Technical Note

Project: West End Avenue, Royston, Barnsley

Client: NPS Group

Date: 15.02.2018

Reference: 40234_TEN04

By: Dave Last

Checked: Tom Wilkinson

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1. Introduction

A residential development comprising the construction of 2 properties on a brownfield site has been proposed off West End, Royston, Yorkshire. Alan Wood & Partners have been commissioned to provide a drainage statement by way of a technical note to consider the drainage elements for the proposals.

2. Sources of Information

The information collected to assess the existing and proposed drainage is derived from a number of sources, which are summarised below:

- General mapping of the site and wider vicinity, from free issue sources
- Topographic survey
- Yorkshire Water Services (YWS) PPE Response (ref: T017874)
- Hamson Barron Smith Preliminary Land Contamination and Geotechnical Risk Assessment (ref: 23-24-18-1-6007/DSR1)
- NPS Group proposed development details

3. Existing Site Assessment

The proposed development is situated to the west of West End to the west of Royston. The total site is approximately 475m^2 in area. The existing site is shown to have a relatively smooth surface, with a shallow fall from north west to south east. At the high point to the north west, ground levels are up to 74.97m AOD with the low point towards the south east at a level of 73.30m AOD.

The site is an existing garaged area with a compacted dirt access track. Figure 1 below identifies the site and location. The existing site has no known existing drainage and is entirely permeable land. There is no evidence that the existing structures on the site have positive drainage.

Figure 1 Former Site Layout

3.1 Site Geology

A review of the British Geological Survey (BGS) information shows no recorded superficial deposits with a boundary between Sandstone (Mexborough Rock) and Mudstone (Pennine Middle Coal Measures) sat on bedrock as shown in Figure 2 below.

Figure 2 British Geological Survey Geology Map

Hamson Barron Smith Preliminary Land Contamination and Geotechnical Risk Assessment Report (Ref: 23-24-18-1-6007/DSR1) identified the site to contain firm or stiff clays derived from weathering of the mudstone bedrock with Coal Measures bedrock at Shallow depth.

3.2 Soakaway Testing

There has been no soakaway testing undertaken as part of the initial development. This testing will be required to confirm to Yorkshire Water that this is not a viable option.

Given the known ground conditions it is unlikely that soakaways will prove to be a viable option.

3.3 Existing Site Run Off

The development site is shown to be brownfield development land with garages and asphalt hardstanding area; therefore the greenfield run off rate for the site will be relatively low.

The development proposes to reduce the overall impermeable area within the site from and existing area of 189m^2, down to a proposed area of 156m^2.

The runoff rate can be estimated by using BS EN 752 Part 4: 1998 ’11.3.2 Methods of Calculating Runoff from Small Development Schemes’, which is an applicable method for sites up to 200ha in area and is based on the following formula:

$$Q = \Psi iA$$

where: Q = Peak Runoff Rate (l/s)

Ψ = Permeability factor (1 being wholly impermeable)

i = Rainfall Intensity (l/s.ha) = 140l/s.ha for 1 in 30 year storm, 210l/s.ha for a 1 in 100 year storm

A = Area (ha)

Based on the known impermeable area, the existing run off from site has been calculated and summarised in Table 1 below.

Site Impermeable Area (m^2)	M30 Runoff Rate (l/s)	M100 Runoff Rate (l/s)
189	2.65	3.97
30% Betterment Rate	1.86	2.78

Table 1 Existing Site Run-off Rates

Given the low brownfield discharge rate, it is assumed that a discharge is restricted to 3l/s as per the lowest recommended rate. This rate is subject to agreement with Yorkshire Water and has been lowered to account for an overall discussion regarding the wider development proposals within Royston.

3.4 Existing Site Drainage

Yorkshire Water sewer records indicate the presence of an existing 225mm diameter surface water sewer in the front garden of the property directly to the south of the site. There is no record of any foul water drainage within the development site or immediately accessible from the site.

At this stage, no further surveys have been undertaken on the existing network to confirm its condition, it is recommended that a CCTV be undertaken prior to commencing any works. The exact location and depth of the existing drainage runs is approximated from the Yorkshire Water information received, but will be subject to further survey to confirm.

3.4.1 Existing Surface Water Drainage

The existing development comprises private garages and gravel access; there is not anticipated to be any surface water drainage located within the site.

The proposed connection into the Yorkshire Water network are assumed to be in an acceptable condition given the information available.

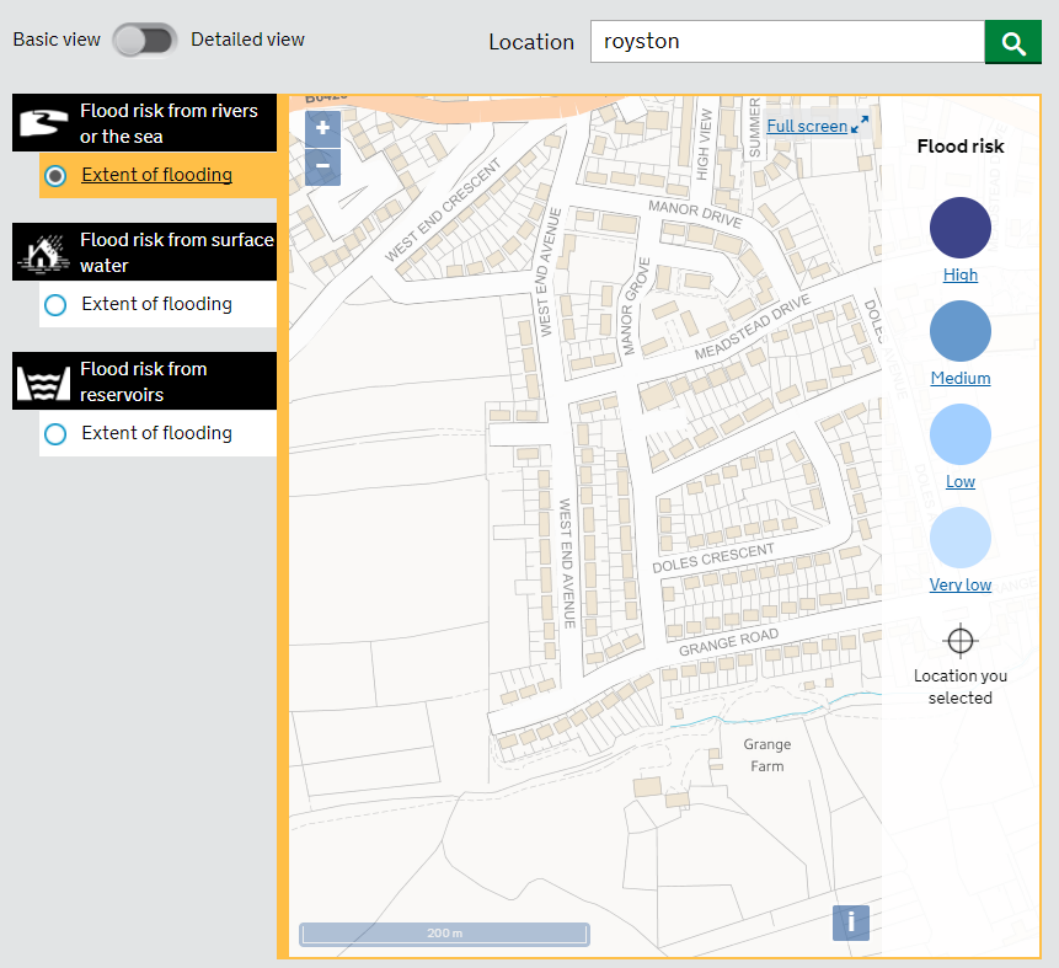


Figure 3 Environment Agency Long Term Flood Risk from Rivers and the Sea Map (August 2017)

3.4.2 Existing Foul Water Drainage

As mentioned in section 3.3 above, and existing adoptable surface water sewer is located in the front garden of the property directly south of the site. As the site currently comprises garaged units, it is not anticipated to be any private foul water drainage will be encountered within the site.

It is anticipated that the private foul drainage can be connected into the existing Yorkshire Water network located around the proposed site.

3.5 Flood Risk

The area of proposed development is situated in in Flood Zone 1, indicating low risk of fluvial (river) flooding as indicated in Figure 3 above. Long term surface water flood risk maps produced by the Environment Agency indicate that there are no records of flooding within or surrounding the site.

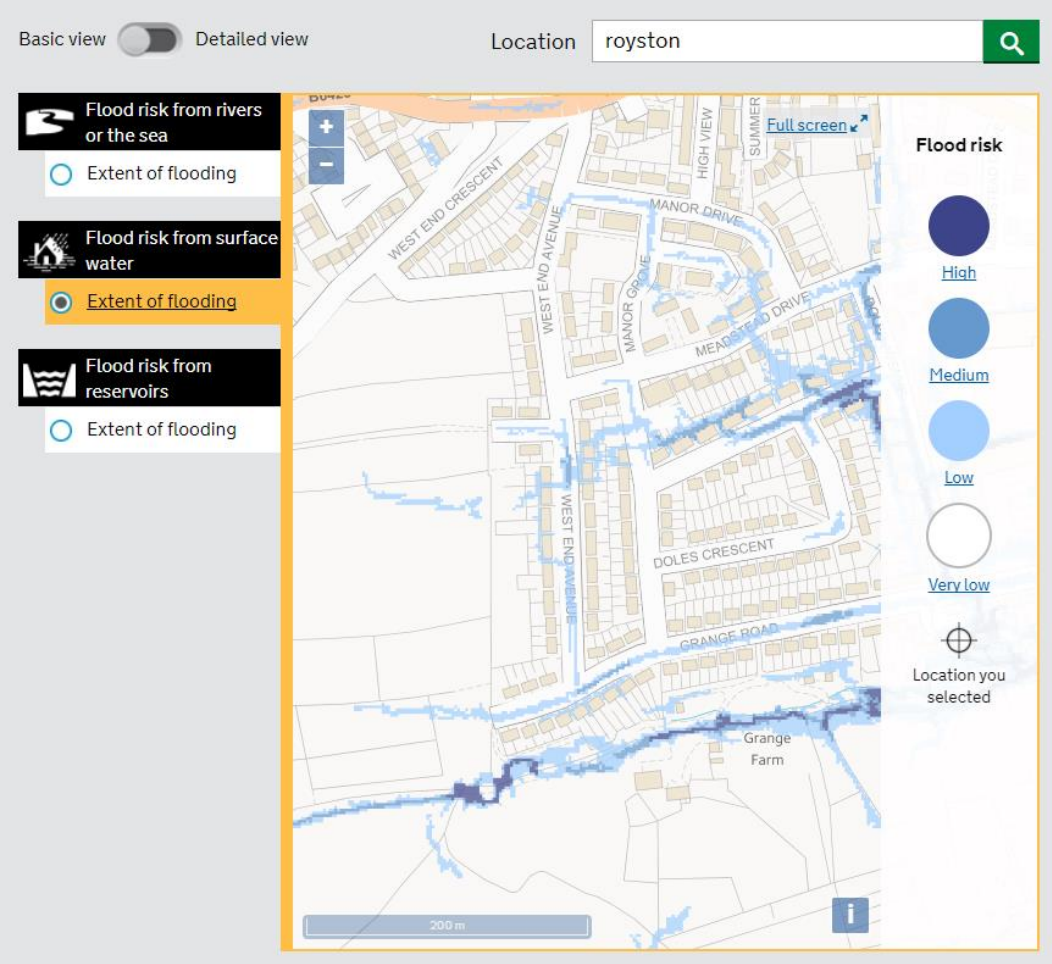


Figure 4 Environment Agency Long Term Surface Water Flood Risk Map (August 2017)

4. Proposed Development

The proposed development comprises the construction of 2 new residential properties with off street parking and associated infrastructure. A new separate surface water and foul water drainage system is proposed in order to suitably drain the development. An indicative drainage layout is enclosed in Appendix B.

Information provided within the Yorkshire Water Pre-Planning Enquiry (ref: T017874) has identified that that an unrestricted foul water connection is acceptable.

The Pre-Planning Enquiry also highlights that the public surface water sewer network will accept discharge that matches the existing site discharge less a 30% reduction. A copy of the PPE response can be found in Appendix D.

4.1 Foul Drainage

A new foul water drainage system is required to serve the proposed 2 new properties. Yorkshire Water have confirmed that foul water flows can discharge into the existing YWS foul water sewer network. It is proposed that foul water drainage waste should discharge to a 150mm diameter public foul sewers using the existing manhole approximately 40m to the east of the site.

Due to the relatively flat nature of the site and the area surrounding the site, a package pumping station and rising main will be required to enable the foul system to discharge to the Yorkshire Water network.

Based on Sewers for Adoption 7 guidance of 4000 litres/dwelling/day, average foul water flows from the site will be **0.09 l/s**, assuming a peak factor of 6, the resultant peak flow from the site would be **0.50 l/s**.

4.2 Surface Water

In accordance with UK Building Regulations H3 SUDS guidance, the method of discharge of surface water from the site has been considered in the order of preference:

- Discharge to the Ground
- Discharge to a Watercourse
- Discharge to a Public Sewer

Hamson Barron Smith Preliminary Land Contamination and Geotechnical Risk Assessment (Ref: 23-24-18-1-6007/DSR1) shows the site to grey mudstone, siltstone, pale grey sandstone overlaying bedrock. At this stage no soakaway testing has been completed but this will be required to confirm viability to Yorkshire Water.

Infiltration testing has been completed within the site and indicates that soakaways are not a viable option for the site.

No watercourses are shown to bound the proposed site with the closest being approximately 300m to the south of the site with the only access being crossing / beneath adoptable roads and through private gardens. On this basis, discharge to a watercourse is a largely unviable option.

Therefore, the development will require connection into the Yorkshire Water network which, pending receipt of confirmation above, is anticipated to be accepted.

For either of the above options, flow restriction from the site will be required by means of a flow control manhole (Hydrobrake or similar approved). The volume of storage required will be dictated by Land Drainage Authority / Internal Drainage Boards / Yorkshire Water.

Further liaison is required with Yorkshire Water to confirm the final discharge from the site. Due to the nature of this development and sites elsewhere in Royston (refer to: Meadstead Avenue –

40234 – TEN01, Manor Grove – 40234 – TEN02 and Doles Crescent – 40234 – TEN 03). Further liaison is required to confirm an overall discharge philosophy within Royston in order to achieve an amicable solution for all the developments.

5. Conclusion and Recommendations

Existing Environment Agency flood maps indicate that the proposed development site lies within Flood Zone 1. Long term surface water flood risk maps indicate that the development is not at risk of surface water flooding. Based on the above information, the risk of flooding to the development is believed to be low and acceptable.

Infiltration has been confirmed as not a possible option within the site and due to the distance to the nearest watercourse, this is also a largely non-viable solution.

Based on the drainage assessment undertaken, foul sewage generated from the site will be discharged using a package pumping station and rising main approximately 40m east of the development site.

The surface water drainage is anticipated to connect into the manhole located in the front garden of the property to the south of the development site. The discharge rate for this development site has been reduced to account for further proposed developments within Royston and subject to agreement with Yorkshire Water.

Appendix Summary:

Appendix A - Site Location Plan and Indicative Site Layout

Appendix B - Proposed Drainage Layout

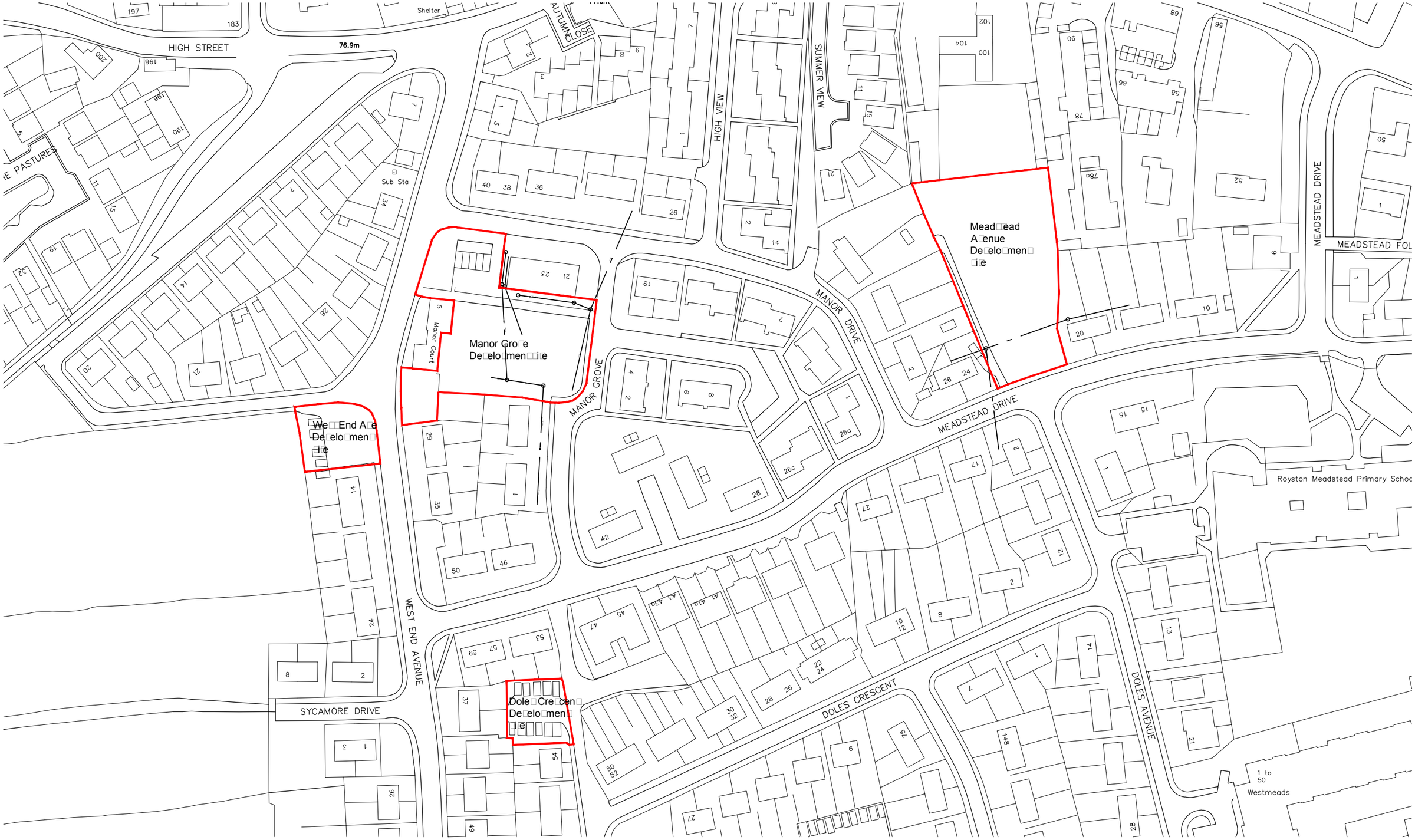
Appendix C - Micro Drainage Storage Calculations

Appendix D - Yorkshire Water PPE Response

Appendix E - Robson Liddle Ground investigation Extract

Appendix A

Site Location Plan and Indicative Site Layout



ORIGINAL SHEET SIE
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FIRST ISSUE

REV	DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
P1						

COMMENT

CLIENT
Berne lai Home

PROJECT
Manor Gro e, Mead ead Dri e and We End A enue Pro o ed Bungalo De elo men

TITLE
Exi ing Si e Loca ion Plan

nps group
NPS Barn le Ld
Ga e a Pla a, Sack ille S , Barn le , Sou h York hire, S70 2RD,
Tel: 01226 774605 Email: barn le @n .co.uk
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SCALES	DISCIPLINE	PROJECT NUMBER
1:1250	ARCH	17 1 1283

DRAWING NUMBER	REV CODE
NPS DR A 00 010	P 1

STATUS CODE	PURPOSE OF ISSUE	DRAWN
S0	PRELIMINARY	GH

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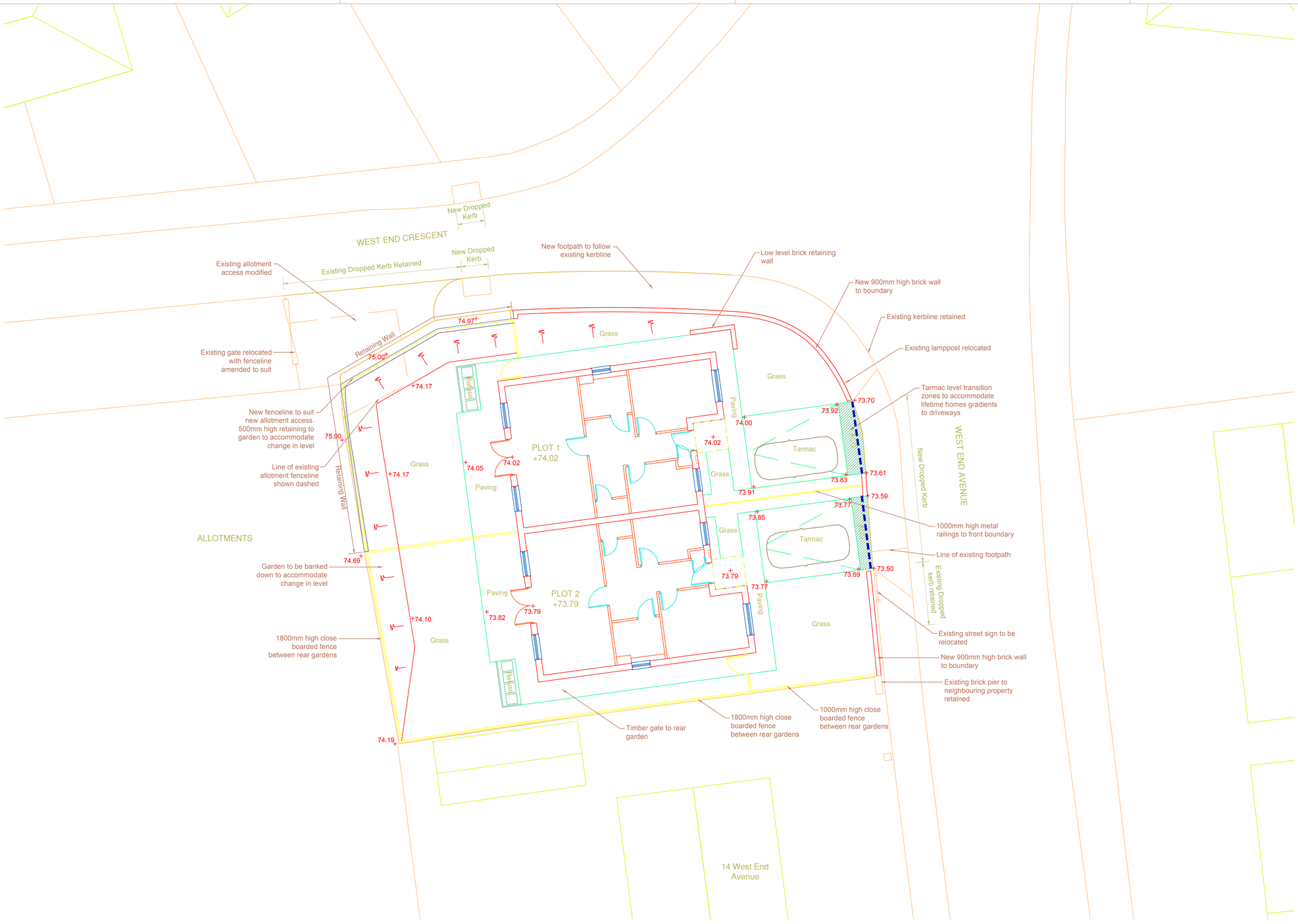

01 Site Plan

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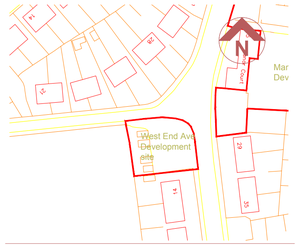
KEY PLAN



Notes:

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

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ORIGINAL SHEET SIZE A1

CLIENT: Berneslai Homes

TITLE: West End Ave
Proposed Site Plan

PROJECT: Royston Bungalow Development

nps group

NPS Barnsley Ltd
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Tel: 01226 774605; Email: barnsley@nps.co.uk
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SCALES	DISCIPLINE	PROJECT NUMBER
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DRAWING NUMBER		REV CODE
NPS-DR-A-(00)-311		P1
STATUS CODE	PURPOSE OF ISSUE	DRAWN BY
S2	PLANNING APPROVAL	BST

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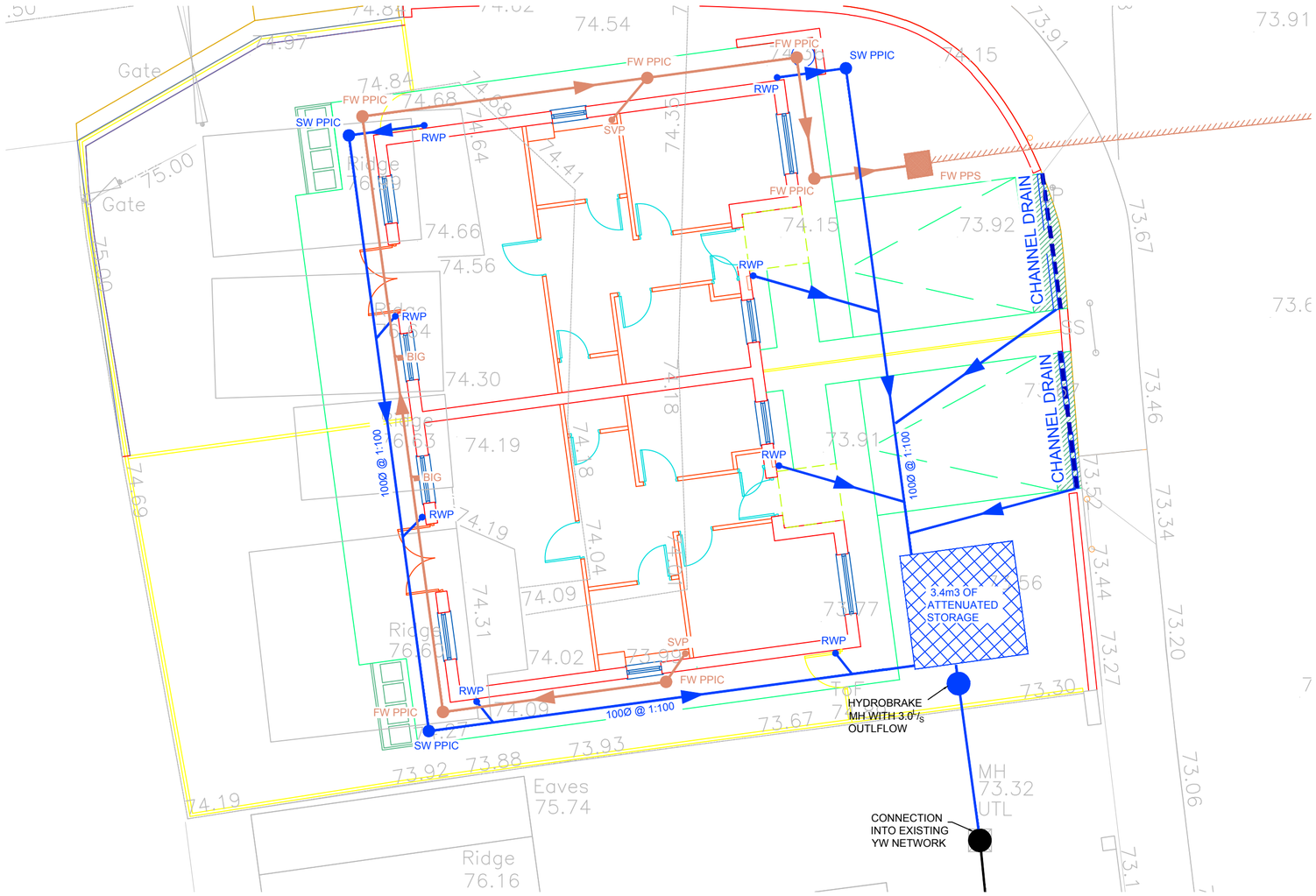
Date Plotted: 15 February 2018 22:22:58

Appendix B

Proposed Drainage Layout



HEALTH & SAFETY RISKS

IN ADDITION TO THE STANDARD HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING RESIDUAL HEALTH AND SAFETY RISKS

CONSTRUCTION RISKS

CR 01 ADD TEXT DEFINING RESIDUAL RISKS HERE.

CR 02 ADD TEXT DEFINING RESIDUAL RISKS HERE.

CR 03 ADD TEXT DEFINING RESIDUAL RISKS HERE.

OPERATION & MAINTENANCE RISKS

MR 01 ADD TEXT DEFINING OPERATION & MAINTAINANCE RISKS HERE.

MR 02 ADD TEXT DEFINING OPERATION & MAINTAINANCE RISKS HERE.

MR 03 ADD TEXT DEFINING OPERATION & MAINTAINANCE RISKS HERE.

DEMOLITION RISKS

DR 01 ADD TEXT DEFINING DEMOLITION RISKS HERE.

DR 02 ADD TEXT DEFINING DEMOLITION RISKS HERE.

DR 03 ADD TEXT DEFINING DEMOLITION RISKS HERE.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING IN ACCORDANCE WITH THE REQUIREMENTS DEFINED IN THE CDM REGULATIONS.

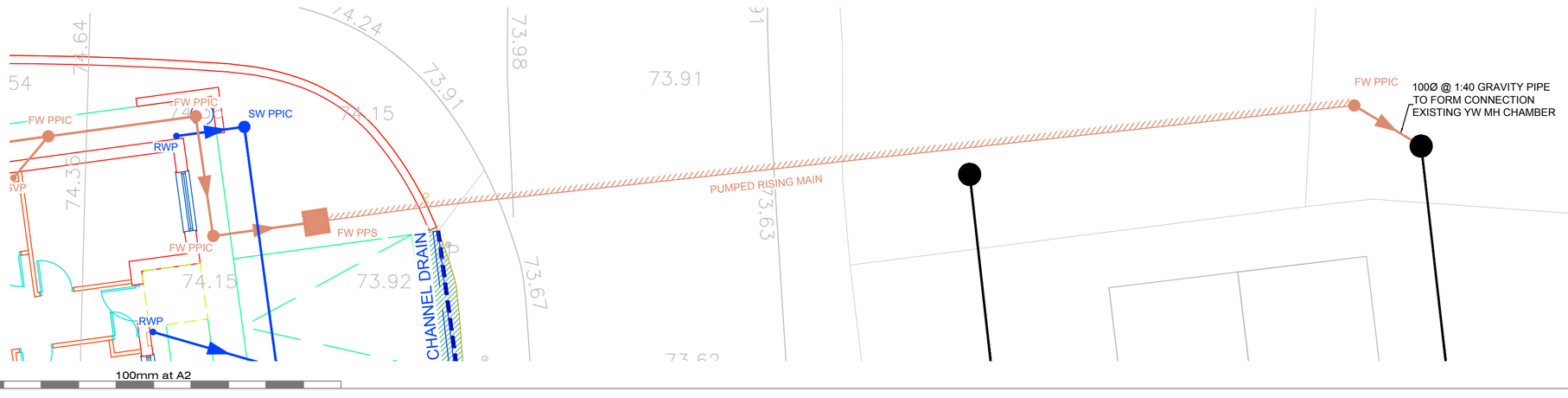
KEY

- FWPPIC — PROPOSED FW PPIC
- BIG — PROPOSED BACK INLET GULLY
- SVP — PROPOSED SOIL VENT PIPE
- RWP — PROPOSED RAIN WATER PIPE
- PROPOSED SW MH
- PROPOSED FW PACKAGE PUMPING STATION
- PROPOSED SW ATTENUATION TANK: 3.75 x 4.0m x 0.4m = 6.0m³
- EXISTING FWMH
- EXISTING SWMH

NOTES:

1. THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE AND ENSURE THAT THE BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY, SUCH MATERIAL REMAINING THE THE PROPERTY OF THE CONTRACTOR ON COMPLETION, AND FOR ENSURING THAT THE WORKS AND ANY ADJACENT PROPERTIES ARE SAFE IN THE TEMPORARY CONDITION.

Rev	Description	Date	By	Chk	App
P2	REVISED STORAGE VOLUME, DRIVE DRAINAGE ADDED, DRAWING FRAME CHANGED	15.02.18	KJH	DJL	DJL
P1	FIRST ISSUE	12.02.18	KJH	DJL	DJL



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Project: RESIDENTIAL DEVELOPMENT, WEST END, ROYSTON, BARNSLEY

Client: BARNSLEY MBC

Drawing: PROPOSED DRAINAGE

Role: CIVIL ENGINEER

Drawing Status: PRELIMINARY

Job. no. 40234 | Scale@ A2: 1:100 | Rev. P2

Project Originator Volume Level Type Role Number

ROY - AWP - ZZ - XX - DR - C - 0005

Appendix C

Micro Drainage Storage Calculations

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	73.941	0.341	3.0	2.9	O K
30 min Summer	73.963	0.363	3.0	3.1	O K
60 min Summer	73.923	0.323	3.0	2.7	O K
120 min Summer	73.801	0.201	3.0	1.7	O K
180 min Summer	73.725	0.125	3.0	1.1	O K
240 min Summer	73.696	0.096	2.7	0.8	O K
360 min Summer	73.675	0.075	2.1	0.6	O K
480 min Summer	73.665	0.065	1.7	0.6	O K
600 min Summer	73.658	0.058	1.4	0.5	O K
720 min Summer	73.653	0.053	1.2	0.5	O K
960 min Summer	73.647	0.047	1.0	0.4	O K
1440 min Summer	73.639	0.039	0.7	0.3	O K
2160 min Summer	73.633	0.033	0.5	0.3	O K
2880 min Summer	73.629	0.029	0.4	0.2	O K
4320 min Summer	73.624	0.024	0.3	0.2	O K
5760 min Summer	73.622	0.022	0.2	0.2	O K
7200 min Summer	73.620	0.020	0.2	0.2	O K
8640 min Summer	73.618	0.018	0.2	0.2	O K
10080 min Summer	73.617	0.017	0.2	0.1	O K
15 min Winter	73.989	0.389	3.0	3.3	O K
30 min Winter	74.211	0.611	3.6	3.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	123.746	0.0	4.6	14
30 min Summer	81.399	0.0	6.1	22
60 min Summer	51.031	0.0	7.7	40
120 min Summer	30.924	0.0	9.3	70
180 min Summer	22.768	0.0	10.2	98
240 min Summer	18.215	0.0	10.9	126
360 min Summer	13.232	0.0	11.9	186
480 min Summer	10.552	0.0	12.7	246
600 min Summer	8.846	0.0	13.3	306
720 min Summer	7.656	0.0	13.8	366
960 min Summer	6.090	0.0	14.6	488
1440 min Summer	4.405	0.0	15.9	726
2160 min Summer	3.181	0.0	17.2	1084
2880 min Summer	2.522	0.0	18.2	1424
4320 min Summer	1.816	0.0	19.6	2152
5760 min Summer	1.437	0.0	20.7	2920
7200 min Summer	1.198	0.0	21.6	3664
8640 min Summer	1.032	0.0	22.3	4272
10080 min Summer	0.909	0.0	22.9	5112
15 min Winter	123.746	0.0	5.2	14
30 min Winter	81.399	0.0	6.8	23

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	73.932	0.332	3.0	2.8	O K
120 min Winter	73.746	0.146	3.0	1.2	O K
180 min Winter	73.692	0.092	2.6	0.8	O K
240 min Winter	73.676	0.076	2.1	0.6	O K
360 min Winter	73.661	0.061	1.6	0.5	O K
480 min Winter	73.653	0.053	1.2	0.5	O K
600 min Winter	73.648	0.048	1.0	0.4	O K
720 min Winter	73.644	0.044	0.9	0.4	O K
960 min Winter	73.639	0.039	0.7	0.3	O K
1440 min Winter	73.633	0.033	0.5	0.3	O K
2160 min Winter	73.628	0.028	0.4	0.2	O K
2880 min Winter	73.624	0.024	0.3	0.2	O K
4320 min Winter	73.621	0.021	0.2	0.2	O K
5760 min Winter	73.618	0.018	0.2	0.2	O K
7200 min Winter	73.617	0.017	0.1	0.1	O K
8640 min Winter	73.615	0.015	0.1	0.1	O K
10080 min Winter	73.614	0.014	0.1	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	51.031	0.0	8.6	42
120 min Winter	30.924	0.0	10.4	70
180 min Winter	22.768	0.0	11.5	96
240 min Winter	18.215	0.0	12.2	126
360 min Winter	13.232	0.0	13.3	184
480 min Winter	10.552	0.0	14.2	246
600 min Winter	8.846	0.0	14.9	306
720 min Winter	7.656	0.0	15.4	366
960 min Winter	6.090	0.0	16.4	492
1440 min Winter	4.405	0.0	17.8	714
2160 min Winter	3.181	0.0	19.2	1092
2880 min Winter	2.522	0.0	20.3	1440
4320 min Winter	1.816	0.0	22.0	2180
5760 min Winter	1.437	0.0	23.2	2808
7200 min Winter	1.198	0.0	24.1	3696
8640 min Winter	1.032	0.0	25.0	4344
10080 min Winter	0.909	0.0	25.7	4952

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.400	Shortest Storm (mins)	15
Ratio R	0.397	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.020

Time (mins) From:	To:	Area (ha)
0	4	0.020

Time Area Diagram

Total Area (ha) 0.000

Time (mins) From:	To:	Area (ha)
0	4	0.000

Time Area Diagram

Total Area (ha) 0.000

Time (mins) From:	To:	Area (ha)
0	4	0.000

Appendix D

Yorkshire Water PPE Response

YorkshireWater

Mr K J Holt
Alan Wood & Partners
341 Beverley Road
Hull
HU5 1LD

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

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

Email:
Technical.Sewerage@yorkshirewater.co.uk

Your Ref: AWP054/ HC-00693/SITE2/47
Our Ref: T017874

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

30th October 2017

Dear Mr Holt,

46 Meadstead Drive Royston Barnsley S71 4LJ - Pre Planning Sewerage Enquiry On R740804

Thank you for your recent enquiry. Our charge of £153.00 (plus VAT) will be added to your account with us, reference AWP054. You will receive an invoice for your account in due course.

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.

Existing Infrastructure

There are small diameter public sewer recorded crossing the site. In this instance, building-over may take place under the control of Part H4 Building Regulations 2000.

Foul Water

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 domestic waste should discharge to the 150 mm diameter public foul sewer recorded around 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.

YorkshireWater

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.

If other methods of surface water disposal are not viable and subject to providing satisfactory evidence as to why they have been discounted, curtilage surface water discharges to the public sewer will be restricted to the level of run-off - i.e. same rate of discharge - to that from the existing use of the site less a 30% reduction in the existing discharge. Any discharge of surface water from the site should discharge to similar points of connection to that of the existing use of the site. You will need to demonstrate positive drainage, based on a 1 in 1 year storm, to the public sewer to Yorkshire Water by means of investigation and calculation carried out at your expense.

To do this, Yorkshire Water requires to see existing and proposed drainage layouts with pipe sizes, gradients and connection points, measured impermeable areas of the present and proposed use of the site, along with the calculations that show the existing and proposed discharge rate from the site to the public sewer.

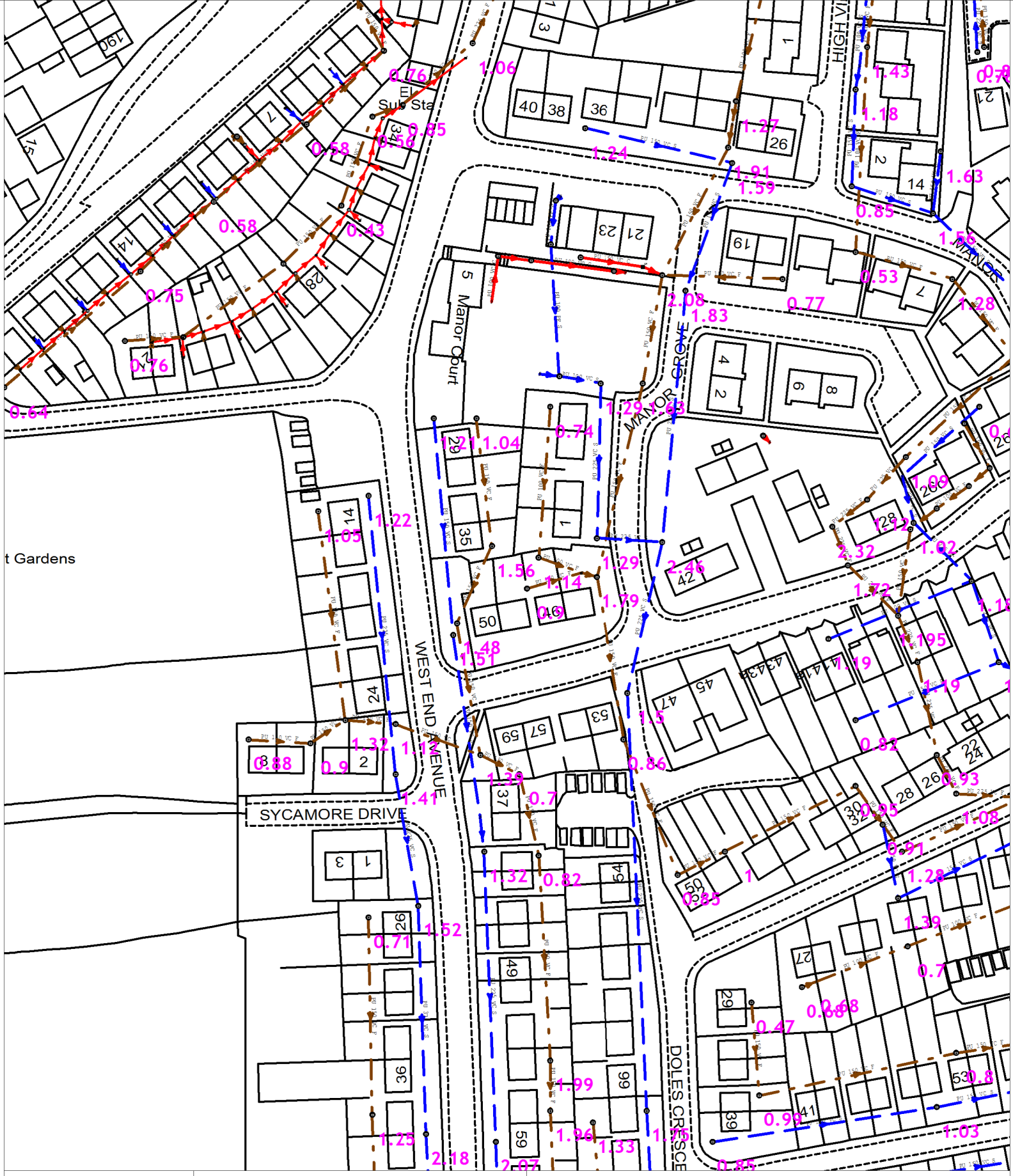
Other Observations

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

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



435328 : 411127	Map Name : SE3511SW	Title

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

Notes

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

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.

Date Req :	30/10/2017, 13:03:17	Date Gen :	30/10/2017, 13:05:15
Source :	Sewer Network Enquiry		

UPN: Undefined Originator: C ROBERTS, YorMap, 87 2582

Appendix E

Hamson Barron Smith Ground Investigation Extract

Doles Crescent
Barnsley

Preliminary Land Contamination and Geotechnical Risk Assessment

On behalf of Barnsley Metropolitan Borough Council

Report 23-24-18-1-6007/DSR1
July 2017

Report Issue Record

Project No.:	23-24-18-1-6007
Project Title:	Doles Crescent
Site Location:	Royston, Barnsley
Client:	Barnsley Metropolitan Borough Council
Report Title:	Preliminary Land Contamination and Geotechnical Risk Assessment
Issue Date:	13 July 2017
Report No.:	23-24-18-1-6007/DSR1
Revision:	-

	Written	Reviewed and Approved
Name	**Catherine Riley** BEng, BSc, CEng, CEnv, MCIWEM	**Craig Roberts** BSc, FIEnvSc, CEnv
Signature		
Position	Senior Geo-Environmental Engineer	Technical Director

Contents

Appendices

Executive Summary

SITE INFORMATION	
Client	Barnsley Metropolitan Borough Council.
Site	Doles Crescent
Location	Royston, Barnsley, S71 4LA. NGR 435506,411247.
Approximate area	0.05Ha
Topography	Elevation 65m OD.
Current land use	Private garages.
Proposed development	Low rise residential. Demolish existing garages and replace with one detached bungalow.

SITE SETTING	
Geology	Pennine Middle Coal Measures (mudstone, siltstone and sandstone). No superficial Deposits shown.
Radon	No radon protective measures are required.
Hydrogeology	Secondary A Aquifer. The site does not lies within a source protection zone.
Hydrology	An unnamed tertiary river lies circa 200m south.
Landfill sites	No landfills located within 500m of the site.
History	The site was undeveloped agricultural land until the 1970s, when the existing garages were constructed.
Previous site investigations	Hamson Barron Smith have not been made aware of any previous investigations, which may have been undertaken at this site.
Anticipated ground conditions	Firm or stiff clays derived from weathering of the mudstone bedrock. Coal Measures bedrock at shallow depth.

GEOTECHNICAL	
Foundations	Shallow spread foundations should be suitable. Bearing capacity to be determined from site investigation, but are likely to be sufficient for conventional low rise structures.
Shrinkable soils	Soils may be shrinkable.
Buried concrete	Significant concrete protection measures unlikely to be required.
Floor slabs	Suspended floor slab may be required.
Slope stability	Site and adjacent area are level and therefore no risks.
Pavement	CBR values likely to be adequate for road and car park construction.
Soakaways	Underlying geology may not be suitable for soakaway drainage, subject to full scale testing to confirm and calculate infiltration rates.
Natural cavities	None expected.
Mining	Royston coal seam (circa 0.50m thick locally) is conjectured to outcrop to the north of the site, as dip is generally to the north and east it is unlikely to be present at shallow depth beneath the site. The SYMAS report indicates that the shallow coal seam in this area is historically rarely worked in the wider vicinity. Therefore, the likelihood of historical ground workings being present is considered to be negligible.

CONTAMINATION	
Human health	Potential localised hydrocarbons and solvents associated with car maintenance and potential asbestos containing roofing sheets have been identified. If present, it is considered that these may pose a low to medium risk to identified human receptors.
Controlled waters	Potential localised sources of hydrocarbons and solvents associated with car maintenance pose low to medium risk to the underlying a Secondary A Aquifer. Risks to the surface water, are given the distance from the site considered low.
Gas protection	Risks from ground gases are considered to be low. No radon protection measures required.