Eastwood&Partners
CONSULTING ENGINEERS

E&P

PR/LEM/36186-001

June 2014

Revision D

FLOOD RISK ASSESSMENT

Client:	Barratt & David Wilson Homes Yorkshire West
Site:	Land at Church Lane Hoylandswaine
Planning Authority:	Barnsley Metropolitan Borough Council

EXECUTIVE SUMMARY

The project comprises the proposed development of a 3.4 ha greenfield site for residential use.

The Environment Agency and the Barnsley Metropolitan Borough Council's Strategic Flood Risk Assessment flood maps indicate the site lies in Zone 1. Under the National Planning Policy Framework the proposed development is appropriate to this site and application of the Sequential Test can, therefore, be demonstrated.

The site is not at significant risk of flooding from any source.

Surface water disposal is considered in accordance with the preferred drainage hierarchy in Building Regulations Part H 2002, with disposal via SUDS methods the first option, followed by disposal to the watercourse and, finally, disposal to the public sewer.

Percolation tests indicate that soakaways will not be viable on the site. Disposal will be to the watercourse at a route to be determined. Surface water discharge will require flow balancing and on-site storage. The suggested discharge rate is the variable greenfield rate, up to a maximum 11.8 l/s/ha, and is to be agreed with the statutory bodies. Storage is either in an underground tank on the site or in a basin on adjacent land.

Foul water will drain by gravity to the public combined sewer in Haigh Lane.

The drainage routes cross third party land and a sewer requisition may be required. Consent will be required for surface water discharge to the watercourse.

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INTRODUCTION

This Flood Risk Assessment (FRA) has been prepared in accordance with the National Planning Policy Framework (March 2012) on the instructions of Barratt & David Wilson Homes Yorkshire West. Any other parties using the information in this report do so at their own risk, unless previously approved in writing.

The project comprises the proposed development of a 3.4 ha greenfield site for residential use.

First Issue	*Jan 2014*	
Revision A	*Feb 2014*	*Historic Flooding section, three drainage route options & Conclusion 3 added, Existing Drainage section expanded.*
Revision B	*Apr 2014*	*Update on Option 3, conclusions 3 & 5 amended, new layout added.*
Revision C	*Jun 2014*	*New layout added.*
Revision D	*Jun 2014*	*New layout added.*

THE DEVELOPMENT

Site Location & Description

The site is located at the northern end of Hoylandswaine and is centred on Ordnance Survey reference SE 258 052.

The site comprises two fields: the northern field is arable and the southern field is grassland.

The site is bounded to the south and west by arable fields and grassland, to the east by housing on Church Heights, Church Lane and Haigh Lane, and to the north by Hoylandswaine Primary School.

The nearest watercourses are two un-named tributaries of Ellhirst Beck, to the east of Haigh Lane.

Site Levels

The site falls to the north and north-east at a gradient of between 1 in 20 and 1 in 15, steepening to 1 in 10 at the northern end of the site.

Site Layout

The proposed development is for low-storey housing. An indicative layout is appended.

Environment Agency Flood Map

The Environment Agency (EA) flood zone map shows the site to lie within Zone 1 (Low Risk).

Barnsley Metropolitan Borough Council - Strategic Flood Risk Assessment

Barnsley Metropolitan Borough Council's Level 1 Strategic Flood Risk Assessment (SFRA) was prepared by JBA in 2010. The flood zone map shows the site to lie within Zone 1 (Low Risk).

Technical Guidance to the National Planning Policy Framework

The Technical Guidance to the National Planning Policy Framework sets out the principles for assessing the suitability of sites for development, in relation to flood risk, as part of the planning process. A risk-based approach is adopted through a strategic approach with regard to site selection and a methodology for managing flood "pathways" and reducing the adverse

consequences of flooding.

Initially the “Sequential Test” is applied to the allocation of land suitable for development. Following this, if appropriate, the “Exception Test” is applied where it must be demonstrated that the development provides wider sustainability benefits to the community outweighing flood risk.

Sequential Test

Table 2 of the Technical Guidance provide details of vulnerability classifications for particular types of development in relation to flood risk zones. Residential use is classed as “More Vulnerable”.

Table 3 indicates that “More Vulnerable” development is compatible with Flood Zones 1 and 2, compatible with Zone 3a if the Exception Test can be passed and incompatible with Zone 3b.

Exception Test

If it is required, the Exception Test should demonstrate that the development provides benefits to the community that outweigh flood risk and that it will be safe in the event of flooding.

Climate Change

An issue emphasised in the Technical Guidance is the requirement to take account of potential climate change effects. New residential development is generally accepted as having a 100 year design life for flood risk purposes. The Technical Guidance recommends a 30% increase in peak rainfall intensity is taken into account for design horizons up to 2115.

Application of the Sequential and Exception Tests

The current flood zone maps indicate that the development is appropriate to the site and it is assumed reasonable that application of the Sequential Test can be demonstrated.

The Exception Test is not required in this case.

FLOOD RISK

Potential Sources of Flooding

The EA & SFRA maps are intended for general guidance on flood risk and it is also necessary to consider other, more detailed, sources in relation to local factors.

Watercourse

The site is elevated relative to the nearest watercourse and flood risk from this source is low.

Surface water

The site lies on a hillside and there is potential for surface water runoff from adjacent fields to flow onto the site. However, there are no low spots on the site where localised ponding may occur and the risk of flooding on the development is considered to be low.

Sewerage

The site may be at risk of flooding resulting from surcharging of the local drainage system. However, sewers in the area are owned and maintained by Yorkshire Water. We are not aware of any flood issues relating to these sewers.

Groundwater

Groundwater flooding affects low-lying areas on permeable ground. These conditions do not apply to the site.

Historic Flooding

Anecdotal evidence collected at a public consultation meeting and a site walkover shows there is localised flooding in the area.

Mount Pleasant Farm is located 0.5 km to the north-east of the site, off Cooper Lane, The occupiers report flooding to a culverted section of the watercourse which runs through the farm. On South Lane, at a point 0.5 km to the north of the site, the owner of adjacent farmland reports localised flooding to the road, which dips at this point, and to neighbouring fields.

This flooding is remote from the site and the development is unaffected.

Residual Flood Risk

The site is not at risk of flooding. The principal flood risk for consideration is to others, which should not be increased as a result of developing the site. Hence the disposal of surface water is also a consideration of this FRA and is discussed in more detail in the Drainage Strategy section of this report.

General Flood Mitigation Measures

Levels across the site should be laid out to provide an opportunity for any flood water to flow away from buildings. The minimum level for roads and paths should be at, or above, current site levels.

DRAINAGE STRATEGY

Existing drainage

There is no evidence of positive drainage on the site.

The site lies principally within the Ellhirst Beck catchment. The topographical survey and Ordnance Survey contour maps show that surface water runoff from the site will follow the gradient of the land and tend to flow northwards, towards Ellhirst Beck or its tributaries. The route of this surface water runoff is across the site and neighbouring land and onto Cross Lane and Haigh Lane. The subsequent route of this surface walkover has been determined by a site walkover. From the junction of Cross Lane and Haigh Lane, surface water flows northwards, along Haigh Lane. Surface water will continue along Haigh Lane to a point just north of Cooper Lane; here there is a dip in the road, close to the head of Elmhirst Beck. (This is the site of localised highway flooding reported by local residents.) There are highway gullies at this location which appear to discharge surface water onto the adjacent field from where it flows into Elmhirst Beck.

Surface water runoff from the south-western corner of the site tends to flow to the north-west, towards Tanyard Beck. This is an area of less than 0.3 ha, or about a little under 10% of the total site area.

Consultation with Statutory Bodies

Yorkshire Water Consultation

The Yorkshire Water sewer record plan shows a public combined sewer in Haigh Lane and public foul and surface water sewers in Church Lane.

Pre-planning advice has been received from Yorkshire Water (Letter referenced P017922 and dated 19 December 2013). A summary of the advice is given below.

- There is a 150 mm public combined sewer crossing the site. No buildings are to be built within 3 m or trees planted within 5 m of this sewer.
- Foul water may discharge to the 150 mm public foul sewer recorded in Church Street or the 150 mm public combined sewer in Haigh Lane.

- The local Waste Water Treatment Works is Hoylandswaine. At present, this works does not have capacity to accept any further flows.
- If sewage pumping is required foul water discharge must not exceed 6 l/s.
- Subject to providing evidence as to why other methods of surface e water disposal have been discounted, surface water may discharge to the 300 mm public surface water sewer in Church Lane at a discharge rate no greater than 5 l/s.

Ground Conditions

A Phase 2 site investigation including trial pit excavation and infiltration testing was carried out by Eastwood & Partners in December 2013.

Site History

Historic maps dating from the 1850s show the site to be undeveloped.

Geology & Hydrogeology

The geological maps indicate that the site is underlain by Lower Coal Measures.

Natural Ground

The ground comprises topsoil overlying firm to stiff, sandy clay, overlying sandy gravel of mudstone and shale.

Infiltration Testing

Infiltration testing was carried out in two of the trial pits. No drop in water level was seen over the duration of the test.

Greenfield runoff

The greenfield runoff is calculated using the Flood Estimation Handbook (FEH) statistical rainfall-runoff method. The catchment used is upstream of Cooper Lane, Hoylandswaine and is shown on the FEH CD-ROM 3. The FEH parameters for this catchment include a SPR soil value of 2.3. This value is representative of a highly permeable soil, which the site investigation did not find anywhere on the site. Instead of using this default value, a SPR value of 40 is chosen for the rainfall runoff calculation. This is considered to be more appropriate for the clayey, impermeable soil on the site.

The following table shows runoff for varying return periods.

Site catchment				
	1 in 1 yr	**1 in 30 yr**	**1 in 100 yr**	**1 in 100 yr + CC**
Greenfield runoff rate	2.5 l/s/ha	8.4 l/s/ha	11.8 l/s/ha	15.9 l/s/ha

Drainage Hierarchy

Surface water disposal should be in accordance with the drainage hierarchy in Building Regulations Part H 2002. Disposal via SUDS methods should be considered as the first option. Disposal to the public sewer should be considered only when SUDS methods and disposal to the watercourse are shown to be unsuitable.

Sustainable Drainage Systems (SUDS)

SUDS methods include water infiltration systems such as soakaways, basins and filter strips, together with swales, pervious pavements, detention basins, ponds and other wetland solutions. The various methods are considered in detail in The SUDS Manual (CIRIA C697).

Infiltration type SUDS such as soakaways will not be viable on this site due to the presence of impermeable ground.

Watercourse

Ellhirst Beck to the north of the site is thought to be the principal watercourse serving the existing site and it may accept surface water from the proposed development.

There are also watercourses to the east of the site, tributaries of Ellhirst Beck, and there is Tanyard Beck, to the north-west of the site, which may accept surface water. There is little or no historic connection from the site to these watercourses.

Public Sewer

There is a public surface water sewer in the vicinity which may accept surface water from the site. It is probable that the whole site would not drain by gravity to this sewer and that a pumped discharge would be needed. A pumped surface water discharge is the least preferred solution, used only if no other discharge routes are available, and is not considered further.

Proposals for Surface Water Disposal

Surface water disposal will be to a watercourse. The suggested discharge rate will be the variable greenfield rate up to the 1 in 100 year return, that is, between 2.5 l/s/ha and 11.8 l/s/ha. This rate is to be approved by the statutory bodies.

The surface water drainage will be routed towards the lowest point of the site, in the north-eastern corner. There is no straightforward discharge route from here to a watercourse. Consequently, there are three possible routes currently under consideration, each with points in their favour and against them. These are outlined below.

Option 1 – Northern route

Disposal is to the watercourse (Ellhirst Beck) off Haigh Lane at a point just north of Cooper Lane. This route has the advantage as the natural greenfield flow route but the watercourse here is not a clearly defined channel. There are existing flooding problems on the highway at this location.

Attenuation storage, for this and for all other options, will be for volumes up to the 1 in 100 year plus change storm. Consideration is been given to storage in a basin, to comply with SUDS requirements, but for this option the site is too steep to accommodate a basin with the required shallow banking. Instead, attenuation storage will be underground in box culverts or in a tank.

Initial storage calculations show that approximately 750 m^3 of storage will be required for a discharge at the variable greenfield rate. If the discharge rate is limited to a maximum of 5 l/s/ha, the storage volume required will increase to 1,000 m^3.

The attenuation storage should comply with Sewers for Adoption, and should be of a type and size suitable for adoption by Yorkshire Water.

Option 2 - Eastern route

Disposal is to the watercourse (a tributary of Ellhirst Beck) to the east of Haigh Lane. This route has the advantage of the watercourse here being a clearly defined channel. However, this is not the natural greenfield flow route and there is an existing flooding problem downstream which are thought to relate to insufficient culvert or channel capacity.

As for the Northern Option, attenuation will be in an underground tank. This option is show in Eastwood & Partners drawing 36186/002.

Option 3 - North-western route

Disposal is to the watercourse on the northern side of Cross Lane and hence to Tanyard Beck. The route crosses third-party and a sewer requisition may be required. The watercourse is under riparian ownership and discharge consent from the landowner is required.

The advantage of this route is that a basin can be constructed in the bottom of the field to the west of the site, where gradients are shallower. This option is show in Eastwood & Partners drawing 36186/007. However, this is not the natural greenfield flow route and there was flooding to properties in Cawthorn, downstream of the site, in 2007.

Eastwood & Partners have had further discussion with the highway drainage department of the local authority drainage regarding this option (Meeting with local authority and Barratt Homes on 11 March 2014 and site meeting with a local authority engineer on 4 April 2014). The local authority have no objection in principle to this discharge route and basin location.

Option 3 is the preferred option at present because of its potential for SUDS use.

Proposals for Foul Disposal

Foul discharge is to public combined sewer in Haigh Lane. It is anticipated that foul will drain by gravity to this sewer. The route from the north-east corner of the site to the public sewer crosses third party land and a sewer requisition may be required.

CONCLUSIONS

1. The site is not in an area at risk of flooding.
2. Surface water disposal will be to a watercourse.
3. There are currently three routes to receiving watercourses under consideration. The route to the north-west (Option 3) is preferred at present.
4. The suggested surface water discharge rate is the variable greenfield rate, between 2.5 l/s/ha (1 in 1 year) and 11.8 l/s/ha (1 in 100 year), and is to be approved by the statutory bodies.
5. If discharge Option 3 is confirmed, surface water attenuation storage will be in a basin. The other discharge options require underground, tanked storage.
6. The foul and surface water drainage routes from the site will cross third party land and a sewer requisition may be required. Consent will be required for surface water discharge to the watercourse.
7. The level of risk and safeguards available are considered appropriate to this class of development.

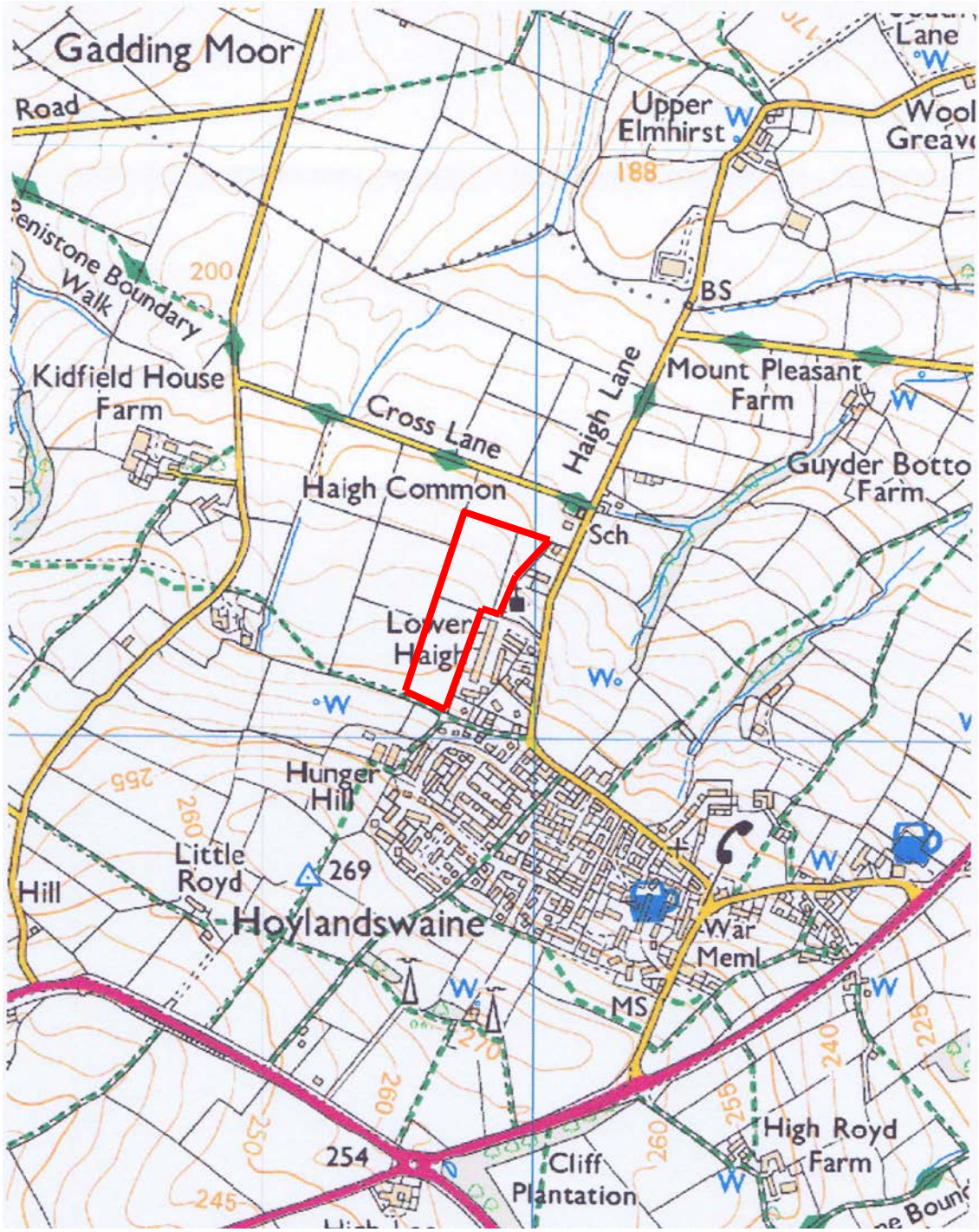
P Richardson
Director

APPENDICES

Location plan	
Haycock & Todd	Survey drawing S7920
David Wilson Homes	Layout drawing HS-PL/01 Rev A
Environment Agency	Flood zone map
Barnsley Metropolitan Borough Council	Level 1 SFRA – Map A-4 flood map
Yorkshire Water	Pre-planning letter & sewer record plan
Eastwood & Partners	Drainage drawing 36186/007

Location Plan

Church Lane, Hoylandswaine



Site

HAYCOCK & TODD
LAND SURVEY CONSULTANTS ARCHITECTURAL SURVEYORS
The Hollies, A3 Church Street, Royston, Barnsley, S71 4QA
T : 01226 709630 F : 01226 709631
E : info@haycock-todd.co.uk W : land-surveying.co.uk

SITE SURVEY

CHURCH LANE
HOYLANDSWAINE
BARNSLEY

Sheet 1 of 1	Surveyed by PF & DR
Datum	Drawn by PF & DR
GRID– Related to Ordnance Survey using One Point Localisation on Station 51, Orientation at OS Grid North.	Date of Survey July 2013
	Scale 1/200
LEVEL– Related to Ordnance Survey by connection to the OS Active Network by G.P.S	Survey Job No. S7920

LEGEND

Worksite Wayer Blue	Dim	Spot Level	+123.563
Worksite Cheer	Chm	Fence Line	Post and wire or Timber
Collection	Col	Retail Site	Stone
Lamppost	Lp		Hedge Line
Telegraph Post	Tp		
Electricity Pole	Ep		Contours 5m Interval
Road Traffic Signs	Rts		Contours 1m Interval
Bollard	Bol		Grass
Water Valve	Wv		Rough Grass
Water Hydrant	Wh		Crop Field
Fire Hydrant	Fh		Tarmac
Gas Valve	Gv		Hedge
Disposal Shaft	Ds		Deciduous Tree
Unknown Shaft	Us		Survey Station

Station	Easting	Northing	Level
51	425965.993	405444.700	195.371
52	426003.055	405432.138	195.536
53	425907.510	405465.050	197.500
54	425841.713	405467.234	200.024
55	425877.529	405389.985	203.830
56	425945.341	405218.710	212.952
57	426021.131	405225.377	207.580
58	426050.698	405294.146	200.437
59	426107.365	405400.910	192.269
510	425989.095	405175.935	214.734
511	425837.585	405210.752	214.728
512	425954.774	405271.947	208.019
513	425883.272	405270.343	212.304
514	425868.354	405216.431	216.992
515	425852.954	405139.053	222.768
516	425845.889	405042.246	230.382
517	425799.583	405068.350	228.308
518	425855.805	405052.342	229.121
519	425861.833	405090.287	225.281
520	425926.717	405011.572	229.095
521	426011.719	405147.714	215.068
522	426000.813	405085.321	223.433
523	425992.903	405005.203	227.092

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E : info@haycock-todd.co.uk W : land-surveying.co.uk

SITE SURVEY

CHURCH LANE
HOYLANDSWAINE
BARNSLEY

Sheet 1 of 1	Surveyed by PF & DR
Datum	Drawn by PF & DR
GRID– Related to Ordnance Survey using One Point Localisation on Station 51, Orientation at OS Grid North.	Date of Survey July 2013
	Scale 1/200
LEVEL– Related to Ordnance Survey by connection to the OS Active Network by G.P.S	Survey Job No. S7920

Church Lane, Hoylandswaine
Planning Layout

house type schedule

type		Sq. Ft	No.
469	4 Bed detached	1536	12
454	4 bed detached	1823	11
497	4 Bed detached	1703	8
534	5 Bed detached	1797	8
536	5 Bed detached	2236	5
526	5 bed detached	2273	5
500	5 Bed detached	1823	11
206	2 Bed semi-detached	678	4
383	3 bed semi-detached	832	2
	TOTAL		**66**

Legend

- Shared Surface
- Private Drive
- 1.8m high timber screen fence
- 0.9 high timber post and rail fence
- Front entrance door
- Lockable gate
- Indicative Landscaping
- Existing trees and hedges to remain.
- Existing trees and hedgerow removed (shown dotted).

A	03.06.14	Mix revised. Layout re-drawn

Development :	Church Lane
Location:	Hoylandswaine
Marketing Name:	
Drawing Title:	Planning Layout
Drawing Number:	HS-PL / 01
Revision: A	Scale @ A0: 1:500
Drawn By: KL	Date Started: Dec 2013

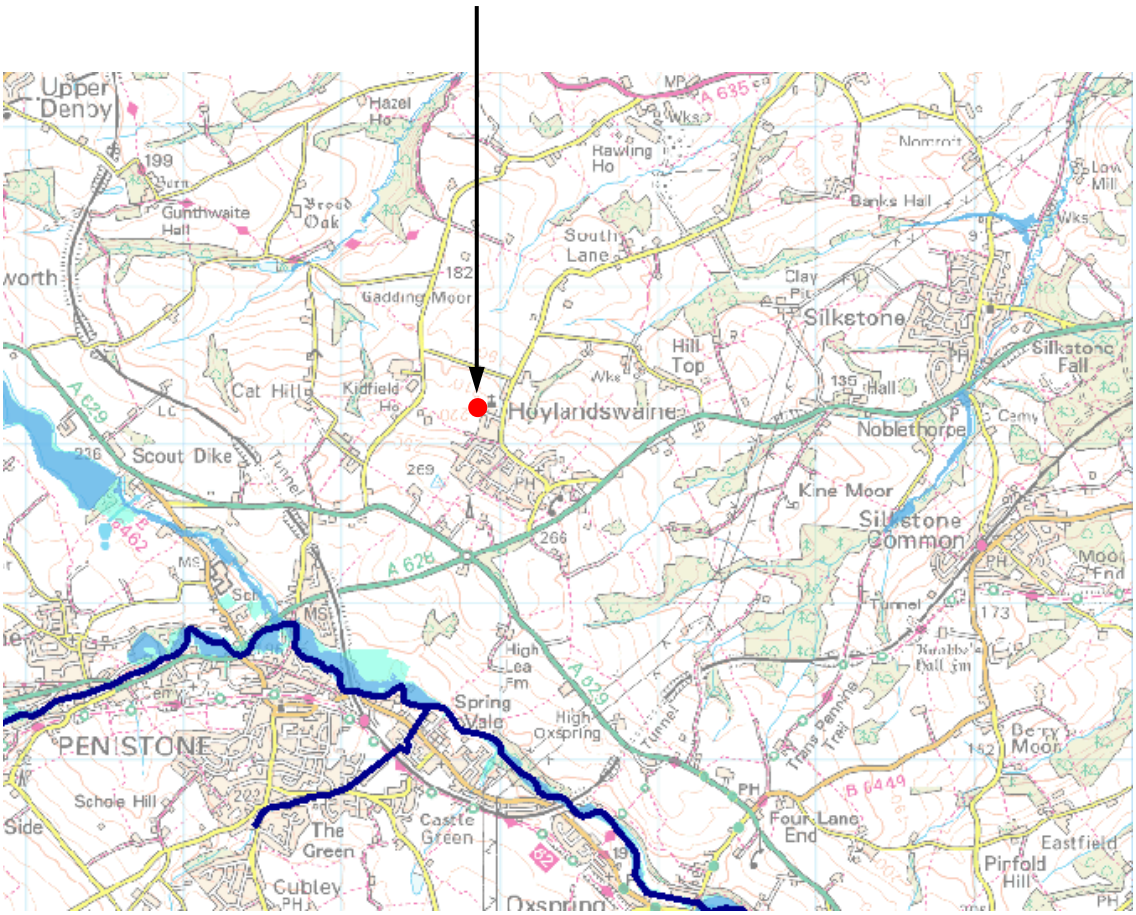
Space to live.

David Wilson Homes

Vico Court, Ring Road, Lower Wortley, Leeds, LS12 6AN
Tel: 0113 279 0099 Fax: 0113 279 0038

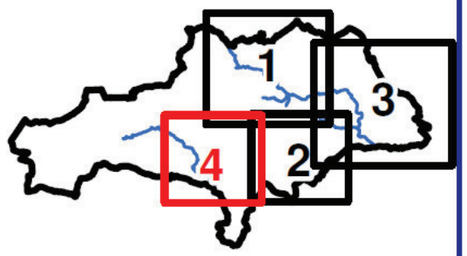
Environment Agency Flood Map

Church Lane, Hoylandswaine



	Flooding from rivers or sea without defences
	Extent of extreme flood
	Flood defences
	Areas benefiting from flood defences

KEYPLAN



LEGEND

1:24,647

- Barnsley MBC Boundary
- Defence
- Main River
- Possible route of restored canal
- Flood Zone 3
- Flood Zone 2

Proposed Development Sites

- Employment Sites
- Housing Sites
- UDP Sites
- Safeguarded Land

jba CONSULTING

MAP A - 4

PROPOSED DEVELOPMENT SITES AND FLOOD ZONES

YorkshireWater

Pr LCM.

23 DEC 2013
Rec'd 36186

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

Tel: 0845 120 8482
Fax: (01274) 372 834

Email:
Technical.Sewerage@yorkshirewater.co.uk

For telephone enquiries ring:

Kashif Khan on (0845)120 8482

Eastwood & Partners (Consulting Engineers) Ltd
St Andrews House
23 Kingfield Road
Sheffield
S11 9AS

For the attention of Ms Linda Mee

Your Ref:
Our Ref: P017922

19th December 2013

Dear Madam,

Church Lane, Hoylandswaine - Pre-Planning Sewerage Enquiry on P284688

Thank you for your enquiry received 5th December 2013. Our charge of £77.00 (plus VAT) will be added to your account with us, reference EPL039. 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 unchartered 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:

There is a 150 mm diameter public combined sewer recorded crossing the site. No buildings, or other obstructions, are to be erected within 3 (three) metres, nor trees planted within 5 (five) metres of this public sewer. It may not be acceptable to raise or lower ground levels over the sewer, nor to restrict access to the manholes on the sewer. If you wish to have this sewer diverted under Section 185 of the Water Industry Act 1991 an application should be made in writing. To discuss this matter, please telephone 0845 120 84 82.

The local Waste Water Treatment Works (WWTW) is Hoylandswaine. Our treatment team have advised that, at this moment in time, this WWTW does not have sufficent capacity available to accept any further flows.

Development of the site should take place with separate systems for foul and surface water drainage. The separate system should extend to the public sewer.

Foul water domestic waste may discharge to the 150 mm diameter public foul sewer recorded in Church Lane, at a point approximately 20 metres from the site or to the 150 mm diameter public combined sewer recorded in Haigh Lane, at a point approximately 42 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 6 (six) 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.

Where appropriate, soakaways, swales and infiltration trenches (SUDS) may be adopted as part of the public sewer network. Further information may be seen in the DEFRA publication 'Interim Code of Practice for Sustainable Drainage Systems' (ISBN 0-86017-904-4). If the developer is considering adoption of SUDS they should contact our Developer Services Team on 0845 120 84 82.

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 300 mm diameter public surface water sewer recorded in Church Lane, at a point approximately 15 metres from the site.

The surface water discharge from the site to be restricted to not greater than 5 (five) litres/second.

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/Land Drainage Authority, 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 0845 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 0845 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

Hoylandswaine Primary School

197.5m

Vicarage

St John's Church

Hall

2.77m deep

2.2m deep

2.23m deep

2.5m deep

CHURCH LANE

CHURCH HEIGHTS

2.77m deep

CHURCH LANE

2.73m deep

214.3m

2.73m deep.

0.93m deep

1.82m deep

3.33m deep

3.46m deep

3.3m deep

3.19m deep

Well

Beets House

Haigh Head

The Oaks

LOWER HAIGH HEAD

Tree Tops

HAIGH HEAD ROAD

230.1m

Orchard End

226.2m

HIGHFIELDS

LB

425815 : 405049

Map Name : SE2504NE

Yorkshire Water,
PO Box 500,
Halifax Road,
Bradford BD6 2LZ
Contact Name :
K KHAN
Contact Tel :

YorkshireWater

Title

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 : 19/12/2013, 16:28:45

Date Gen : 19/12/2013, 16:28:57

Source : Sewer Network Enquiry

UPN: Undefined

Originator: K KHAN, New Development - Waste Water,

Information within this drawing is not necessarily produced to scale. Always use figured dimensions and co-ordinates – if in doubt, ask.

NOTES

1. This drawing is to be read in conjunction with all relevant Eastwood & Partners drawings prefixed 36186 as well as all relevant Barratt Homes planning layouts and house type drawings.
2. Drainage layout shown is indicative only and subject to connection level to the existing sewers and agreement with the adopting Authority
3. All sewers should be taken as 150mm diameter unless otherwise noted.
4. Only major retaining structures are shown and allowance should be made generally across the site for additional walls/underbuild up to 600mm in height.

POND AND FLOW CONTROL DEVICE:
An allowance should be made for a pond with approximately 1000m² capacity and one flow control device. Allow for 4 headwalls.

REV.	DESCRIPTION	SIG	CHK	DATE
E	Latest planning layout added. Drainage updated to suit	CH	PR	24.06.14
D	Latest planning layout added. Revised external works added.	CH	PR	15.04.14
C	Latest planning layout added. Extent of works indicated on drawing for sewer works	CH	PR	05.03.14
B	Latest planning layout added, volumes and areas in off site pond annotated	CH	PR	10.02.14
A	First Issue.			

BARRATT HOMES

CHURCH LANE, HOYLANDSWAINE

DRAINAGE APPRAISAL

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SCALE WHEN PLOTTED AT A0	DRAWING STATUS
1:500	PRELIMINARY

DRAWN	CHECKED	DATE	DRAWING NUMBER	REV
CH	PR	29.01.14	36186/007	E