
Land off Blythe Street Wombwell Barnsley

Flood Risk Assessment

Client:

Gleeson Developments Ltd
5 Europa Court
Sheffield Business Park
Sheffield
S9 1XE

Prepared by:**joc consultants ltd**

Park Farm House
Leathley Lane
Leathley
Otley
LS21 2JU

SITE	Land to the west of Blythe Street, Wombwell, Barnsley.
PURPOSE OF THIS REPORT	This site-specific flood risk assessment is required in connection with a planning application to Barnsley Metropolitan Borough Council for a residential development at the site. References in this report to "the site" are references to the site which is the subject of the planning application.
PLANNING APPLICATION NUMBER	Not issued
ANNEXES TO THIS REPORT	
Annex A	Figure 1: Location Plan
Annex B	Topographical Survey
Annex C	Drainage survey plans
Annex D	Estimate of existing peak flow rates from the site
Annex E	Yorkshire Water pre-planning advice and sewer map
SITE LOCATION AND DESCRIPTION	See Figure 1: Location Plan at Annex A.
National Grid Reference	439160E, 403516N
Gross Site Area	1.04ha
Ground surface	Permeable surface : 0.61ha Impermeable surface: 0.43ha
Topography	Ground levels fall generally in a NE direction, from approximately 64.0m AOD at the SW boundary to approximately 58.3m AOD at the NW boundary.

There is a cut slope close to the SW boundary, where the ground level is reduced from approximately 64.0m to approximately 61.2m AOD. This suggests the site was re-graded in the past to create a level area for the former development.

Blythe Street falls in elevation eastwards, away from the site, and Colewell Street falls in elevation towards the north.

See topographical survey at Annex B.

Ground conditions

The ground investigation for the development indicated unsuitable conditions for infiltration drainage, due to the low permeability of the underlying soils and solid geology.

History

The site was formerly occupied by Highfield Grange, a NHS centre which was subsequently acquired by Barnsley MBC. The building has now been demolished and the site is now vacant.

Watercourses

The river Dove is approximately 1km to the north of the site at an elevation of approximately 35m AOD. This is 23m below the lowest part of the site.

There are no other watercourses within 500m of the centre of the site, apart from an open drain which is approximately 375m to the NE of the northern boundary.

Reservoirs

There are no reservoirs in the vicinity of the site. There are several open water bodies in Wombwell lngs, but these are more than 20m below the elevation of the site.

Existing site drainage

There are separate sewerage systems on the site which collect wastewater and surface water and discharge to the public sewers, as shown on the drainage plan at Annex C.

Surface water discharges to the 225mm diameter surface water sewer in rear gardens between Wilson Street and Colewell Close, (see Yorkshire Water sewer plans at Annex D).

THE DEVELOPMENT

A residential development of 43 dwellings is proposed.

It is estimated that the development will create impermeable area on approximately 50% of the site.

VULNERABILITY CLASSIFICATION

The development is classified as '**More Vulnerable**', in accordance with Table 2 of the Technical Guidance to the National Planning

Policy Framework (NPPF).

FLOOD ZONE

Flood zone 1.

REQUIREMENT FOR THE SEQUENTIAL TEST

As the site is in flood zone 1, there is no requirement for the Sequential Test.

REQUIREMENT FOR THE EXCEPTION TEST

In accordance with Table 3 of the NPPF Technical Guidance, there is no requirement for the Exception Test.

HISTORY OF FLOODING

There is no reference in the Barnsley PFRA to any historic flooding at the site and we are not aware of any records of flooding at the site.

FLUVIAL FLOODING

Functional floodplain

The site is not in the functional floodplain.

Annual probability of fluvial flooding

0.1% or less.

Flood defences

None

Fluvial flood hazard

None

Loss of floodplain storage

None

Obstruction to overland flow routes

None

Flood warning area

The site is not in a flood warning area.

SURFACE WATER FLOODING

Risk of surface water flooding

The Environment Agency-surface water flood map shows the risk of this type of flooding to be 'Very Low', the annual probability of which is less than 0.1%.

Critical Drainage Areas

The site is not in a critical drainage area.

GROUNDWATER FLOODING

Groundwater flooding is associated with highly permeable rock such as chalk. This type of geology is not present at the site.

At times when soil saturation is high, there is the potential for seepage at the bottom of the cut slope in the SW of the site, but this would be minor and its effect would be negligible.

SEWER FLOODING

Sewer flooding can occur when the capacity of the sewerage system is exceeded by exceptional rainfall. There is no evidence that the site has been affected by this type of flooding.

RESERVOIR FLOODING

The Environment Agency reservoirs flood map shows the site is not in an area at risk from the uncontrolled release of water from reservoirs.

EFFECT OF THE DEVELOPMENT ON FLOOD RISK**Fluvial and tidal flood risk**

No effect

Surface water flood risk

As noted above, the development will create impermeable area amounting to approximately 50%, an increase of 7% compared with existing conditions.

The existing 1 in 1 year peak surface water flow rate from the site is estimated to be approximately 57 l/s. As it is proposed to limit the peak flow rate from the development to 40 l/s, a reduction of 30%, this will ensure that there is no increase in off-site flood risk. In fact there will be a reduction in risk because surface water discharges from the site are currently uncontrolled.

Groundwater flood risk

No effect

Sewer flooding risk

No effect

EFFECT OF CLIMATE CHANGE

Climate change must be considered over the expected lifetime of the development which, in this case is taken to be 100 years. Climate change must therefore be considered up to 2115.

Peak rainfall intensities are predicted to

increase by 30% in the period 2085 to 2115 and peak river flow is predicted to increase by 20% in the period 2025 to 2115¹.

The effects of climate change must be taken into account in the design of the drainage system.

FLOOD RISK MANAGEMENT

Fluvial flood risk

No recommendations

Surface water flood risk

Controlled surface water discharge

Preliminary indications are that infiltration drainage is unlikely to be feasible due to the underlying low-permeability soils.

As there is no direct access to a watercourse, it is recommended that surface water from the development is discharged to the 225mm diameter surface water sewer via the existing point of connection, close to the NW corner of the site.

The rate of discharge should be limited to 70% of the former discharge from the site which is estimated to be approximately 57 l/s. It is therefore recommended that the peak surface water discharge from the site is limited to 40 l/s, or such other rate permitted by Yorkshire Water.

Attenuation storage

The detailed drainage design should make provision for any attenuation storage required as a consequence of the restricted discharge rate agreed with Yorkshire Water.

Groundwater flood risk

No recommendations.

Sewer flooding risk

No recommendations.

Reservoir flood risk

No recommendations.

¹ NPPF Technical Guidance Table 5

CONCLUSIONS

1. The site is in flood zone 1 where the annual probability of fluvial flooding is 1% or less.
2. The site discharges surface water to the 225mm diameter surface water sewer between Wilson Street and Colewell Close.
3. There is no requirement for the development to be subjected to the Sequential Test or the Exception Test.
4. The risk of surface water flooding at the site is described as 'Very Low' on the Environment Agency surface water flood map. The annual probability of such flooding is less than 0.1%.
5. The risk of groundwater flooding is assessed to be negligible.
6. The site is not in an area at risk from the uncontrolled release of water from a reservoir.
7. The effect of the development will be to reduce any surface water flood risk that currently exists by limiting the peak run-off rate to 40 l/s, a reduction of 30% compared with the existing 1 in 1 year run-off rate.
8. Infiltration drainage will not be feasible at this site due to the low permeability of the underlying soils. A surface water discharge to the public sewer will therefore be necessary in the absence of a suitable watercourse to which surface water could be discharged.

RECOMMENDATIONS

1. A detailed drainage design should be prepared and submitted to Barnsley Metropolitan Borough Council and Yorkshire Water for approval, prior to construction of the development.
2. The flood risk management measures recommended in this report should be implemented in the design of the development.

USE OF REPORT

This report is prepared specifically for Gleeson Developments Ltd for the purpose of the aforementioned planning application and the report may not be used for any other purpose and it may not be assigned to any third party without our written permission.

DISCLAIMER

This flood risk assessment is based on data available at the time of its preparation and JOC Consultants Ltd accepts no liability for the consequences of any changes to or re-assessment of this data in the future.

ANNEX A

Figures 1: Location Plan

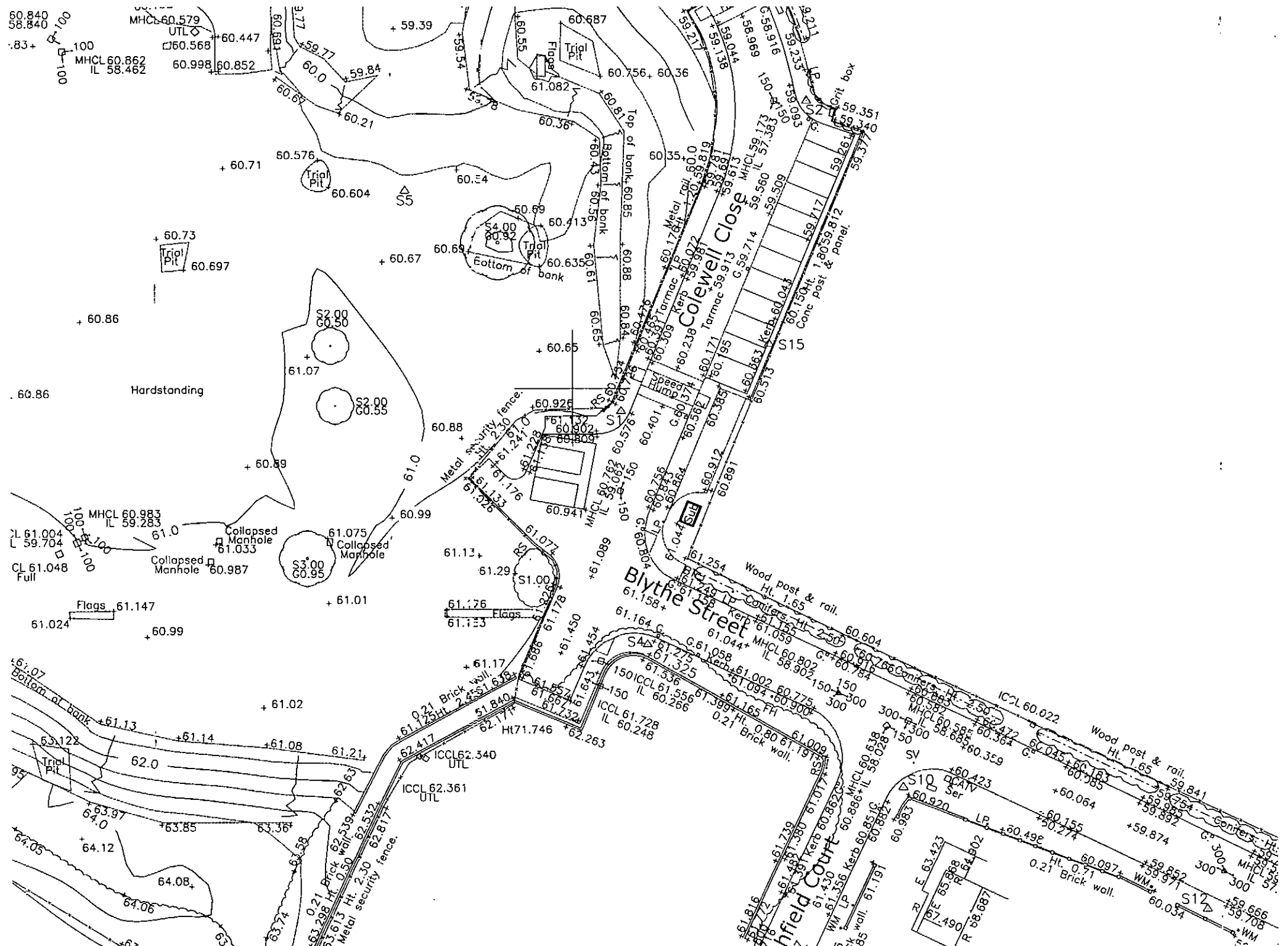
Development at Blythe Street, Wombwell, Barnsley



Figure 1: Location Plan

ANNEX B

Topographical Survey Plan



ANNEX C

Drainage Survey Plan

ANNEX D

Estimate of existing peak run-off rates from the site

Estimate of peak run-off rate from Site

01-Jul-15

NGR	439160	403516	
Catchment area	4300.00 m ²		
% Impermeable	100%		
Area draining to SW sewer	4300.00 m ²		
Length of catchment: L	188 m	Between MH 8 & Sewer	
Catchment surface	Impermeable		
C _v	1		
C _R	1.3	Wallingford	
U/s elevation: MH 8	60.53 m		
d/s elevation: MH1	58.85 m		
Distance	118.42		
Slope	0.0142	1 in 70.49	
Time of entry	4 min	assuming previous piped drainage	
Time of flow	2.72 min	assuming 1.15 m/s	HRTTable 4
Time of concentration T _c	7.00 min	Estimated	

Check for 1-year event

M1-7min rainfall	4.49 mm
Point intensity	38.52 mm/h
ARF	0.95
Average intensity	36.59 mm/h
Peak flow rate	56.80 l/s
70% of peak	40 l/s

Check for 2-year event

M2-7min rainfall	5.77 mm
Point intensity	49.49 mm/h
ARF	0.95
Average intensity	47.01 mm/h
Peak flow rate	72.98 l/s
70% of peak	51 l/s

ANNEX E

Yorkshire Water pre-planning advice

John O'Connor
JOC Consultants Ltd
Park Farm House; Leathley
Otley
Leeds
LS21 2JU

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: R007611

Received
1 / 6 / 2015
15/020

For telephone enquiries ring:

Jane Phillips on 0345 120 8482

27th May 2015

Dear Sir,

Blythe Street, Wombwell, Barnsley - Pre Planning Sewerage Enquiry on P755712

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.

In answer to your questions:-

The WWTW is Wombwell, it has sufficient treatment and hydraulic capacity for the proposed development and can accommodate the foul flows from the proposed site.

There is a dedicated surface water sewer in Blythe Street. Details of this can be found below.

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 domestic waste should discharge to the 150mm diameter public combined sewer recorded in Blythe Street, at a point approximately 9 (nine) metres from the site.

From the information supplied, it is not possible to determine if the whole site will drain by gravity to the public sewer network. If the site, or part of it, will not drain by gravity, then it is likely that a sewage pumping station will be required to facilitate connection to the public sewer network. If sewage pumping is required foul water discharge must not exceed 3 (three) litres per second.

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.

The local public sewer network does not have capacity to accept any additional discharge of surface water from the proposal site. If SuDS are not viable, the developer is advised to contact the

Environment Agency/Internal Drainage Board with a view to establishing a suitable watercourse (if any nearby) for discharge.

As a last resort and subject to providing evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the 225mm diameter public surface water sewer recorded in Blythe Street., at a point adjacent from the site.

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. 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.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Internal Drainage Board, with regard to surface water disposal from the site.

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.

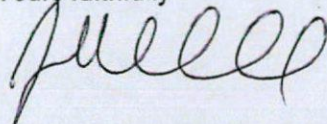
The public sewer network is for domestic sewage purposes. This generally means foul water for domestic purposes and, where a suitable surface water or combined sewer is available, surface water from the roofs of buildings together with surface water from paved areas of land appurtenant to those buildings. Land and highway drainage have no right of connection to the public sewer network. No land drainage to be connected/discharged to public sewer.

As a last resort, highway drainage may be accepted under certain circumstances. If it can be demonstrated, through satisfactory evidence, that SUDS are not a viable option, there are no watercourses or highway drains available and if capacity is available within the public sewer network, highway drainage discharges to the public sewer network may be permitted. In this event, the developer may be required to enter into a formal agreement with Yorkshire Water Services under Section 115 Water Industry Act 1991 to discharge non-domestic flows into the public sewer network.

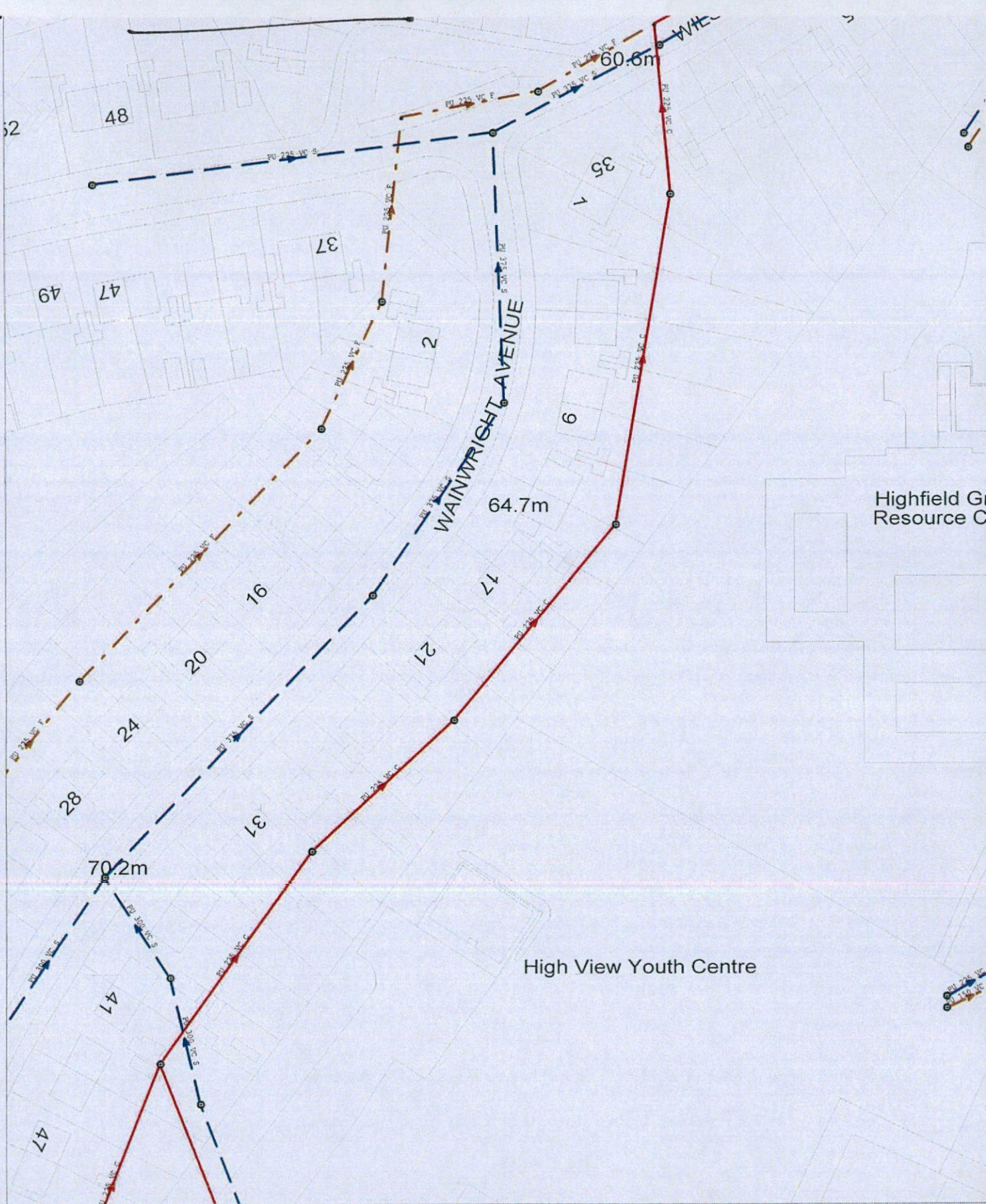
Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0345 120 84 82.

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 faithfully



Developer Services Team

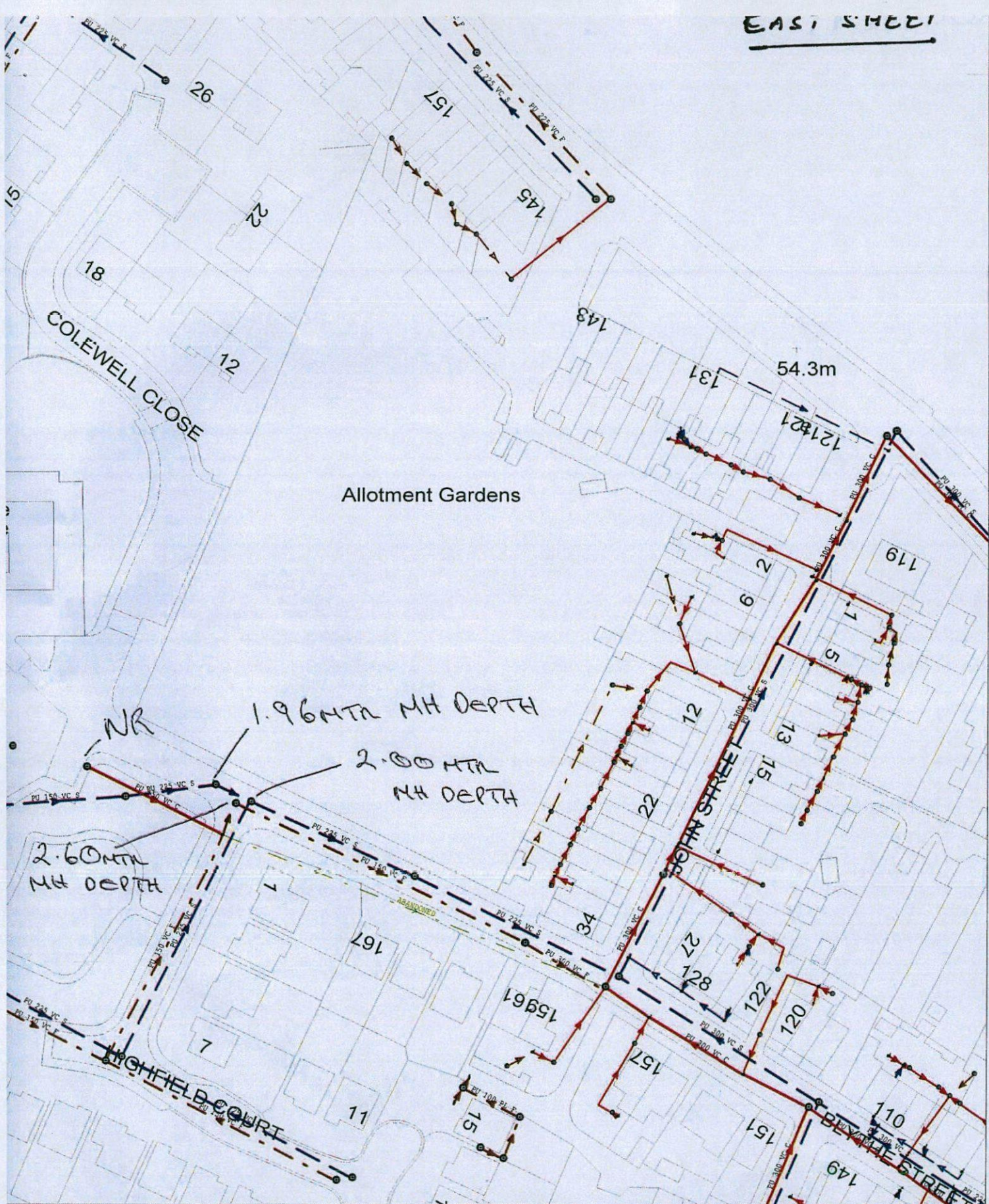


439016 : 403403

Map Name : SE3803S



Yorkshire Water,
PO Box 500,
Halifax Road,
Bradford BD6 2LZ
Contact Name :
- Jane PHILLIPS
Contact Tel : 75



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.
Notes NR = NOT RECORDED MH = MANHOLE	Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS	
(Only) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2014. All rights reserved Ordnance Survey Licence number 100022432	Date Req : 27/05/2015, 14:34:27	
	Date Gen : 27/05/2015, 14:34:29	

End of Report