no. Space  
2 Bed bungalows = 2no. space  
3 & 4 Bed properties = 2no. Spaces  
2 Bed Apartments = 1no. Space per unit + 3 visitor spaces


Drawing to be read in conjunction with drawing 014 Site Plan Landscaping

FIRST ISSUE					
P1	BST	05.08.19			
COMMENT					
REV	DRAWN	DATE	CHECKED	DATE	APPROVED
					
<small>NPS Barnsley Ltd Gateway Plaza, Sackville St, Barnsley, South Yorkshire, S70 2RD, Tel: 01226 774605; Email: barnsley@nps.co.uk; web: www.nps.co.uk</small>					
CLIENT					
BMBC Housing Growth					
PROJECT					
New Housing Development St Michael's Avenue, Monk Bretton					
TITLE					
Proposed Site Plan 35 Units					
SCALES		DISCIPLINE		PROJECT NUMBER	
1:500		ARCHITECT		18-1-1301	
DRAWING NUMBER			REV CODE		
NPS-DR-A-(00)-SK2			P 1		
STATUS CODE		PURPOSE OF ISSUE		DRAWN BY	
S3		PRELIMINARY		BST	

# Appendix C

## Greenfield Rates



JNP Group		Page 1
No. 1 Meadowhall Riverside Meadowhall Road Sheffield S9 1BW		
Date 11/10/2019 09:51 File	Designed by Lee.Carl Checked by	
Innovyze	Source Control 2018.1.1	

Greenfield Runoff Volume

FSR Data

Return Period (years)	100
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.000
Ratio R	0.363
Areal Reduction Factor	1.00
Area (ha)	1.200
SAAR (mm)	677
CWI	100.860
Urban	0.000
SPR	30.000

Results

Percentage Runoff (%)	27.90
Greenfield Runoff Volume (m <sup>3</sup> )	208.005

No. 1 Meadowhall Riverside  
Meadowhall Road  
Sheffield S9 1BW



Date 27/03/2019 12:28  
File Infiltration Basin.SRCX

Designed by Callum.Simister  
Checked by

Innovyze Source Control 2018.1.1

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.300
Area (ha)	1.900	Urban	0.000
SAAR (mm)	767	Region Number	Region 3

**Results 1/s**

QBAR Rural	3.9
QBAR Urban	3.9
Q100 years	8.0
Q1 year	3.3
Q30 years	6.8
Q100 years	8.0

# Appendix D

## Yorkshire Water Response & Sewer Plans



**Ms S Longstaff  
JNP Group  
Unit 1 Meadowhall Riverside  
Meadow Hall Road  
Sheffield  
S9 1BW**

**Yorkshire Water Services  
Developer Services  
Sewerage Technical Team  
PO BOX 52  
Bradford  
BD3 7AY**

**Tel: 0345 120 8482  
Fax: (01274) 372 834**

**Your Ref:  
Our Ref: V005818**

**Email:  
technical.sewerage@yorkshirewater.co.uk**

**For telephone enquiries ring:  
Chris Roberts on 0345 120 8482**

**15th April 2019**

Dear Ms Longstaff,

**St Michael's Avenue, Monk Bretton, S71 2SD – Pre-Planning Sewerage Enquiry on T381801  
(Residential)**

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records.

The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months.

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

**Foul Water**

Foul water domestic waste should discharge to the 150 mm diameter public foul sewer recorded to the east of the site.

**Surface Water**

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

As a last resort and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the 225 mm diameter public surface water sewer recorded in St Michael's Avenue, at a point to the east of the site. The surface water discharge from the site to be restricted to not greater than 3.5 (three point five) litres/second.

### **Other Observations**

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply on line or obtain an application form from our website ([www.yorkshirewater.com](http://www.yorkshirewater.com)) or by telephoning 0345 120 84 82.

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Developer Services Team (telephone 0345 120 84 82) for further information.

All the above comments are based upon the information and records available at the present time. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely



Chris Roberts  
Sewerage Technician  
Developer Services



Mon 29/04/2019 11:54

Chris Roberts <Chris.Roberts@yorkshirewater.co.uk>

RE: St Michael's Avenue, Monk Bretton, S71 2SD - Pre Planning Sewerage Enquiry on T381801 (Residential)

To: Sarah Longstaff

Cc: Technical Sewerage

You forwarded this message on 29/04/2019 13:19.  
We removed extra line breaks from this message.

Hi Sarah,

As a last resort and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the 225 mm diameter public surface water sewer recorded in Poulton Street, at a point to the east of the site. The surface water discharge from the site to be restricted to not greater than 3.5 (three point five) litres/second.

In regards to the foul sewer we do not have an easement but we can use our statutory powers to access our sewer under section 98 but this takes time and costs the developer. In the first instance we would advise you to negotiate with the land owners.

Regards

Chris

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

From: Sarah Longstaff <Sarah.Longstaff@jnpgroup.co.uk>

Sent: 29 April 2019 11:43

To: Chris Roberts <Chris.Roberts@yorkshirewater.co.uk>

Cc: Callum Simister <Callum.Simister@jnpgroup.co.uk>

Subject: FW: St Michael's Avenue, Monk Bretton, S71 2SD - Pre Planning Sewerage Enquiry on T381801 (Residential)

Hi Chris

Further to my call to Developer Services and Callum's emails below, please can you advise if we can discharge surface water into the surface water sewer in Poulton Street instead (that will allow us a gravity discharge from the site). Will the permitted rate be the same?

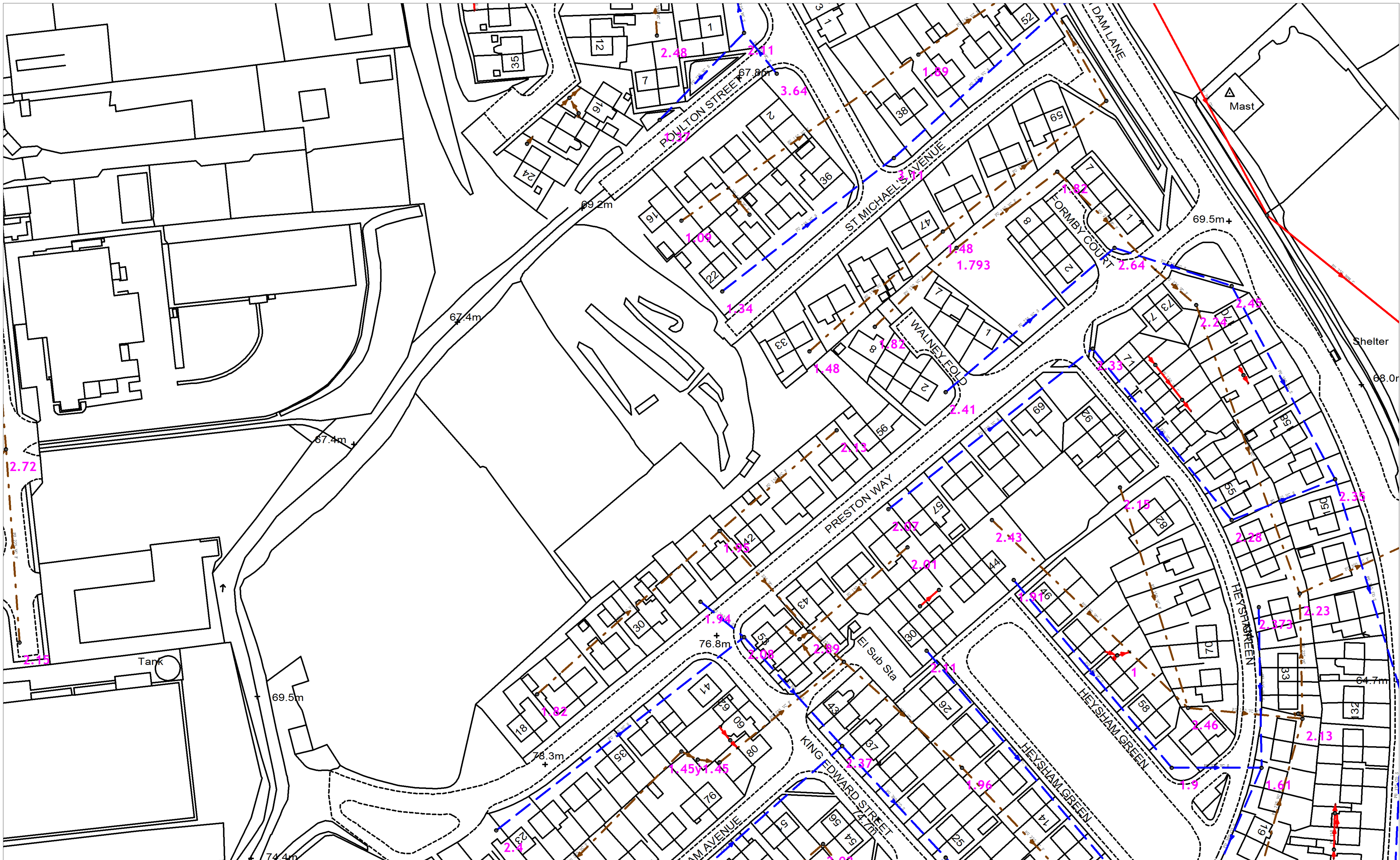
We note that the foul sewer is located in the rear gardens of houses on St Michales Av / Poulton St. Do you have an easement / access to this or would we need to negotiate access across third party land?

Regards

Sarah Longstaff

Principal Hydrogeologist

[www.jnpgroup.co.uk](http://www.jnpgroup.co.uk) Consulting Engineers Brighouse . CheshamC..HartlepoolH..Leamington Spa ..Sheffield



436564 : 408564

Map Name : SE3608NE

Title

Partial Key

This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.



Yorkshire Water,  
 PO Box 500,  
 Halifax Road,  
 Bradford BD6 2LZ  
 Contact Name :  
 YorMap Advisor C ROBERTS  
 Contact Tel : 87 2582

Notes

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Foul Sewer = F  
 Combined Sewer = C  
 Surface Water Sewer = SW  
 Trade Sewer = TD  
 Partially Separate = PS

Date Req : 15/04/2019, 11:28:43

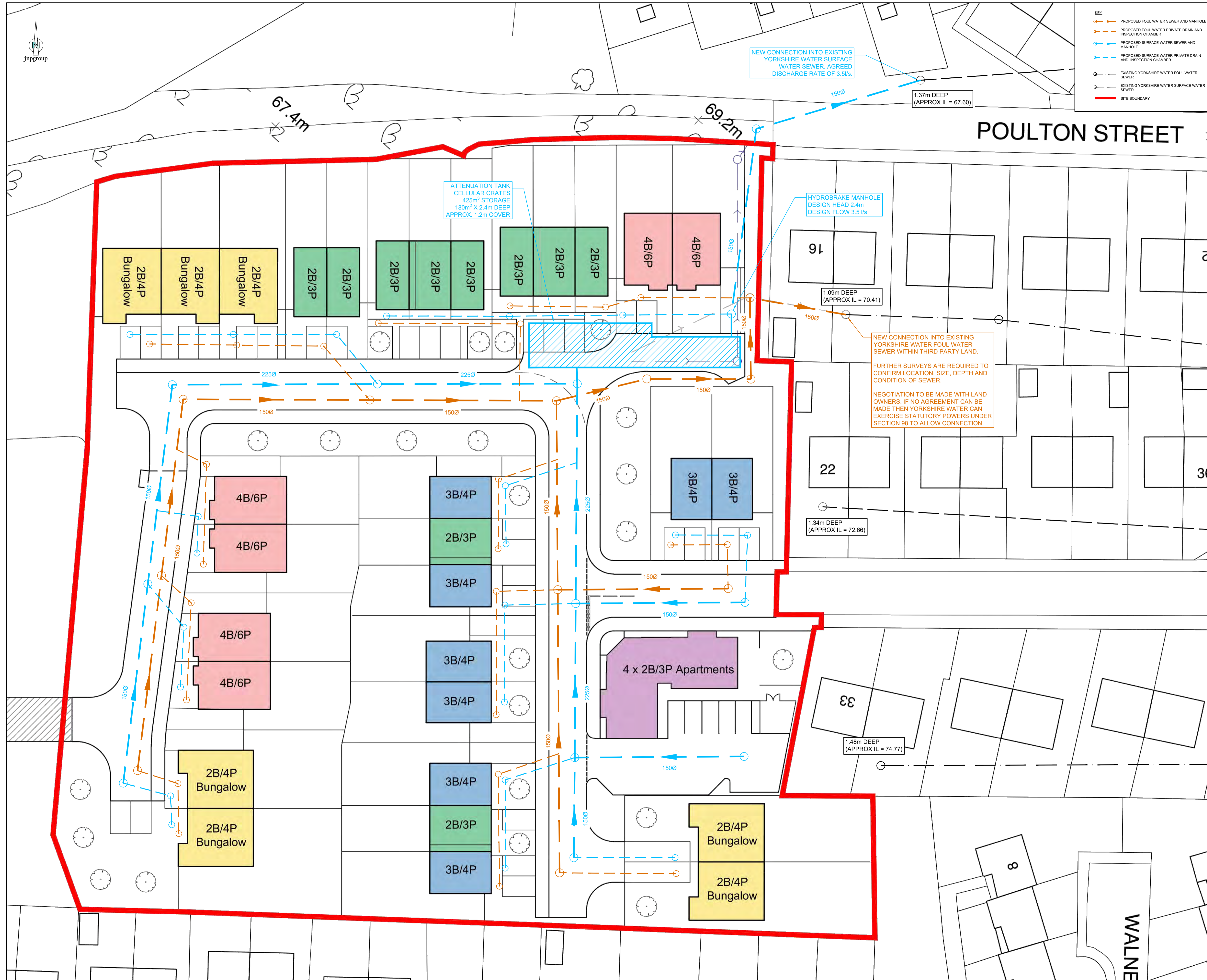
Date Gen : 15/04/2019, 11:29:33

Source : Sewer Network Enquiry

# Appendix E

## Schematic Drainage Layout





**KEY**

- PROPOSED FOUL WATER SEWER AND MANHOLE
- PROPOSED FOUL WATER PRIVATE DRAIN AND INSPECTION CHAMBER
- PROPOSED SURFACE WATER SEWER AND MANHOLE
- PROPOSED SURFACE WATER PRIVATE DRAIN AND INSPECTION CHAMBER
- EXISTING YORKSHIRE WATER FOUL WATER SEWER
- EXISTING YORKSHIRE WATER SURFACE WATER SEWER
- SITE BOUNDARY

- General Notes**
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**Health & Safety Note**

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**HAZARD IDENTIFICATION BOX**

This table is provided to assist the Principal Contractor to fulfil their obligations under the CDM Regulations 2015

Hazard Ref	Hazard Type <small>Crushing/Struck/Overhead/Slipping/Tripping</small>	Hazard Description	Mitigation Measures/ Residual Risk
▲			

Rev.	Date	Description	Rev./Date/Author
P02	05/12/2019	REVISED FOUL WATER OUTFALL ROUTE TO REDUCE WORKS IN THIRD-PARTY LAND.	CS/SLL/AG
P01	11/10/2019	UPDATED FOR LATEST SITE LAYOUT AND IN ACCORDANCE WITH UPDATED STRATEGY REPORT.	CS/SLL/AG
-	08/05/2019	FIRST ISSUE	CS/SLL/AG

Subsidiary: **S0 - Work In Progress**

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[www.jnpgroup.co.uk](http://www.jnpgroup.co.uk)  
 Chesham • Brighthelm • Hartlepool • Leamington Spa • Sheffield  
 Website: [www.jnpgroup.co.uk](http://www.jnpgroup.co.uk)

Client: **NPS**  
 Job: **St Michael's Avenue**  
 Title: **Proposed Preliminary Drainage Strategy**

Classification: **FI 60 20** Scale: **A1** Date Issued: **08/05/19** Drawn/Checked/Approved: **CS/SLL/AG**

**BMTRADA** **UKAS** **HAAS** **Constructionline**

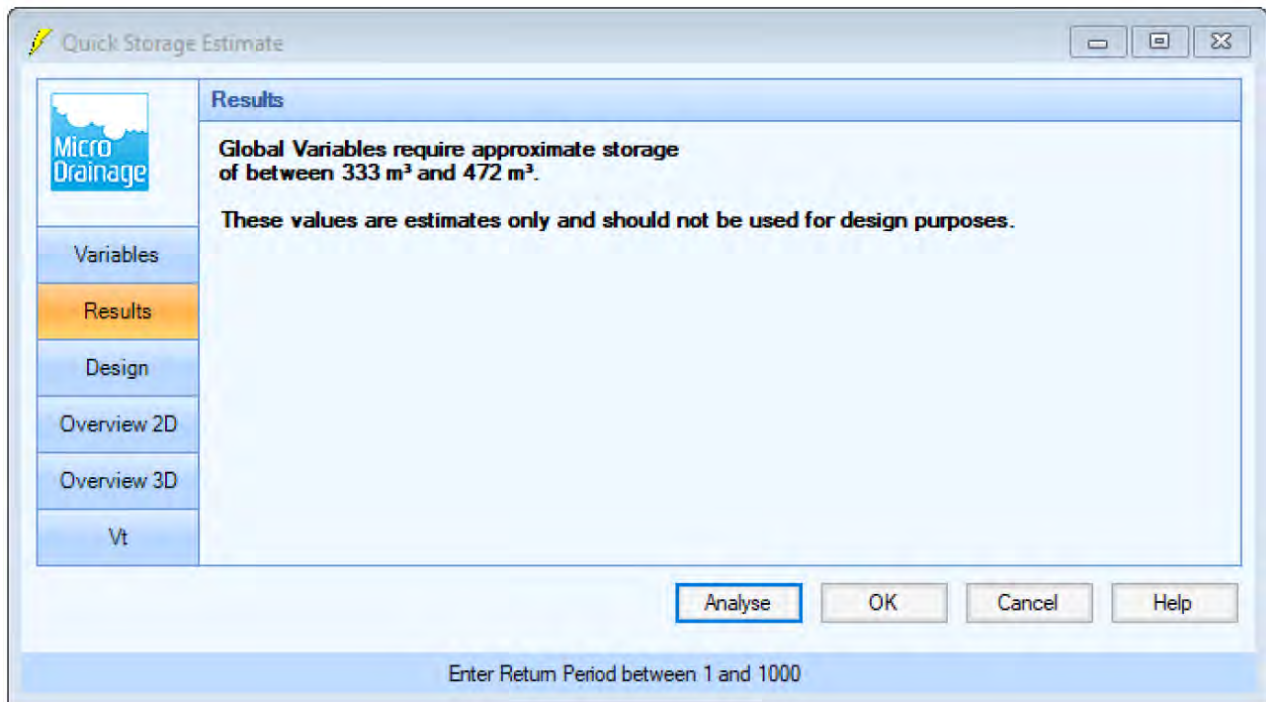
Accredited Contractor

Project: **S10774-JNP-XX-DR-C-2001** Revision: **P02**

# Appendix F

## MicroDrainage Outputs

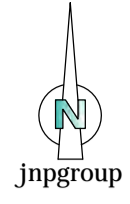




# Appendix G

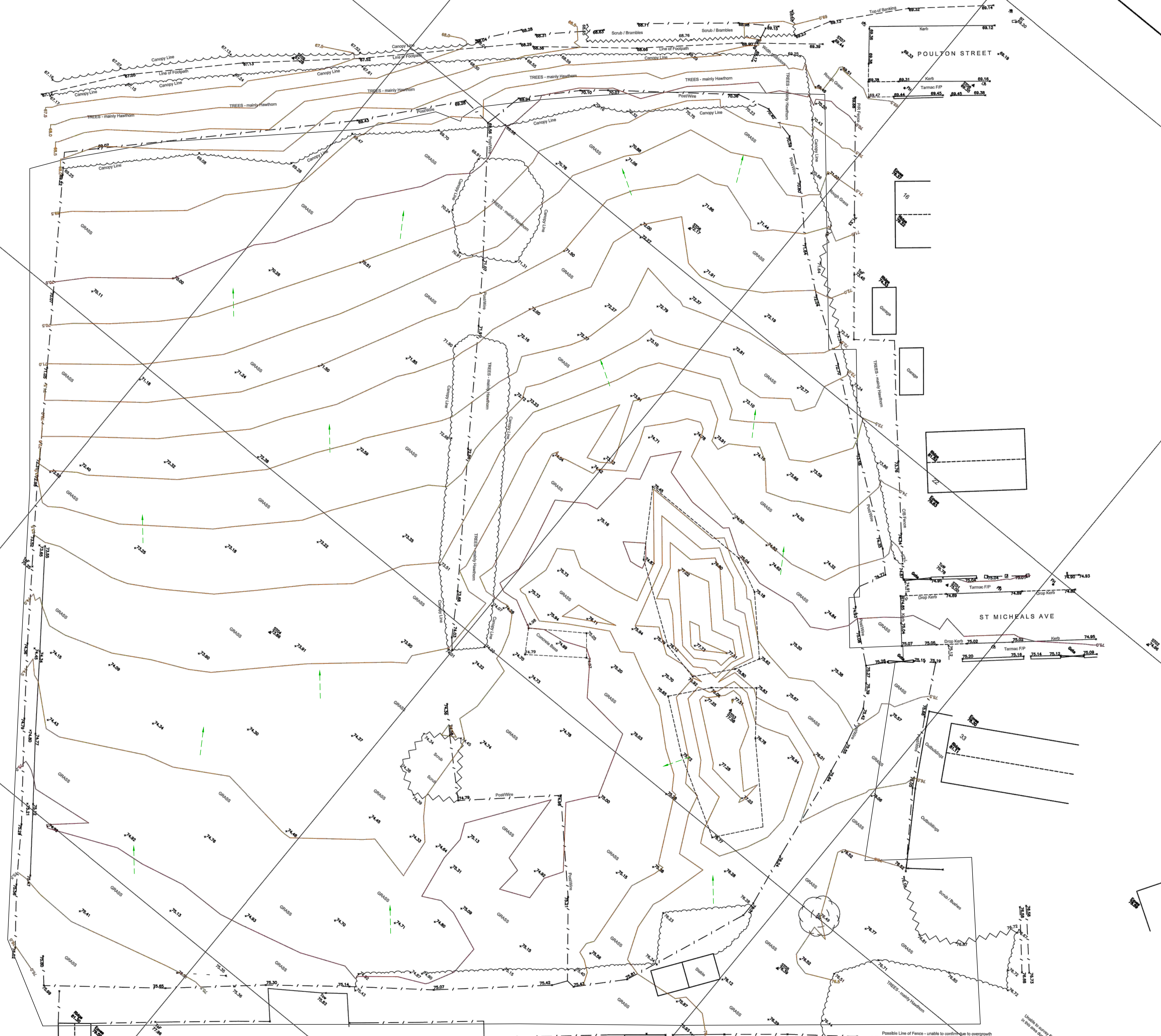
## Exceedance Flowpaths





KEY

EXCEEDANCE FLOW PATHS SOFT LANDSCAPING



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**HAZARD IDENTIFICATION BOX**

This table is provided to assist the Principal Contractor to fulfil their obligations under the CDM Regulations 2015

Hazard Ref	Hazard Type	Hazard Description	Mitigation Measures/ Residual Risk
▲	Construction/Excavation/Clipping/Drainage/Signage		

Rev.	Date	Description	Rev. CDR / Appl
-	10/05/2019	FIRST ISSUE	CSSL/KG

Validity: S2 - Suitable for Information

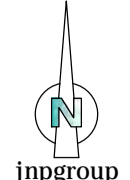
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Website: www.jnpgroup.co.uk

Client: NPS  
Job: St Michael's Avenue  
Title: Existing Exceedance Flow Paths

Classification: FI 60 20 Scale: 1:250 Date Issued: 10/05/19 Drawn/Checked/Approved: CSSL/KG

Accredited Contractor  
Supplier No. 000019

Project: Oldlake - Volume System Level/Location: Type: Discipline: Number: Revision: -  
**S10774-JNP-XX-XX-DR-C-2003**  
 Document/Revision Number



**KEY**

- EXCEEDANCE FLOW PATHS SOFT LANDSCAPING
- EXCEEDANCE FLOW PATHS HARD SURFACING

67.4m  
69.2m  
**POULTON**



- General Notes**
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  - All working dimensions to be checked on site.
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**HAZARD IDENTIFICATION BOX**

This table is provided to assist the Principal Contractor to fulfil their obligations under the CDM Regulations 2015

Hazard Ref	Hazard Type (Control Measures/Changing/Removing/Managing)	Hazard Description	Mitigation Measures/ Residual Risk
▲			

Rev	Date	Description	Rev CDM / Appl
P01	11/10/2019	REVISED TO INCLUDE UPDATED SITE LAYOUT.	LOSL/LAS
-	10/05/2019	FIRST ISSUE	CS/SL/KG

Validity: **S2 - Suitable for Information**

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Website: www.jnpgroup.co.uk

Client: **NPS**  
Site: **St Michael's Avenue**  
Title: **Proposed Exceedance Flow Paths**

Classification: <b>FL 60_20</b>	Scale: 1:250	Date Issued: 10/05/19	Drawn / Checked / Approved: CS/SL/KG
Project: <b>10774-JNP-XX-XX-DR-C-2002</b>			Revision: <b>P01</b>

Haulage Road



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