Date: 8 February 2012
Our ref: LO95

Mr Steve Lancaster
Lancaster Maloney
Mottram House
43 Greek Street
Stockport
SK3 8AX

Dear Steve

Re: Drainage Statement
Fenn Road, Tankersley

Please find attached Drainage report. LKC are still waiting for a response from Yorkshire Water and will follow up with an addendum or revised report once this has been received.

Yours sincerely



Philip Hunter
Associate

Registered Office: Bury Business Centre
Kay Street, Bury BL9 6BU
www.thelkgroup.com

Tel: 0161 763 7200
Fax: 0161 763 7318
Registered in England and Wales 06767704

FENN ROAD, TANKERSLEY
DRAINAGE STATEMENT

Introduction

LK Consult has been asked to produce a report on drainage issues affecting this site for Equity Housing Group. The site is situated in south-west Tankersley (NGR 434479, 399964) and is adjacent to Glebe Court. It lies to the north-east of Storrs Dike, which flows south-east. Rockley Dike is situated to the north-west of the site, which flows north east. The area of the site is approximately 0.68 ha and generally falls in a north-east direction.

Information Supplied and Gathered

Information supplied by the Client
The site is within the 'site edged red' on the attached development plan by Bowker Sadler. Also supplied is correspondence with Barnsley MBC (BMBC) Drainage Engineer summarised below. The development plan shows the proposals for construction of twenty dwellings with public open space and access from Fenn Road.

Site visits
A site visit was undertaken on 16 January 2012 specifically to note the hydrology, local falls, threshold levels of existing and recently-constructed buildings and the relationship between the site, adjacent properties, and the accesses. The site was observed to be falling in a north-easterly direction towards Glebe Court and Fenn Road. An embankment was observed (a fall of 2m or more) adjacent the western boundary of the site towards Westwood New Road and a smaller difference in level exists with the A61 to the south. LKC identified two manholes which could be used as possible drainage outfall points – one on the pathway leading into Fenn Road and the other on the access road to Glebe Court off Westwood New Road. LKC also observed evidence of filter drains surrounding the site that are (according to BMBC) used to drain the highway embankments. A small portion of the site, where a stables was apparently previously located, is hard-surfaced and is not provided with any formal drainage, but otherwise the site comprises rough pasture.

Environment Agency
Flood risk data was not requested from the Environment Agency (EA) as the site does not appear to be at any risk of flooding. An extract from the EA web-based flood mapping is attached for reference and shows the approximate extent of the nearest flood zone.

The site is shown on the Environment Agency's (EA) website flood zone mapping as being within Flood Zone 1 – Low risk – annual probability of flooding less than 1 in 1,000. Since the site is less than 1.0ha in area a flood Risk Assessment (FRA) will not therefore be required from a flooding perspective and Sequential Test evidence for development should not be required.

The Groundwater Source Protection Zone (GSPZ) and Aquifer information was accessed on the EA website. The site is located outside any source protection zone and over a 'Secondary A' bedrock aquifer (previously designated Minor Aquifer) and therefore infiltration methods should not be constrained provided ground permeability is suitable and there is no significant ground contamination. We await information on preliminary ground investigations to assess suitability.

Correspondence with the EA is attached.

Local Council
Barnsley Metropolitan Borough Council (BMBC) was consulted in the course of this appraisal. Correspondence was exchanged with Wayne Atkins (Drainage and Highways Engineer) in an attempt to establish any incidences of, or possible problems with, flooding associated with foul, surface water and land drainage in the area of the site. The council stated that they have no records of any culverted or open watercourses crossing the site and is not aware of any local flooding issues. The engineer suggested that the open-grated drainage features found in the road verges adjacent to the site were probably associated with the drainage. A summary of correspondence is attached. A preliminary Flood

Risk Assessment Report was carried out by the council in 2011. The report also indicated that the site is not faced with any flooding issues.

Drainage Undertaker
Yorkshire Water was contacted as part of this assessment but has not yet provided a response. It is known from correspondence with the council that there is a surface water sewer in Thorncliff Way and a combined sewer in Fenn Road. There is a manhole in Fenn Road could be used as possible drainage outfall point with agreement with Yorkshire Water. It is likely that Yorkshire Water will prefer that surface water is discharged to the surface water sewer rather than the combined sewer, and that they will request the rate of discharge of surface water to be restricted to the 'greenfield' rate or, in this case, 5 litres per second, which is the figure usually taken to be a practical minimum. There will be enough room on-site under roads and public areas to construct storage to attenuate surface water runoff to this rate; a preliminary estimate for which is 320 m^3. A plan showing the areas assumed to be impermeable is attached.

Drainage assumptions:

- Surface water run-off arising from the site can be drained into the surface water sewer in Thorncliff Road west of the site.
- If the above cannot be achieved, then surface water arising from the eastern extent of the site (i.e. plots 1, 2, 19 and 20) can be drained into the combined sewer in Fenn Road.
- Discharge of surface water will be restricted to 5l/s.
- There is sufficient on site storage for surface water attenuation.
- Some surface water runoff will be discharged by infiltration if found to be feasible.
- Foul water can be drained into the combined sewer in Fenn Road or the manhole noted on the access to Glebe Court.

Discussion and Summary of Issues

Flooding Issues
The site is not at flood risk from rivers or local watercourses. The proposed development will not be constrained by flood risk to the site and a Flood Risk Assessment is not required.

Building habitable floor level and site level
Since the site is not at risk of fluvial flooding there is no requirement for freeboard above likely flood levels. However, it is prudent in design to allow for the possibility of overland flow or ponding due to problems of sewer overload or blockage, possibly off-site, and avoid low-spots in ground profile and set building floor levels nominally above local ground levels.

Surface Water Drainage
Surface Water drainage should be designed taking into account the requirements of Sustainable Drainage Systems (SuDS) guidance. It is unlikely that Yorkshire Water will allow significant surface water from the site into their combined sewerage system. Permission from the EA will be required to discharge to watercourse or soakaway, and they will require flows to be reduced and/or attenuated at least to the current runoff or 'greenfield' runoff rate from the site, as appropriate. Installation of soakaways may be possible, but is constrained by the need to site them at least 5m away from buildings, and feasibility is determined by GSPZ and groundwater vulnerability requirements, ground conditions (including any contamination), permeability and local water table. It is therefore wise to assume for now that attenuation will be required for runoff from roofs, roads and hardstandings before discharge. Treatment by interceptor should not be necessary for runoff from roofs. Site surfaces may be designed to reduce total runoff.

Soakaway feasibility can be assessed by infiltration testing once ground contamination has been investigated. We have assessed the likely attenuation volumes required for the site, based on 53% impermeable area similar to the intended development, and with 5 l/s outflow limitation (as Barnsley MBC guidance). It is likely that the site will be required to be attenuated to the 'greenfield' rate which would require approx 320 cu m for the 100-year event, which could be stored under the proposed road crossing the site and/or in the Village Green in the western part of the site.

The feasibility of draining all the surface water runoff into the surface water sewer in Thorncliff Road cannot be determined until Yorkshire Water has provided a response. If this is feasible, then no surface water will need to be drained into Fenn Road.

Foul drainage
Foul water can probably be discharged by gravity into the combined sewer in Fenn Road east of the site, or to the sewer noted in the access to Glebe Court, but we await confirmation from Yorkshire Water.

The development of 20 houses is expected to require a water supply, and therefore produce a sewage discharge, of approximately 15 cu m per day based on occupancy of four persons per property and consumption of 180 litres per person per day. Peak discharge rate is expected to be around 1.0l/s.

Water Supply
Availability of an adequate potable water supply cannot be determined until Yorkshire Water has responded to consultation.

Physical Constraints
Constraints to development due to underground features are unlikely taking into consideration the land use history of the site.

Summary

- The site is in Flood Zone 1 and a site specific FRA will not be required
- Sequential and Exception Test evidence should not therefore be required
- Use of soakaways for rainwater disposal should be investigated.
- It is likely that runoff from the site will be required to be attenuated before discharge.
- Permission for surface water disposal will be required from Yorkshire Water.
- A foul drainage connection should be available.

This report has been supplied by LK Consult to inform the Client during his site development process and to support an application for planning consent. For further explanation of anything herein please contact Phil Hunter at this address, or on p.hunter@thelkgroup.com.

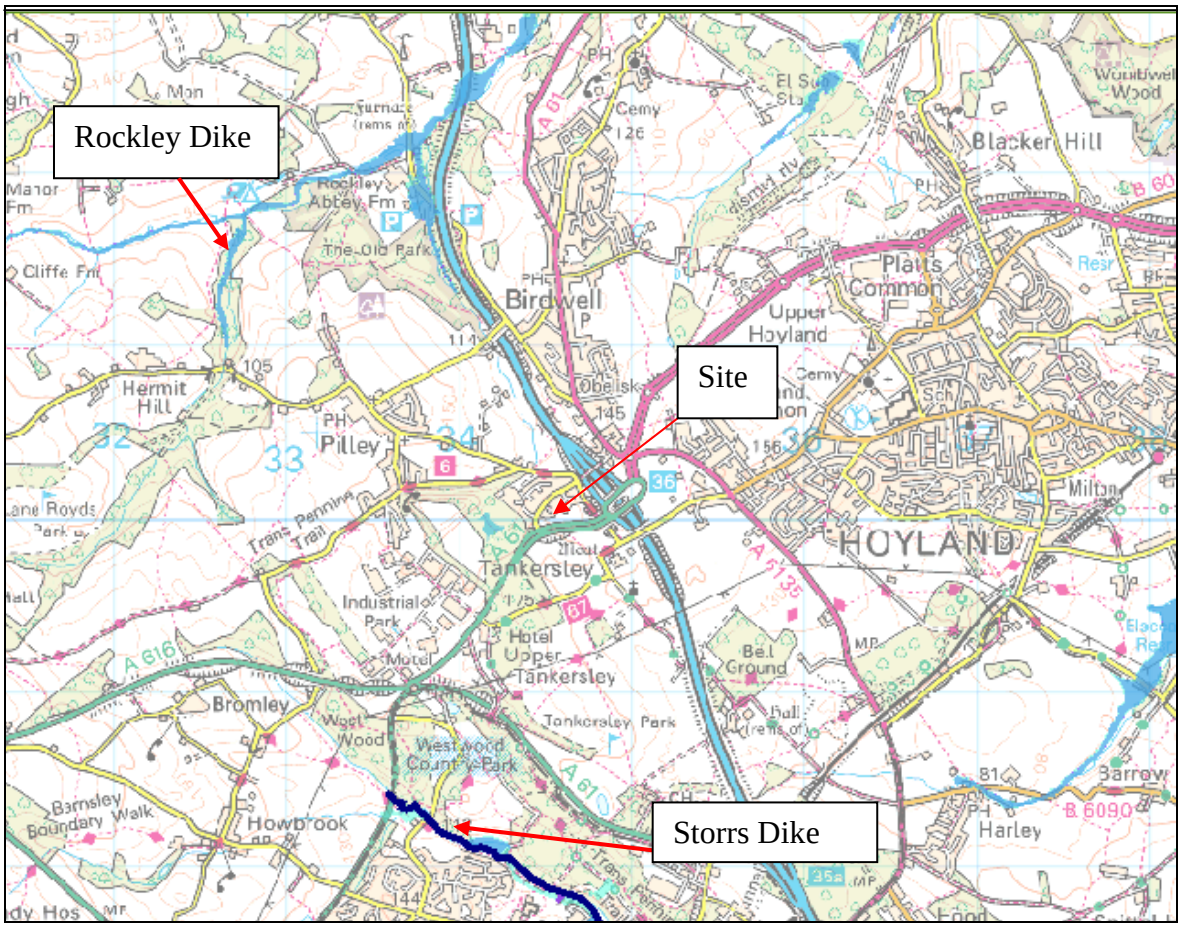
For and on behalf of LK Consult



JM Philip Hunter
Associate

Attachments:
Location Plan and Flood zones
Site Development Plan
Email Correspondence with Barnsley MBC
Environment Agency response
Plan of impermeable areas

Location Plan and Relation to Flood Zones



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- REPORT ERRORS & OMISSIONS TO ARCHITECT.
- CHECK ALL DIMENSIONS ON SITE
- DRAWING TO BE READ IN CONJUNCTION WITH THE HEALTH AND SAFETY PLAN AND ALL RELEVANT RISK ASSESSMENTS



1 Site Plan Proposed
1 : 250

1:5
1:50 1m 2 3 4 5 6 7m

1:1
1:100 1m 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Schedule of Accommodation				
Plot Number	**House Type**	**Level**	**Area GIA**	**Totals**
Plot 1	2 Bed 4 Person A	Ground Floor	37.00	
Plot 1	2 Bed 4 Person A	First Floor	37.00	
				74
Plot 2	2 Bed 4 Person A	Ground Floor	37.00	
Plot 2	2 Bed 4 Person A	First Floor	37.00	
				74
Plot 3	2 Bed 4 Person B	Ground Floor	37.00	
Plot 3	2 Bed 4 Person B	First Floor	37.00	
				74
Plot 4	2 Bed 4 Person B	Ground Floor	37.00	
Plot 4	2 Bed 4 Person B	First Floor	37.00	
				74
Plot 5	2 Bed 4 Person B	Ground Floor	37.00	
Plot 5	2 Bed 4 Person B	First Floor	37.00	
				74
Plot 6	2 Bed 4 Person + 3 Bed 5 Person B	Ground Floor	37.00	
Plot 6	2 Bed 4 Person + 3 Bed 5 Person B	First Floor	37.00	
				74
Plot 7	2 Bed 4 Person + 3 Bed 5 Person B	Ground Floor	43.00	
Plot 7	2 Bed 4 Person + 3 Bed 5 Person B	First Floor	43.00	
				86
Plot 8	2 Bed 4 Person + 3 Bed 5 Person A	Ground Floor	43.00	
Plot 8	2 Bed 4 Person + 3 Bed 5 Person A	First Floor	43.00	
				86
Plot 9	2 Bed 4 Person + 3 Bed 5 Person A	Ground Floor	37.00	
Plot 9	2 Bed 4 Person + 3 Bed 5 Person A	First Floor	37.00	
				74
Plot 10	2 Bed 3 Person C	Ground Floor	57.00	
Plot 11	2 Bed 3 Person C	Ground Floor	57.00	
Plot 12	2 Bed 3 Person C	Ground Floor	57.00	
Plot 13	2 Bed 3 Person A	Ground Floor	57.00	
Plot 14	2 Bed 3 Person A	Ground Floor	57.00	
Plot 15	2 Bed 3 Person B	Ground Floor	57.00	
Plot 16	2 Bed 3 Person B	Ground Floor	57.00	
Plot 17	3 Bed 5 Person B	Ground Floor	44.00	
Plot 17	3 Bed 5 Person B	First Floor	44.00	
				88
Plot 18	3 Bed 5 Person B	Ground Floor	43.00	
Plot 18	3 Bed 5 Person B	First Floor	43.00	
				86
Plot 19	3 Bed 5 Person A	Ground Floor	43.00	
Plot 19	3 Bed 5 Person A	First Floor	44.00	
				87
Plot 20	3 Bed 5 Person A	Ground Floor	44	
Plot 20	3 Bed 5 Person A	First Floor	44	
				88

REV.	DATE	DRN.		CHKD
A	02/02/12	KLM	Plots 17 and 18 amended. Plots 13 and 14 relocated to avoid underground cables.	CL

PROJECT
Fenn Road, Tankersley

CLIENT
Equity Housing Group

DRAWING
Site Plan as Proposed

SCALE	SHEET SIZE	DRAWN	CHECKED	DATE
1 : 250	@ A1	KLM	CL	01/02/12

Bowker Sadler
Hatherlow House, Hatherlow, Romiley, Stockport SK6 3DY
Telephone: 0161 406 7333 Facsimile: 0161 406 7444
Email: bsp@bowker-sadler.co.uk
Web: www.bowker-sadler.co.uk

JOB No	DRAWING No	REVISION
11-048	100	A

STATUS
Preliminary

Building Information Modeling

BMBC Correspondence

From: Atkins , Wayne [mailto:WayneAtkins@barnsley.gov.uk]
Sent: 24 January 2012 16:03
To: Michael Hartley
Subject: RE: Request for Information: Drainage Statement Tankersley

Michael

I have consulted Yorkshire Water's public sewer records and there are no public surface water sewers in Westwood New Road.

The chamber shown on the photograph you attached is typical of access covers to filter drains at the base of Highway embankments used in the borough so I would assume that is what you have found. The gullies in Westwood New Road discharge into a dedicated Highway drain. BMBC has a policy of resisting the connection of flows from private developments into the Highway Drainage system.

From Yorkshire Water's public sewer records, there is a surface water sewer in Thorncliff Way and a combined sewer in Fenn Road.

I would remind you that under the hierarchy of surface water disposal the developer should investigate the use of soakaways as a means of surface water disposal prior to any other means of disposal.

Should you require any further information please contact me on the telephone number below.

Regards

Wayne Atkins
Senior Engineer - Drainage and Highways
Barnsley Metropolitan Borough Council
Environmental Services
Network Resilience and Asset Management
Westgate Plaza 1
PO Box 603
S70 9FA
Telephone: 01226 772182
Fax: 01226 772196
E-mail: wayneatkins@barnsley.gov.uk

From: Michael Hartley [mailto:M.Hartley@thelkgroup.com]
Sent: 24 January 2012 11:47
To: Atkins , Wayne
Subject: RE: Request for Information: Drainage Statement Tankersley

Wayne,

Thank you for your prompt response regarding flooding issues associated with the site.

LKC carried out a walkover of the site on the 16th January and we noticed gullies in Westwood New Road and grating features adjacent to the site (see attached photograph).

Are you aware of any surface water sewers in the council's ownership or with Yorkshire Water that we could apply for a connection to?

Kind Regards

Michael Hartley
Geo-environmental Engineer

LK CONSULT LIMITED

CONTACT NUMBERS:
BURY 0161 763 7200 | LIVERPOOL 0151 235 8716 | GLASGOW 0141 773 6269

GROUP WEBSITES:
thelkgroup.com | code4homes.com | sapcalc.com | lksustainability.co.uk | invasiveplantcompany.com

LK GROUP - COMPANY ACCREDITATIONS:

REGISTERED OFFICE:
Bury Business Centre, Kay Street, Bury. BL9 6BU

Liverpool Office: The Corn Exchange, Fenwick Street, Liverpool. L2 7QL
Glasgow Office: The Wright Business Centre, Lonmay Road, Glasgow. G33 4EL

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From: Atkins , Wayne [mailto:WayneAtkins@barnsley.gov.uk]
Sent: 23 January 2012 14:59
To: Michael Hartley
Subject: FW: Request for Information: Drainage Statement Tankersley

Michael

I refer to your Email attached

My Council have no records of any culverted or open watercourses crossing the site indicated on your attached plan.

I am not aware of any flooding issues associated with the site, and would confirm that to my knowledge it is not affected by any flood plains from major watercourses in the area.

Should you wish to discuss this matter further please contact me on the telephone number below.

Regards

Wayne Atkins
Senior Engineer - Drainage and Highways
Barnsley Metropolitan Borough Council
Environmental Services
Network Resilience and Asset Management
Westgate Plaza 1
PO Box 603
S70 9FA
Telephone: 01226 772182
Fax: 01226 772196
E-mail: wayneatkins@barnsley.gov.uk

From: Bell , Derek
Sent: 19 January 2012 10:06
To: Atkins , Wayne
Subject: FW: Request for Information: Drainage Statement Tankersley

Wayne,

Please see the email below for action …

Cheers ~ Derek

Derek Bell
Principal Network Resilience Manager
Highways & Engineering
Barnsley Metropolitan Borough Council, Westgate Plaza 1, PO Box 601, Barnsley, S70 9FA

Tel: Ext - 01226 787654 Int - 6654
Mob: 07773 783184
Fax: 01226 772196
E-mail: DerekBell@barnsley.gov.uk

From: Kilner , Steve
Sent: 19 January 2012 09:39
To: Highway Maintenance
Subject: FW: Request for Information: Drainage Statement Tankersley

---

From: Michael Hartley[SMTP:M.HARTLEY@THELKGROUP.COM]

EA response

Our Ref: RFI/2012/21316

Your Ref: 240112

Dear Phil

RE: Drainage Statement Tankersley

Thank you for your enquiry dated 24 January 2012.

The Groundwater and Contaminated Land team have no specific knowledge of groundwater flooding issues in this area. However, although we do not have specific data in relation to ephemeral springs or unexpected groundwater emergence in this area, it does not mean that they are not present. If found, they could contribute to localised flooding events. If it is considered that this may be an issues at this site we would recommend that groundwater levels be monitored over a period of time to consider seasonal fluctuations.

Due to the complexities of the Coal Measures and historic mining activities we do not hold any data in this area that is regionally representative of groundwater levels and flow. It is recommended that groundwater data is collected on a site specific basis to ensure data relied upon is reflective of the geology and hydrogeology below the subject site.

Flood Zones
Under Planning Policy Statement 25 Development and Flood Risk (PPS25) land is divided into three zones with regard to flood risk.

Zone 1, little or no risk, this is land outside the 1 in 1000 year flood plain, land deemed to be safe from flooding in the event of a flood with a 0.1% probability of occurring in any one year.

Zone 2, medium risk; land between the 1 in 1000 and 1 in 100 year fluvial (1 in 200 year tidal) flood plain. Between 0.1% and 1.0% (0.5%) probability of occurring in any one year.

Zone 3, high risk, land within the 1 in 100 year fluvial (1 in 200 year tidal) flood plain, at risk in the event of a flood with a 1.0% (0.5%) probability of occurring in any in year.

These zones do not take account of any flood defences that may exist as these could be overtopped or breached by a more severe flood event than designed for or maintained against.

Site Assessment;

I can confirm that the site lies in flood zone 1 according to the Environment Agency Flood Map. I have attached a map confirming this. The nearest watercourse approximately 280 metres away is classified as an ordinary watercourses, as defined under the terms of the Land Drainage Act 1991, and as such the Agency has no powers under the aforementioned Act to carry out improvement works to the watercourse.

We have no information relating to the watercourse, I would suggest you contact the local authority main drainage department as they are the responsible drainage authority for the watercourse at this location. They may hold more detailed flood level information for the watercourse & local history of the area.

Surface Water Runoff

Surface water discharge from new development should ideally 'mimic' the pre-development situation using a sustainable drainage system so that flow in watercourses is not increased. In normal circumstances surface water discharge from new development should be attenuated to the 'greenfield' 1 in 1 year flow from site, or lower than the existing rate of runoff for a pre-developed site.

Greenfield sites

The acceptable greenfield runoff rate is normally 5 litre/second/hectare, but you should consult with the Lead Local Flood Authority for variances in their district.

Brownfield sites

Surface water runoff should be attenuated to provide a minimum 30% reduction of surface water discharge when compared with the existing site outflow prior to redevelopment, unless otherwise agreed with the relevant drainage authority.

If a new discharge is required to a watercourse should be limited to the acceptable greenfield runoff rate, also it must be ensured that any additional volume of surface water to the receiving watercourse will not cause flooding problems.

The attenuation system needs to be designed so there is no flooding to properties on or off site for rainfall events up to 1 in 100 year return period.

Any conventional adopted balancing facility should be designed to accommodate volume storage for at least the 1 in 30 year flow from the site below ground, with the 1 in 100 year flow retained within the site (including an allowance for climate change), without causing any flooding to buildings.

There are alternatives to conventional storage for the control of surface water run-off that are favoured by the Environment Agency where ground conditions are suitable.

Sustainable Urban Drainage techniques (SUDs) tackle surface water run-off problems at source using features such as soakaways, permeable

pavements, grassed swales, infiltration trenches, ponds and wetlands to attenuate flood peak flows, produce water quality improvements and environmental enhancements. The Environment Agency seeks to promote the use of SUDs techniques to this site and expects the developer of the site to submit detailed investigations such that the use of SUDs has been fully explored.

More information on SUDs can be found at: http://www.ciria.org.uk/suds/

For information on Green Roofs in particular, please visit: www.thegreenroofcentre.co.uk

Please note that the view expressed in this letter by the Environment Agency is a response to a pre-application enquiry only and does not represent our final view in relation to any future planning application made in relation to this site. We reserve the right to change our position in relation to any such application.

You should seek your own expert advice in relation to technical matters relevant to any planning application before submission.

If you wish to discuss the site with the officer dealing with the Barnsley area Lesley Slaney can be contacted on (0113) 213 4779.

This information is provided subject to the attached notice which we advise that you should read.

If you require any further help, please do not hesitate to contact me.

Yours sincerely

Diana Orr
External Relations Team (Yorkshire Area)

Tel: 01904 822521 (Internal 7 28 2521)
Email: diana.orr@environment-agency.gov.uk

Environment Agency
Phoenix House
Global Avenue
Leeds LS11 8PG

We would be really grateful if you could spare five minutes to help us improve our service. Please click on the link below and fill in our survey – we use every piece of feedback we receive.

RFI 21316 MAP



Environment Agency

Scale 1:10,000

N W E S

Sealed Main Rivers

Detailed River Network

- **Primary River**
- **Secondary River**
- **Tertiary River**
- **D/S of High Water Mark**
- **D/S of Seaward Extension**
- **Lake / Reservior**
- **Canal**
- **Extended Culvert (greater then 50m)**
- **Canal Tunnel**
- **Underground River (inferred)**
- **Underground River (local knowledge)**

River Obstructions

- **Lock**
- **Dam**

Flood Map Areas (assuming no defences)

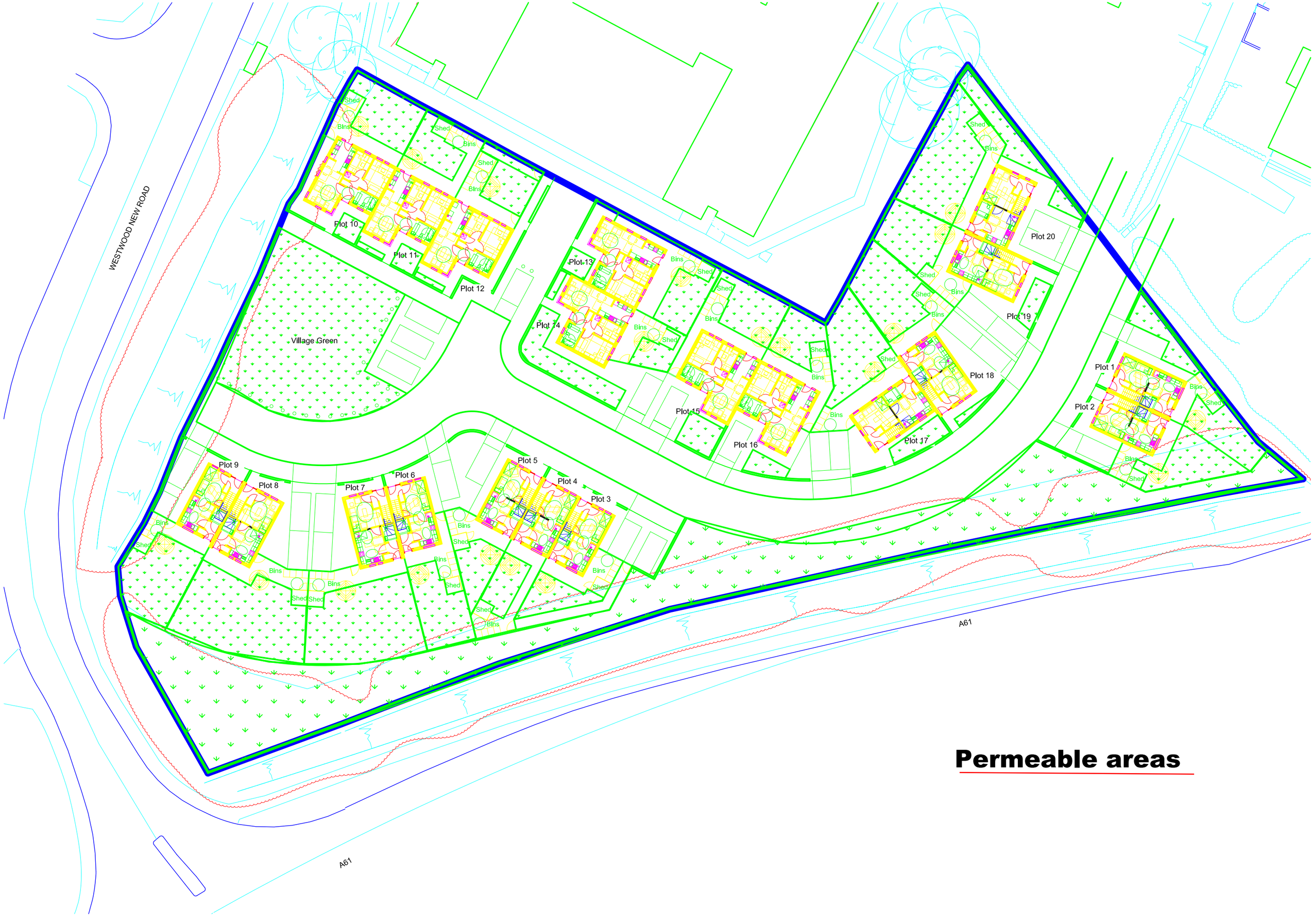
Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk



Permeable areas