

FLOOD RISK ASSESSMENT
LAND AT GOLDTHORPE ROAD,
GOLDTHORPE
FOR
W. REDMILE & SONS LTD



46670-001

3 March 2022

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*Issue 1: 3 March 2022 – Updated 42241-004 Goldthorpe Road - FRA - Issue 2 for latest policy /
legislation and development layout Rev K*

EXECUTIVE SUMMARY

The project comprises the proposed development of a 3.3 hectare greenfield and brownfield site for residential use.

The Environment Agency's Flood Map for Planning shows the site to lie within Zone 1. The site is not at significant risk of flooding from any source. In accordance with current Planning Practice Guidance "Flood Risk and Coastal Change", sequential testing is not required.

The site is at low to high risk of surface water flooding and is at potential low risk of groundwater emergence. This can be managed by raising finished floor levels 300 mm above existing ground levels and directing flows away from buildings.

Surface water disposal is considered in accordance with the drainage hierarchy in Building Regulations Part H 2015 and Planning Practice Guidance 'Reducing the causes and impacts of flooding', paragraph 80.

Infiltration type SuDS such as soakaways are not viable on the site due to the presence of deep made ground and impermeable ground causing slow infiltration rates.

Surface water disposal should be via gravity to the 375 / 450 mm surface water sewer located on the site, attenuated to 10 l/s as agreed with Yorkshire Water.

Attenuation storage for the 1 in 100 year plus 40% climate change rainfall event will be provided above ground in a basin.

Foul effluent will discharge via gravity to the 600 mm public combined sewer located in Goldthorpe Road.

The surface water drainage system will be offered for adoption to Yorkshire Water.

1.0 THE DEVELOPMENT & NATIONAL PLANNING POLICY

1.1 Introduction

This Flood Risk Assessment has been prepared in accordance with current National Planning Policy Framework¹ and Planning Practice Guidance 'Flood Risk and Coastal Change'² on the instruction of W. Redmile & Sons Ltd. Any other parties using the information in this report do so at their own risk, unless previously approved in writing.

The project comprises the development of an approximate 3.3 hectare greenfield and brownfield site for residential use.

1.2 Site location & description

The site is located to the east of Goldthorpe Road, South Yorkshire, and is centred on Grid Reference 446130, 403820 (Appendix 1).

The site is bounded by residential dwellings to the north, open fields to the east, Dearneside Leisure Centre to the south and by Goldthorpe Road B6096 to the west with residential dwelling beyond. The site is accessed from Goldthorpe Road.

The site currently comprises open land, used for grazing in the southern part and overgrown by scrub and saplings in the north. Portions of the fields are separated by palisade fencing. An area of asphalt hardstanding, associated with a former pub, is present in the north-west. The site was previously developed with a school demolished in 2010 and a public house demolished in 2004. The site falls to the south from 35.6 mAOD to 26.0 mAOD at an average gradient 1 in 22 (Appendix 2).

Proposals are for 109 residential dwellings (Appendix 3).

1.3 Environment Agency - Flood Map for Planning

The Environment Agency's Flood Map for Planning (Appendix 4) shows the site lies within Flood Zone 1 (low risk); referring to land having less than a 1 in 1,000 annual probability of river flooding.

¹ <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

² <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

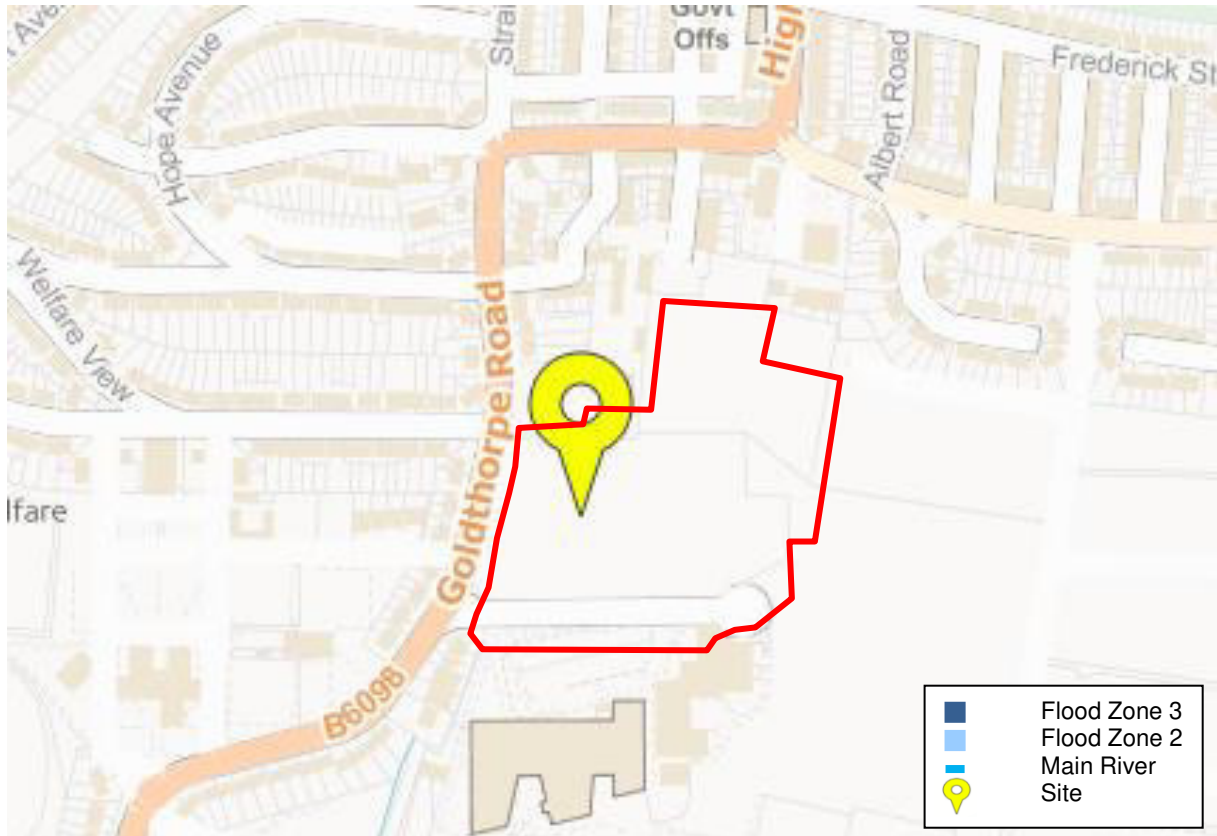


Figure 1: Environment Agency's Flood Map for Planning

1.4 Barnsley Metropolitan Borough Council Strategic Flood Risk Assessment

Barnsley Metropolitan Borough Council's Level 1 Strategic Flood Risk Assessment map (Appendix 5) shows the site to lie within Flood Zone 1 (low risk).

1.5 National Planning Policy Framework

National Planning Policy Framework (July 2021) sets out the principles for assessing the suitability of sites for development, in relation to flood risk, as part of the planning process.

1.5.1 Sequential Test

Initially a Sequential Test is applied to the allocation of land suitable for development. The test is required for any development proposed in Flood Zone 2 or 3 (and occasionally also in Flood Zone 1 where there are flood risks present which are not identified on the Environment Agency's Flood Maps for Planning).

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites, appropriate for the proposed development, in areas with a lower probability of flooding.

The site lies within Zone 1 and this report confirms that the site is not at significant risk of potential flooding from any source. Therefore, the sequential test is not required.

1.5.2 Climate change

An issue emphasised in the Planning Policy Guidance is the requirement to take account of potential climate change effects. New development is generally accepted as having a 100 year design life for flood risk purposes. The Environment Agency's report 'Flood risk assessments: climate change allowances'³, published in February 2016, recommends a 20 to 40% increase in peak rainfall intensity is taken into account for small and urban catchments for design horizons up to 2115. For the purposes of this Flood Risk Assessment, a 40% increase in peak rainfall intensity has been used for assessing storage requirements; 40% being the "upper end" of the data range.

³ <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#table-1>

2.0 FLOOD RISK

2.1 Potential sources of flooding

The Environment Agency and Strategic Flood Risk Assessment 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.

2.1.1 Fluvial

The nearest ordinary watercourse is Far Moor Dike located approximately 270 m south of the site. An unnamed ordinary watercourse is located approximately 315 m east of the site. These ordinary watercourses connect to a network of ordinary watercourses from approximately 300 m south of the site which ultimately converge with the River Dearne, a main river, located approximately 1.5 km south of the site.

The site is elevated approximately 8 m relative to the Far Moor Dike, approximately 5 m relative to the unnamed ordinary watercourse and approximately 15 m relative to the River Dearne.

2.1.2 Surface water

The Environment Agency surface water flood risk map (Appendix 4) shows the majority of the site is at very low risk of surface water flooding where very low risk corresponds to the unshaded areas of the map. Very low risk refers to land having less than a 1 in 1,000 annual probability of flooding (0.1%).

There is a low to high risk surface water flow pathway through the centre of the site, with a north to south orientation, to the southern quarter of the site.

Very low risk refers to land having less than a 1 in 1,000 annual exceedance probability of flooding (0.1% AEP). Low risk refers to land having between a 1 in 1,000 and 1 in 100 annual probability of flooding (0.1% - 1%). Medium risk refers to land having between 1 in 100 and 1 in 30 annual probability of flooding (1% - 3.33%). High risk refers to land having a greater than 1 in 30 annual probability of flooding (>3.33%).

Strategic Flood Risk Assessment mapping indicates the site to be outside the risk of surface water flooding.

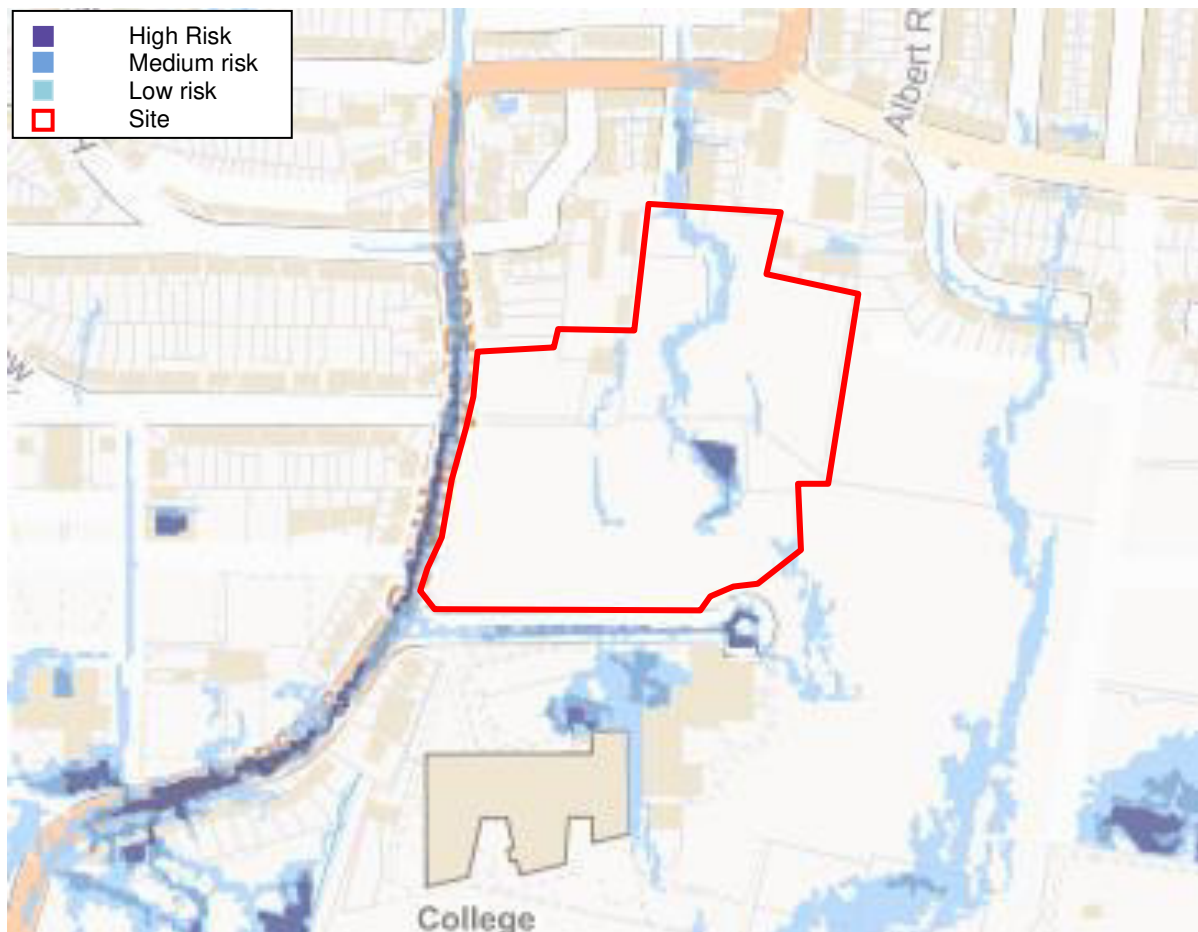


Figure 2: Environment Agency – Risk of surface water flooding map

2.1.3 Groundwater

Groundwater is a potential flood risk to areas which are low lying and on permeable ground or, occasionally, to areas of higher ground in the vicinity of springs. The site is low lying and shallow groundwater may be encountered on the site.

2.1.4 Sewerage

The surrounding public sewer network is owned and maintained by Yorkshire Water. There is no known public record of sewer flooding within the site boundary.

2.2 Historic Flooding

The Strategic Flood Risk Assessment mapping shows that the site is outside the recorded historical flood outlines.

2.3 Residual Flood Risk

The site is at low to high risk of surface water flooding and is at potential low risk of groundwater emergence. This is not a development constraint and can be managed on the site in the mitigation measure below.

2.4 Flood Mitigation Measures

Finished floor levels of any buildings adjacent and within the surface water flood outline should be set to a minimum of 300 mm above adjacent existing ground levels. Land drainage may be required to direct flows away from buildings.

3.0 DRAINAGE STRATEGY

3.1 Existing drainage

There is a 375/450 mm public surface water sewer through the centre of the site with a north to south orientation. There is a 150 mm section 104 sewer located in the north-western quarter of the site with a north to south orientation. There is also a 225 mm public combined sewer across the north-eastern corner of the site.

The majority of the site is currently open grassed fields and therefore it is assumed that within this area surface water flows south following the natural topography with an amount of infiltration.

3.2 Consultation with Yorkshire Water

Pre-planning advice has been received from Yorkshire Water (Appendix 6); their letter reference V003349 dated 12th March 2019. The main points of the advice are summarised below.

- Foul waste should discharge to the 600 mm public combined sewer recorded in Goldthorpe Road, at a point west of the site.
- There is a 375 mm and a 450 mm public surface water sewer recorded crossing the site. No buildings, or other obstructions, are to be erected within 3 m, nor trees planted within 5 m either side of the public sewers. It may not be acceptable to raise or lower ground levels over the sewers, nor restrict access to the manholes.
- There is a 225 mm public combined sewer recorded crossing the site. In this instance building-over may take place.
- Following the surface water disposal hierarchy, surface water should look to drain either to soakaway or watercourse in the first instance.
- If other surface water methods are not viable, surface water discharge to public sewer will be restricted to existing use less 30% reduction.
- Positive drainage will need to be demonstrated, based on the 1 in 1 year storm event, to public sewer by means of investigation and calculations.

Subsequent pre-planning advice was received from Yorkshire Water dated 25th November 2021 (ref: X020512, Appendix 6). The main points are summarised below.

- It is understood there will be an agreement with the S104 Team at Yorkshire Water to divert the 375 / 450 mm diameter public surface water sewer which crosses the site.
- As other methods of surface water disposal have been discounted, curtilage surface water may discharge to the diverted 375 mm surface water sewer or 450 mm diameter public surface water sewer recorded to the south of the site.
- The surface water discharge from the site should be restricted to not greater than 10 (ten) litres/second.

3.3 Ground conditions

The British Geological Survey maps show the site to be underlain by mudstone, siltstone and sandstone of the Pennine Middle Coal Measures in the southern three-quarters and by sandstone Pennine Middle Coal Measures in the north quarter of the site. Superficial deposits are not recorded on the site.

A Phase 1 and Phase 2 Geotechnical and Geo-Environmental Desk Site Investigation was undertaken by Eastwood and Partners; report 42241-001 dated March 2018. Made ground was encountered across the north-western and southern areas. The natural ground was recorded as Pennine Middle Coal Measures Formation of sandy, gravelly clay with siltstone components. Bedrock encountered was recorded as siltstone.

Perched groundwater seepage was recorded within the made ground trial pits at 0.8 and 3.4 m below ground level. Groundwater was not encountered in the remaining pits.

3.4 Greenfield Calculations

Greenfield runoff is calculated using the MicroDrainage ICP SuDS runoff method by RAB Engineering Design Ltd who designed the drainage strategy (Appendix 7).

The table below shows flow rates for varying return periods based on a developable area of 2.96 ha.

Greenfield runoff				
Catchment	Return period			
	1 in 1 yr	1 in 2 yr	1 in 30 yr	1 in 100 yr
Dearne Darfield	9.4 l/s	11.0 l/s	19.3 l/s	22.8 l/s

3.5 Drainage hierarchy

Surface water disposal should be in accordance with the drainage hierarchy in Building Regulations Part H⁴ and Planning Practice Guidance 'Reducing the causes and impacts of flooding', paragraph 080. 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.

3.5.1 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 C753).

Infiltration testing was undertaken by Eastwood and Partners in February 2018 however results confirmed that infiltration type SuDS such as soakaways are not viable on the site due to slow infiltration rates caused by the presence of impermeable ground. Soakaway SuDS are also not viable within deep made ground which is present on the site.

Other SuDS methods may be applicable and their use is summarised in the appended SuDS checklist.

3.5.2 Watercourse

The nearest ordinary watercourse is located approximately 270 m south of the site crossing third-party land, therefore disposal of surface water to watercourse is discounted.

3.5.3 Public sewer

There is a 375 / 450 mm public surface water sewer crossing the site. It is considered that the existing bungalow and hardstanding on the site still discharge to this sewer. As other methods of discharge have been discounted, Yorkshire Water have confirmed curtilage surface water from the site may discharge to the 375 / 450 mm surface water sewer.

3.6 Proposals for surface water disposal

The final disposal strategy for surface water run-off requires detailed consideration and approval during the design phase of the project. The final design will need the approval of the

⁴https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/442889/BR_PDF_AD_H_2015.pdf

relevant statutory bodies but will broadly follow these principles as designed by RAB Engineering Design Ltd and provided in Appendix 7:-

- Surface water disposal should be via gravity to 375 / 450 mm public surface water sewer crossing the site.
- Surface water discharge will be restricted to 10 l/s as agreed with Yorkshire Water.
- Attenuation storage for the 1 in 100 year plus 40% climate change rainfall event will be provided above ground in a basin within the open space in the south of the site.
- The surface water drainage system will be offered for adoption to Yorkshire Water.

3.7 Proposals for foul disposal

Foul effluent will discharge via gravity to the 600 mm public combined sewer recorded in Goldthorpe Road, west of the site.

3.8 Residual flood risk

There is a potential flood risk to site occupiers and to others from surface water runoff as a result of developing the site. The residual risk can be managed by the general flood mitigation measures outlined below.

3.9 Mitigation measures

The proposed surface water drainage system is designed to current best practice and to the standards laid out in the publication 'Design and Construction Guidance for foul and surface water sewers' and Building Regulations Part H 2015.

In the event of surface water failure for rainfall in excess of the design standard, the site is laid out so that surface water runoff is directed away from houses, including those on neighbouring streets.

The 375 / 450 mm diameter public surface water sewer which crosses the site will be diverted through an S104 agreement with Yorkshire Water. Build-over of the 225 mm public combined sewer crossing the site may take place.

4.0 CONCLUSIONS

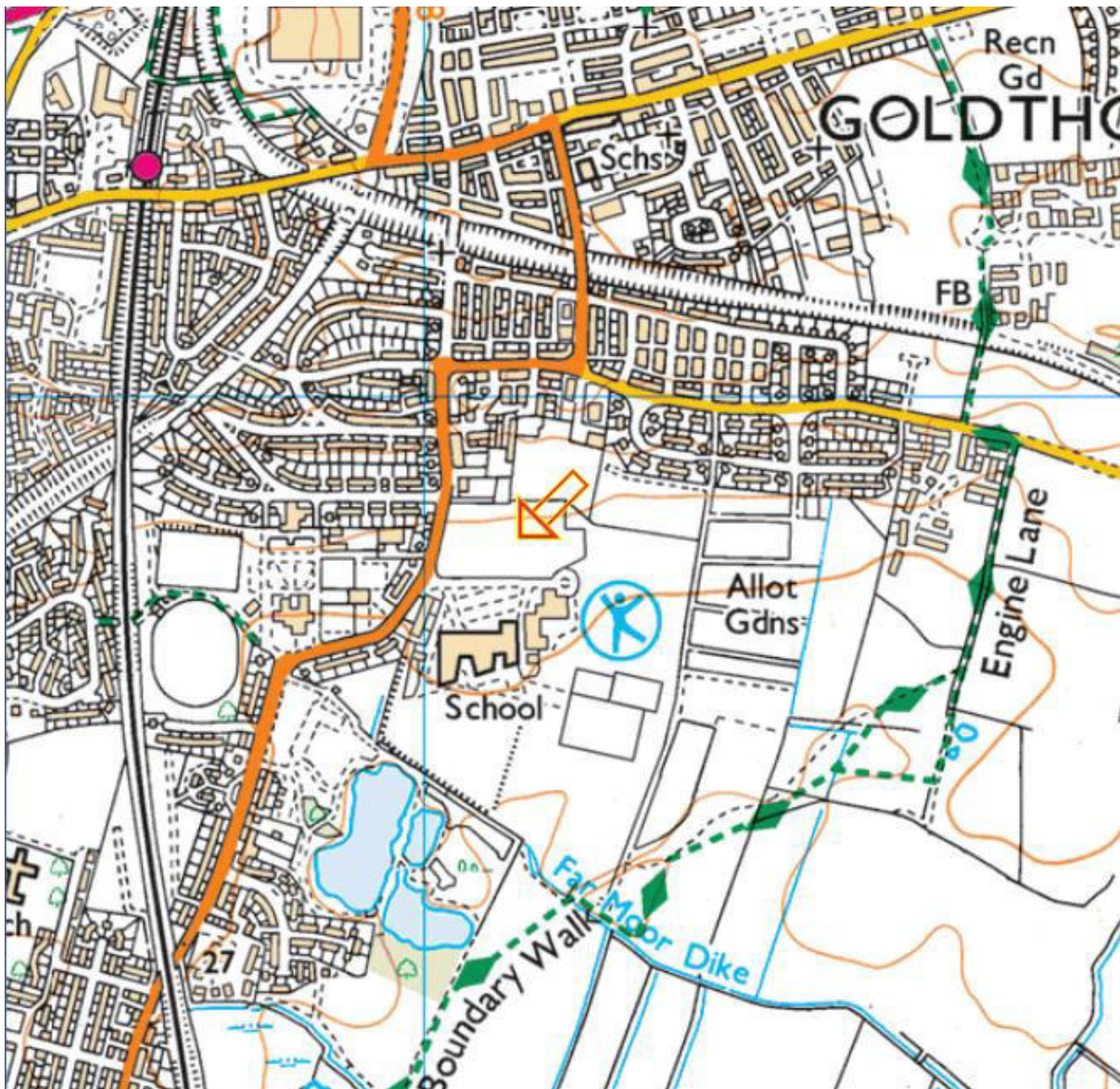
1. The site lies within an area shown on flood maps as at Flood Zone 1, low risk of fluvial flooding.
2. The site is at low to high risk of surface water flooding and is at potential low risk of groundwater emergence. This can be managed by raising finished floor levels 300 mm above existing ground levels and directing flows away from buildings.
3. Surface water disposal will be to the 375 / 450 mm public surface water sewer located on the site.
4. Surface water discharge will be restricted to 10 l/s as agreed with Yorkshire Water.
5. Attenuation storage for the 1 in 100 year plus 40% climate change rainfall event will be provided above ground in a basin within the open space in the south of the site.
6. Foul effluent will discharge via gravity to the 600 mm public combined sewer located in Goldthorpe Road, west of the site.
7. The level of risk and safeguards available are considered appropriate to this class of development.

APPENDICES

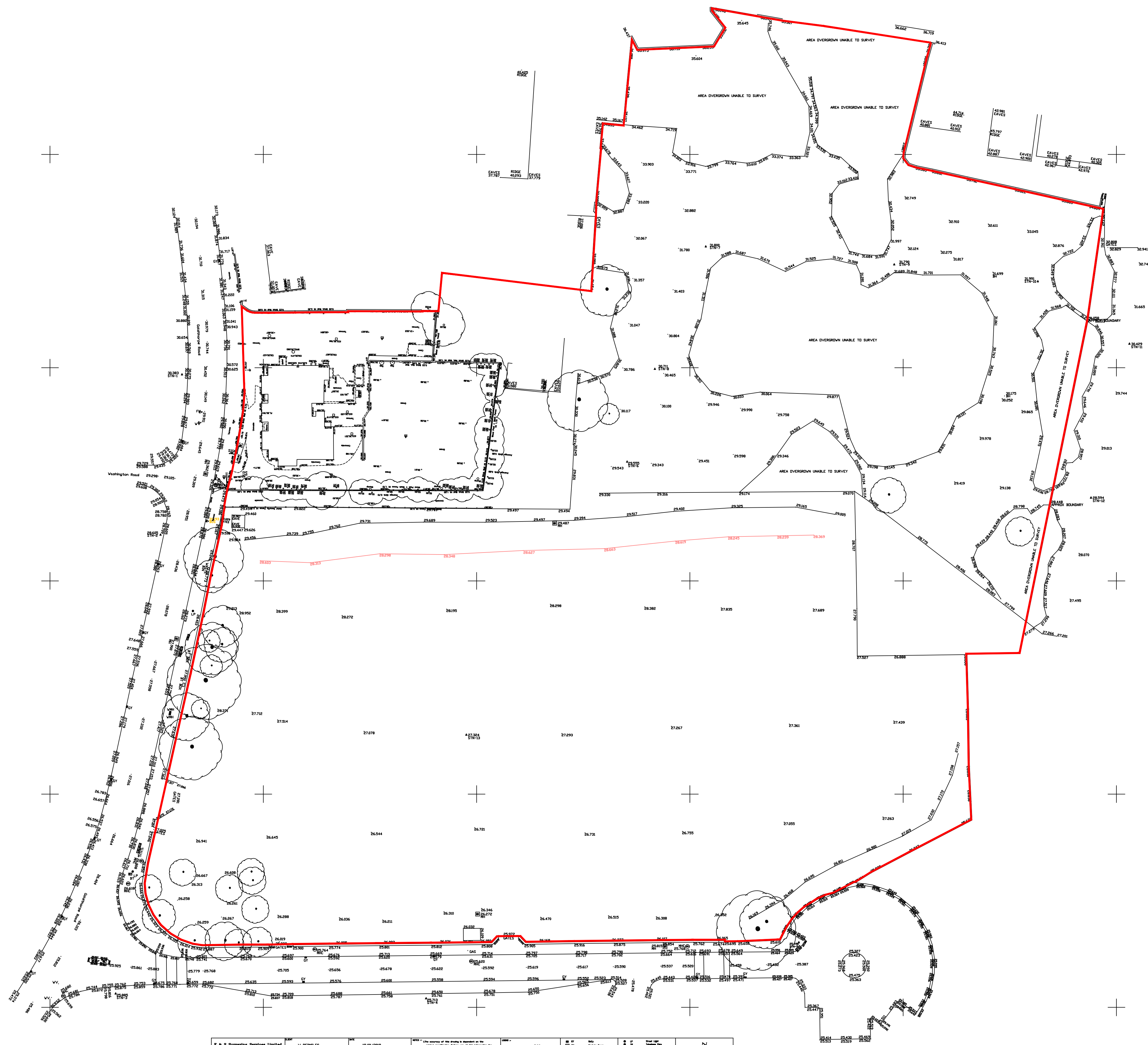
APPENDIX 1

Location

Goldthorpe Road, Goldthorpe, Barnsley, S63 9EQ



APPENDIX 2



F & S Surveying Services Limited 21, New View London East Yorkshire YO20 7DP Tel: 0774 6007707 Email: f.s.surveying@btinternet.com		19/10/2018 1:1 REF / SS SS / REF	19/10/2018 1:1 REF / SS SS / REF	19/10/2018 1:1 REF / SS SS / REF
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1:1 Scale

APPENDIX 3



All work to be carried out in accordance with the requirements of the Building Regulations, Water Authority and the Construction (Design and Management) Regulations currently in force.

Do not scale from this drawing. Architect to be notified of any discrepancies.

Verify relevant dimensions on site before commencing work or preparing shop drawings. This drawing is copyright.

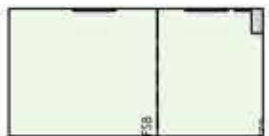
rev	date	amendment	initials
A	30/08/18	Layout amended following pre-app meeting with planners.	JMB
B	04/12/18	Layout amended to accommodate existing ecological features.	JMB
C	14/01/19	Layout amended to accommodate highway/ planners comments.	JMB
D	22/03/19	Plots 43-44 amended to address public consultation comments.	JMB
E	04/03/20	Plots 11-20 redesigned, dormer bungalows added.	JMB
F	23/07/21	Plots 37-47 redesigned, dormer bungalows added on plots 44-47.	JMB
G	12/10/21	Balancing feature added, layout redrawn.	JMB
H	06/12/21	Balancing feature redesigned, layout amended.	JMB
J	09/12/21	Tuning head to plots 11-23 amended.	JMB
K	11/01/22	Balancing feature & layout amended.	JMB



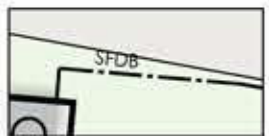
Denotes trees to be retained



Denotes trees to be removed



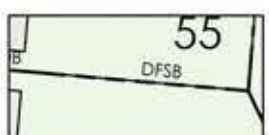
1.8m high pier & panel wall, SD/PPW/01



1.8m high double boarded timber screen fence, SD/BSF/01



1.8m high timber screen fence, SD/SF/01



900mm high timber fence, SD/DF/01



450mm high timber knee rail, SD/KR/01



W Redmile & Sons Ltd, Parkfield House, 118 Alderson Road, Sheffield, S2 4UD.
tel: 0114 2290900 fax 0114 2290909 www.wredmile.co.uk

scale: 1:500 | drawn by: JMB | date: June 18'

Project: Land off Goldthorpe Road, Goldthorpe, Barnsley

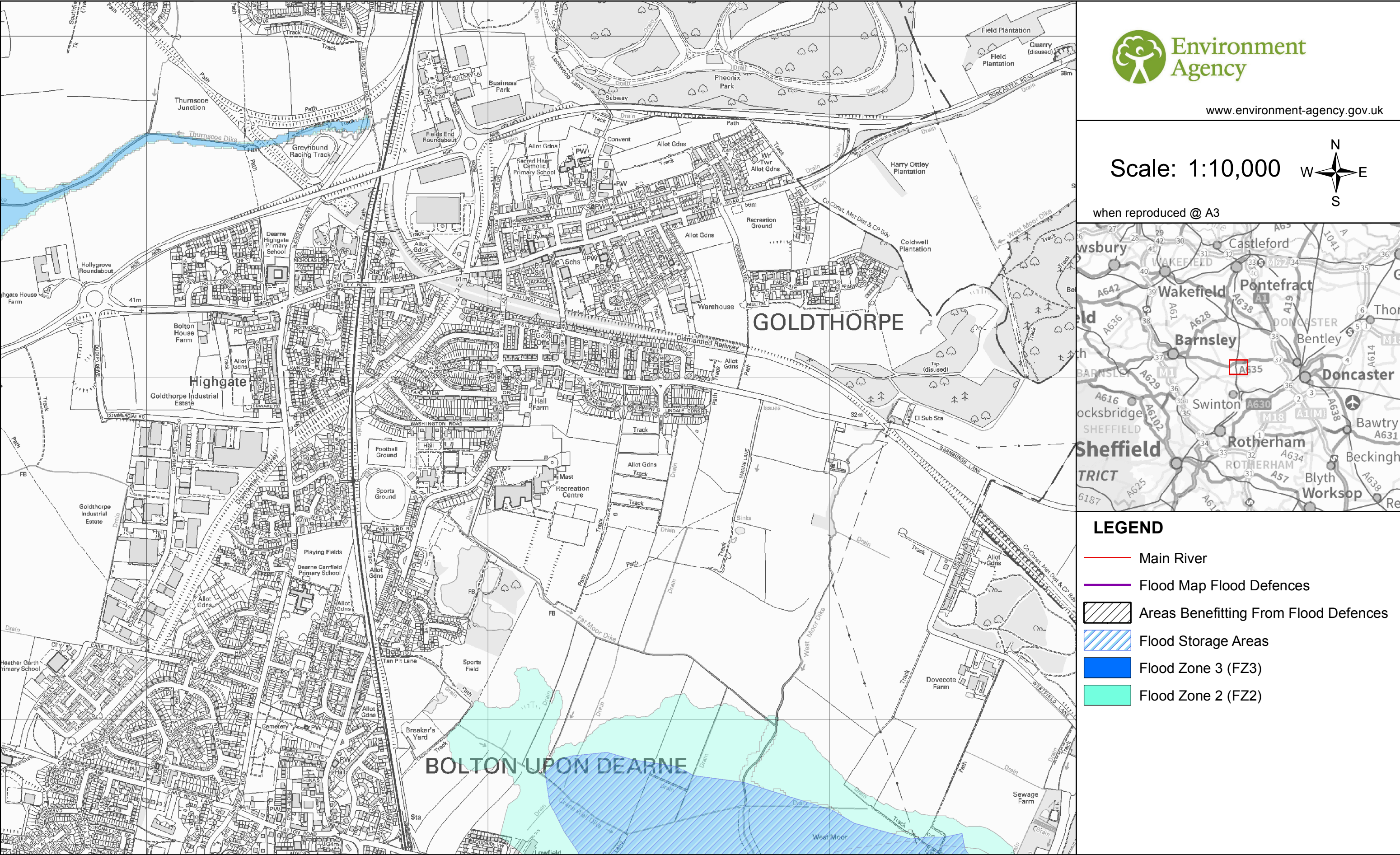
Drawing: Site Layout

Drawing Number: GT/SK-01 | Revision: K

APPENDIX 4

RFI/2019/118367 Flood Map for Planning, centred on Goldthorpe Road, S63 9EN

Date Created: 18/03/19



www.environment-agency.gov.uk

Scale: 1:10,000

when reproduced @ A3



LEGEND

- Main River
- Flood Map Flood Defences
- Areas Benefitting From Flood Defences
- Flood Storage Areas
- Flood Zone 3 (FZ3)
- Flood Zone 2 (FZ2)



Learn more about flood risk

Select the type of flood risk information you're interested in. The map will then update.

You can [learn more about the ways we describe flood risk](#). Alternatively select a legend item or feature from the map for an explanation of that flood risk.

'Detailed view' shows more technical information.

All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes.

Basic view

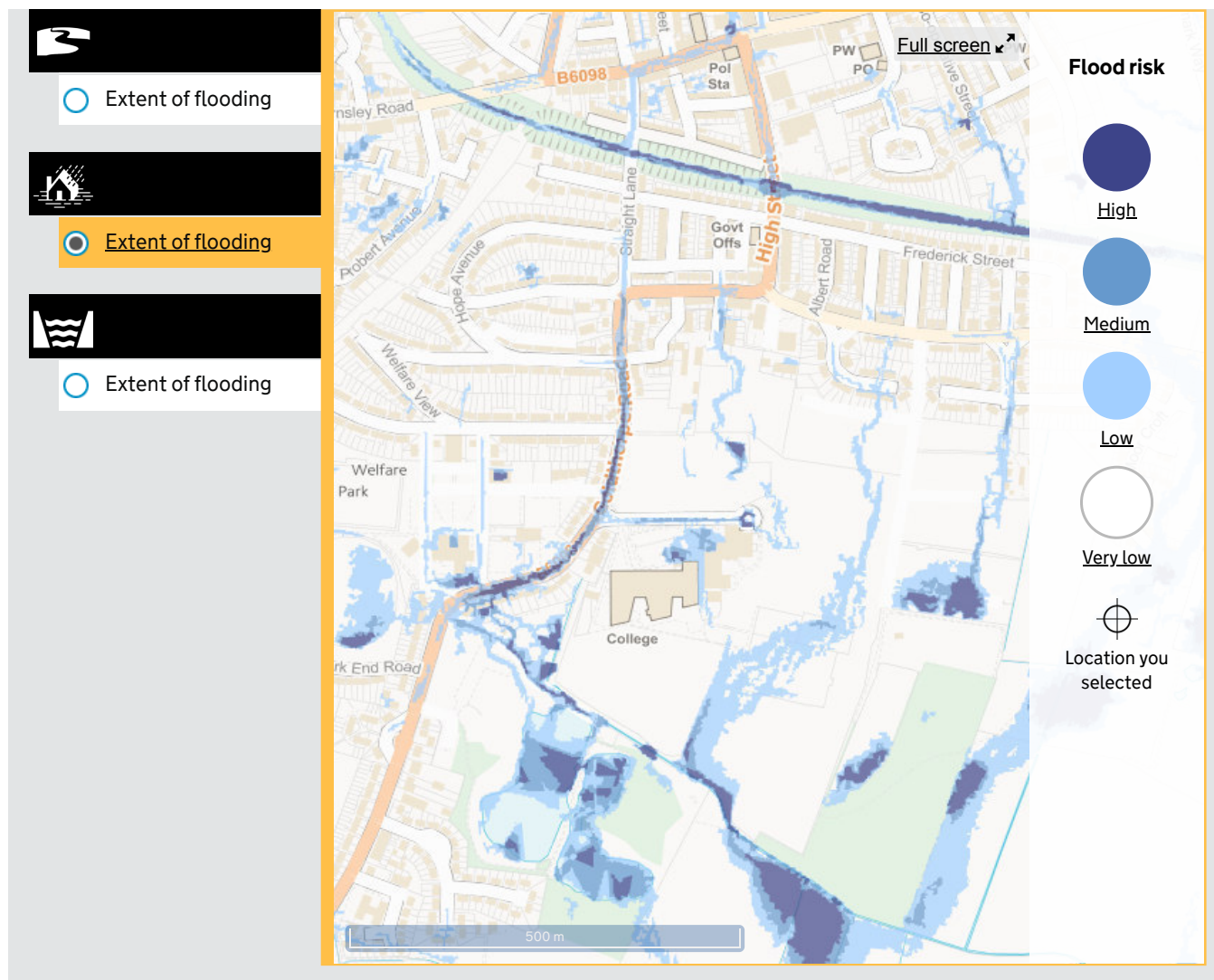


Detailed view

Location

S63 9EQ





► [Accuracy of surface water flood risk information](#)

[View the flood risk information for another location](#)

[Go to the national flood information service](#)

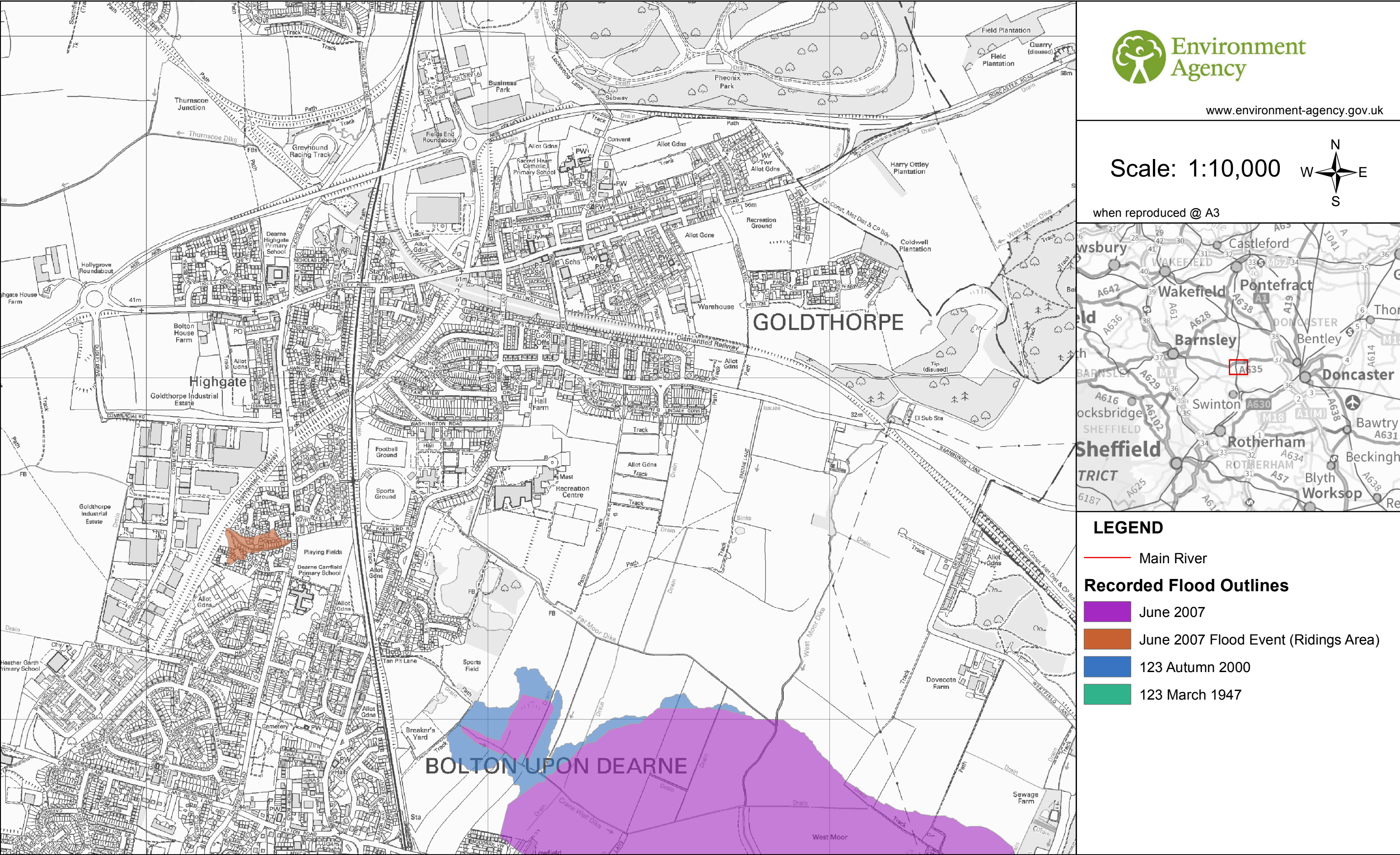
► [Other ways of getting this information](#)

05 March 2019

This information meets the requirements of the EU Floods Directive 2007/60/EC

RFI/2019/118367 Flood History Map, centred on Goldthorpe Road, S63 9EN

Date Created: 18/03/19



www.environment-agency.gov.uk



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LEGEND

- Main River
- Recorded Flood Outlines
 - June 2007
 - June 2007 Flood Event (Ridings Area)
 - 123 Autumn 2000
 - 123 March 1947

The Flood Map for Planning

The Environment Agency provides the Flood Map (see enclosed extract).

What is the Flood Map for Planning?

The Flood Map for Planning provides information on flooding from rivers and the sea for England and Wales. The Flood Map also has information on flood defences and the areas benefiting from those flood defences.

The Flood Map for Planning shows the following:

1. Flood Zone 3 (dark blue area on the enclosed map): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences
 - For flooding from rivers the map indicates the extent of a flood with a 1% (1 in 100) chance of happening each year;
 - For flooding from the sea the map shows the extent of a flood with a 0.5% (1 in 200) chance of happening each year.
2. Flood Zone 2 (light blue area): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences. Flood Zone 2:
 - indicates the extent of a flood with a 0.1% (1 in 1000) chance of happening each year.
 - and/or indicates the greatest recorded historic flood, whichever is greater.
3. Flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, together with some natural or constructed entities which retain, store or channel water and which may protect against smaller floods.
4. Areas benefiting from flood defences - areas that benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would flood.

Flood History

Flood History

To the best of our knowledge there is no known flood history for this site. However, in close proximity to this location we do have some flood history available (see enclosed map). The extent of flooding, and/or flood level information is only shown for those watercourses surveyed after the flood. Other flooding may have occurred which is not shown. This is the best information currently available.

Assets

Asset Location Map

Please find attached asset map(s) showing location of all (Agency and non Agency maintained) flood defences and channels.

Description of Works

See attached table with description of the defences and structures shown on the above drawing, including condition ratings, upstream and downstream crest levels, where available.

Risk of Flooding – Environment Agency Defences

The risk of flooding in this area is now reduced by the presence of flood defences that we maintain, but there still is a residual risk of flooding if these were to breach or be overtopped by a flood greater than that for which they were designed.

Risk of Flooding – Privately Maintained Defences

You will see that the Environment Agency does not maintain any of those defences. However we undertake regular risk based visual inspections. We do not hold design levels and have no height information on these defences or structures.

Asset Condition Ratings

The performance of a flood defence asset is recorded as the condition of the asset. Our asset inspectors subjectively assess the conditions of assets (during visual inspection site visits) with reference to a national standard template. Each asset is given a rating between one and five with one being very good condition and five being very poor. A condition rating of 3, or 'fair' is the minimal acceptable standard for a critical asset, such as a defence wall that protects properties. We are striving to improve all assets below 'fair' to an acceptable standard.

Asset inspections are done on average every six months, although some critical assets are assessed on a more regular basis. It is possible that adjacent assets are inspected on different dates, which may result in two assets of a similar state of repair having different condition ratings.

Condition ratings of assets may also be affected by the time of year the surveys are conducted, as vegetation may obscure the asset in the summer months, or accessibility may be an issue during winter months. These factors would not usually affect the recorded condition rating of an asset unless the asset is on a borderline between two ratings.

Asset Standard of Protection

Please note that the provided Design Standard of Protection is an estimate and should not be relied on. Please note that where available the defended flood extents provide more reliable information relating to the protection offered by the defence (i.e. at which return period the water levels are likely to overtop the defence). If available and required the defended flood extents can be provided on request.

Climate Change

Please note that new guidance on climate change allowances for Flood Risk Assessments has been published in February 2016. The new guidelines are available from:

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Bespoke Flood Risk Assessment (FRA) advice:

If the pre-application advice is required with regards the preparation of a site-specific Flood Risk Assessment, this can be requested via the Yorkshire Sustainable Places team (email: sp-yorkshire@environment-agency.gov.uk). Charges may apply for any advice that is provided, this currently stands at £100 per hour per person. The [.gov.uk](https://www.gov.uk) pages provide a good starting point on what to include within a site-specific Flood Risk Assessment and can be accessed via <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>. A site-specific Flood Risk Assessment will need to consider flood risks from all sources, including those associated with defence failure (e.g. breach) and accounting for the predicted impacts as a result of climate change. Please contact the Sustainable Places team if you require advice on how to include these within a Flood Risk Assessment.

Other

Surface Water Map

In partnership with Local Authorities, we publish Risk of flooding from surface water maps. These were updated in December 2013. If you would like a copy of the map for your area, please contact us again. Otherwise the map can be viewed online at :
<https://flood-warning-information.service.gov.uk/long-term-flood-risk/#x=438988&y=406600&scale=2>

Surface Water Drainage

The Lead Local Flood Authority is the statutory consultee for planning matters relating to surface water drainage, therefore it is recommended they should be consulted separately regarding this.

Surface water discharge from new development should ideally 'mimic' the pre-development situation using a sustainable drainage system so that the flow and volume of water in watercourses is not increased.

A permit may be required, under the Environmental Permitting Regulations 2010 from the Environment Agency for any proposed works or structures in, under, over or within eight metres of a 'main river' (e.g. a new outfall). A permit is separate to and in addition to any planning permission granted. Further details and guidance are available on the GOV.UK website:
<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>

Risk of Flooding from Reservoirs Map

Outlines and simplified depth and velocity maps can be viewed on our website:

<https://flood-warning-information.service.gov.uk/long-term-flood-risk/#x=438988&y=406600&scale=2>

Please, zoom into the location of interest, and then click on the inundated location for details. As a result a list of reservoirs will be provided with supporting information and a links to other data, such as estimated depths and speed of flooding, at the bottom of the result page.

A map showing the outlines can also be provided on request.

Flood Warning

The site is not covered by a Flood Warning.

LIDAR Data

Please note that our LiDAR data is now available free of charge (Open Data) from <http://environment.data.gov.uk/ds/survey/index.jsp#/survey> (once zoomed to the relevant location the available LiDAR products will be listed below the map).

Two LIDAR products are available:

1. Tiled LIDAR data - The full tiled dataset consists of historic LIDAR data which has been gathered since 1998. For some areas we have carried out repeat surveys and data is available in a range of resolutions.
2. Composite LIDAR data - The composite dataset is derived from a combination of our full tiled dataset which has been merged and re-sampled to give the best possible spatial coverage.

Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. This technique results in the production of an accurate, cost-effective terrain model suitable for assessing flood risk and other environmental applications.

The Environment Agency owns two LIDAR systems, which are installed in a survey aircraft along with its other operational remote sensing instruments.

The aircraft is positioned and navigated using Global Positioning System (GPS) corrected to known ground reference points. The aircraft typically flies at a height of about 800 metres above ground level and a scanning mirror allows a swath width of about 600 metres to be surveyed during a flight.

The Rights & Responsibilities of a Riverside Owner

The owner of property adjacent to a watercourse is usually deemed to be the riparian owner and, as such, has both riparian rights and responsibilities with regard to the watercourse within their ownership.

For more information on Rights and Responsibilities of a riverside owner, you can visit our website at:

<https://www.gov.uk/guidance/owning-a-watercourse>

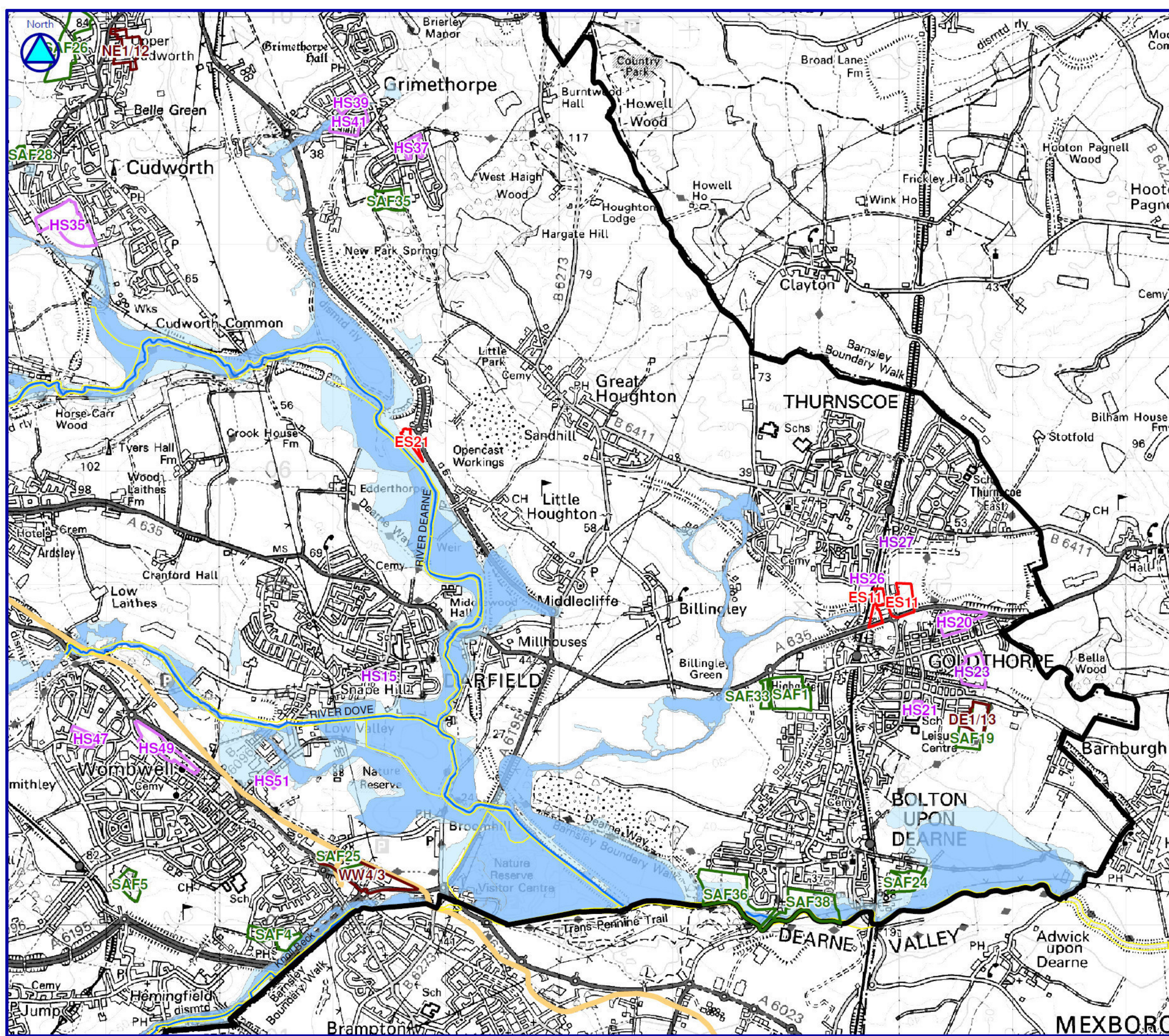
Ordnance Survey Data

Under the terms of our licence agreement with the Ordnance Survey, we are unable to supply the OS data. Under this agreement we can only supply OS data to consultants/contractors carrying out work on our behalf.

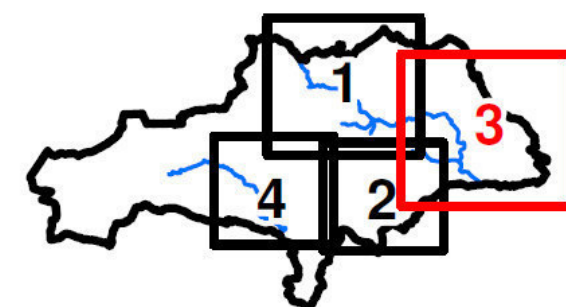
Flood Portal

It's a new 'one-stop shop' web portal providing guidance and information on flood risk management in the UK. Arup have written and designed the site, in conjunction with CIRIA, the Local Government Association, the EA and Defra, primarily as a resource for local authority officers, flood risk management professionals, and others with an interest in flood risk. It's a part of the Capacity Building Strategy. <http://www.local.gov.uk/floodportal>

APPENDIX 5



KEYPLAN



LEGEND

1:32,596

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

Proposed Development Sites

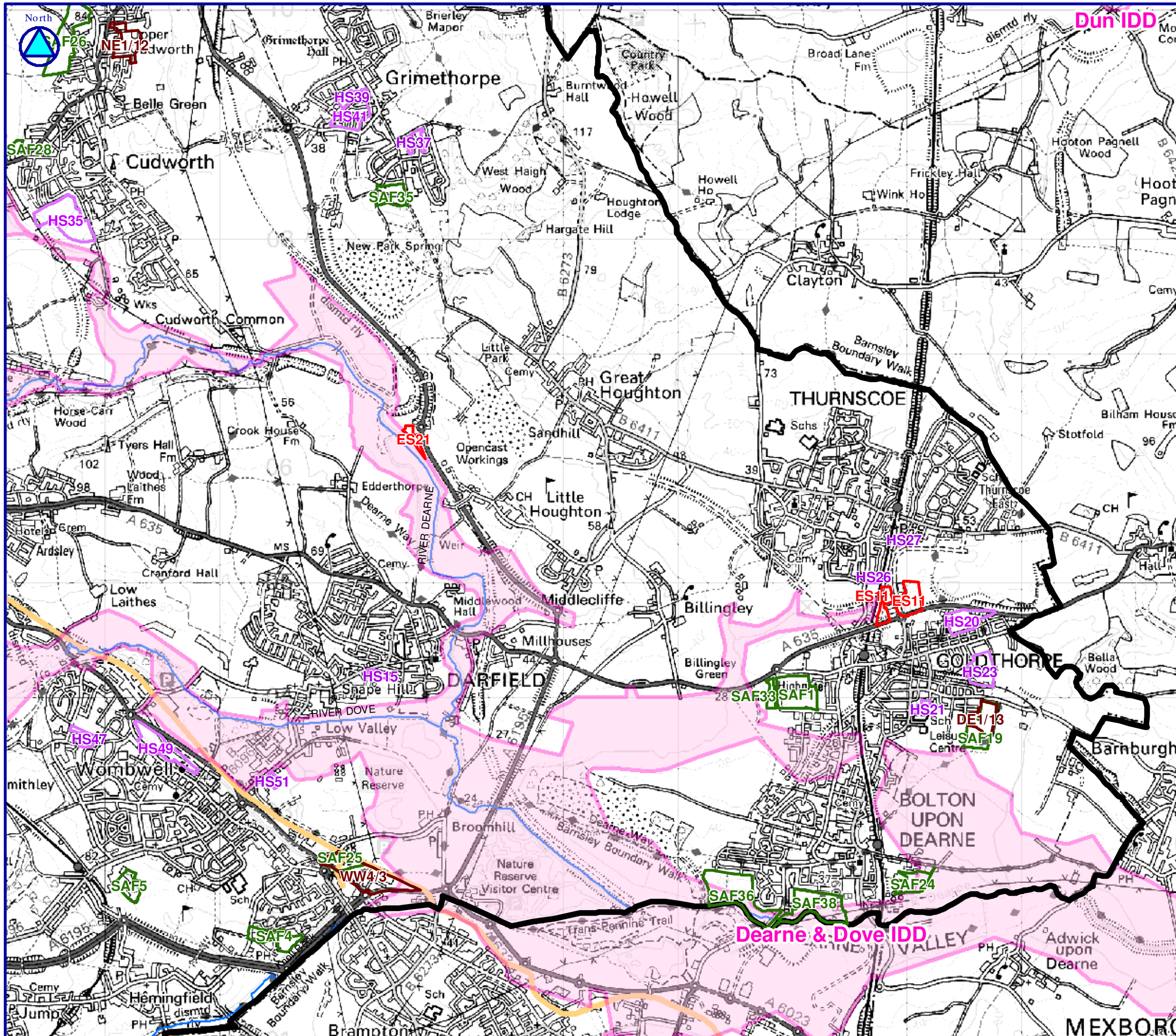
- Employment Sites
- Housing Sites
- UDP Sites
- Safeguarded Land

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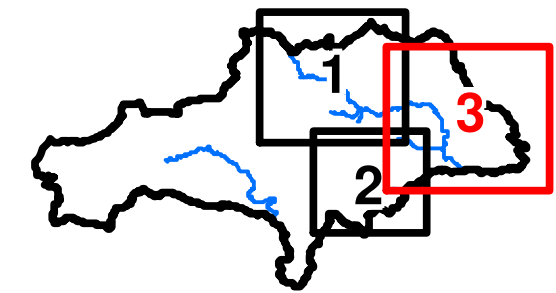


MAP A - 3

PROPOSED DEVELOPMENT SITES
AND FLOOD ZONES



KEYPLAN



LEGEND

1:32,596

- Barnsley MBC Boundary
- IDB Boundaries
- Main River
- Possible route of restored canal

Proposed Development Sites

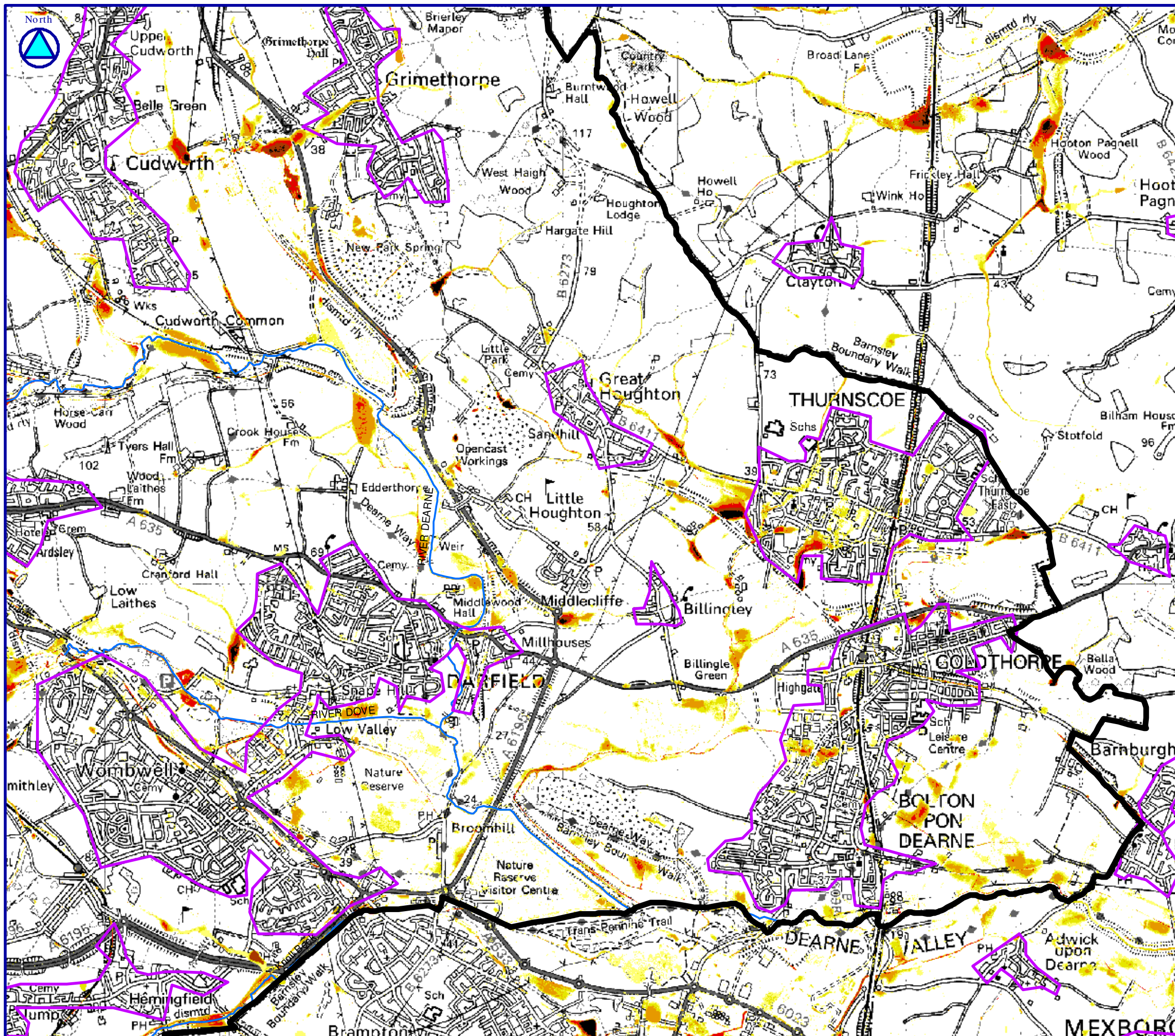
- Employment Sites
- Housing Sites
- UDP Sites
- Safeguarded Land

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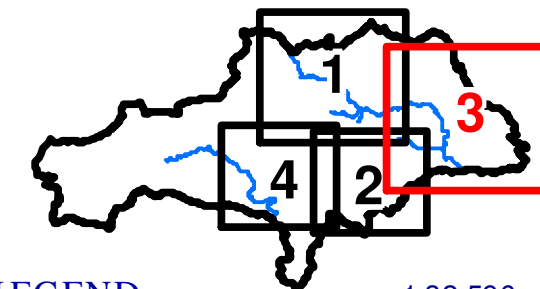


MAP B - 3

PROPOSED DEVELOPMENT SITES
AND IDB BOUNDARIES



KEYPLAN



LEGEND

1:32,596

- Barnsley MBC Boundary
- Urban Areas
- Main River
- Surface Water Flooding
Flood Depth (m)
- 0.15 - 0.3
- 0.3 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1 - 2
- > 2

Note:
Please see Section 5.8 of the SFRA
for further details.

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MAP C - 3

PLUVIAL FLOODING CAUSED BY
100YEAR RAINSTORM

APPENDIX 6

**Ms L Nicholson
Eastwood & Partners
23 Kingfield Road
St Andrew's House
S11 9AS**

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

**Your Ref: EPL039
Our Ref: V003349**

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

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

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

12th March 2019

Dear Ms Nicholson,

Goldthorpe Road, Goldthorpe, Rotherham, S63 9EN - Pre-Planning Sewerage-Enquiry-Residential T330783

Thank you for your recent enquiry. Our charge of £158.93 (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 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 is a 375 mm diameter public surface water 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.

There is a 450 mm diameter public surface water sewer recorded crossing the site. No buildings, or other obstructions, are to be erected within 3.5 (three point five) 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 0345 120 84 82.

There is a 225 mm diameter combined 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 600 mm diameter public combined sewer recorded in Goldthorpe Road, at a point to the west of the site.

Surface Water

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

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

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.

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/Internal Drainage Board, with regard to surface water disposal from the site.

Other Observations

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

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

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

All the above comments are based upon the information and records available at the present time. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith.



YorkshireWater

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

A handwritten signature in black ink, appearing to read 'Chris Roberts'.

Chris Roberts
Sewerage Technician
Developer Services



YorkshireWater

Mr R Bland
RAB Engineering LTD
12 Berry Holme Close
Chapelton
Sheffield
S35 1AB
richard@rabengineering.co.uk

Yorkshire Water Services
Developer Services
Pre-Development Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482

Fax:

Your Ref:
Our Ref: X020512

Email:
technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

25th November 2021

Dear Mr Bland,

**Goldthorpe Road, Goldthorpe S63 9ES – Pre-Planning Sewerage Enquiry
U442121 (Residential)**

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

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



YorkshireWater

Existing Infrastructure

There is a 375mm diameter public surface water sewer recorded crossing the site. No buildings, or other obstructions, are to be erected within 3 (three) metres is required at each side of the sewer centre-line, no 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. It is understood there will be an agreement made with the S104 Team to divert this sewer.

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 can discharge to the 600 mm diameter public combined sewer recorded in Goldthorpe Road, at a point to the west of the site.

Surface Water

As other methods of surface water disposal have been discounted, curtilage surface water may discharge to the diverted 375mm surface water sewer or 450 mm diameter public surface water sewer recorded to the south of the site.

The surface water discharge from the site to be restricted to not greater than 10 (ten) litres/second. This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

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/Internal Drainage Board, with regard to surface water disposal from the site.



Other Observations

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

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

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

All the above comments are based upon the information and records available at the present time and is subject to formal planning approval agreement. 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.

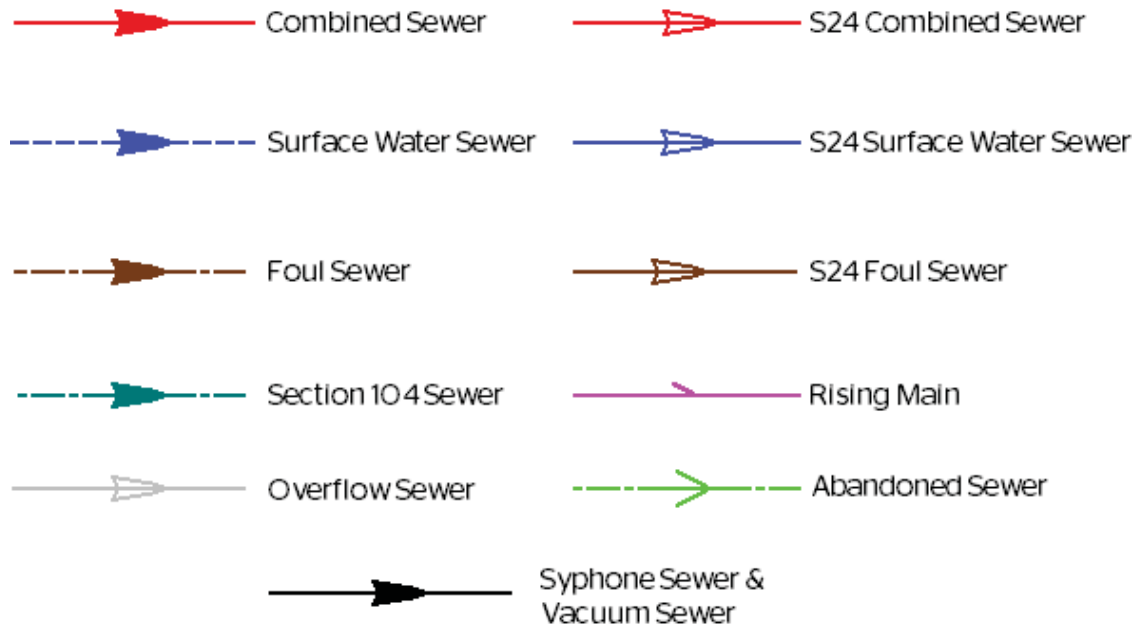
Yours sincerely

Chris Roberts
Development Services Technician

Property Identifier



Sewer Legend

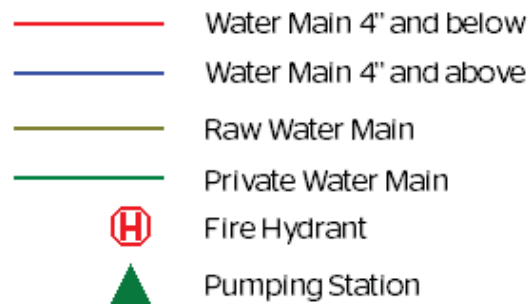


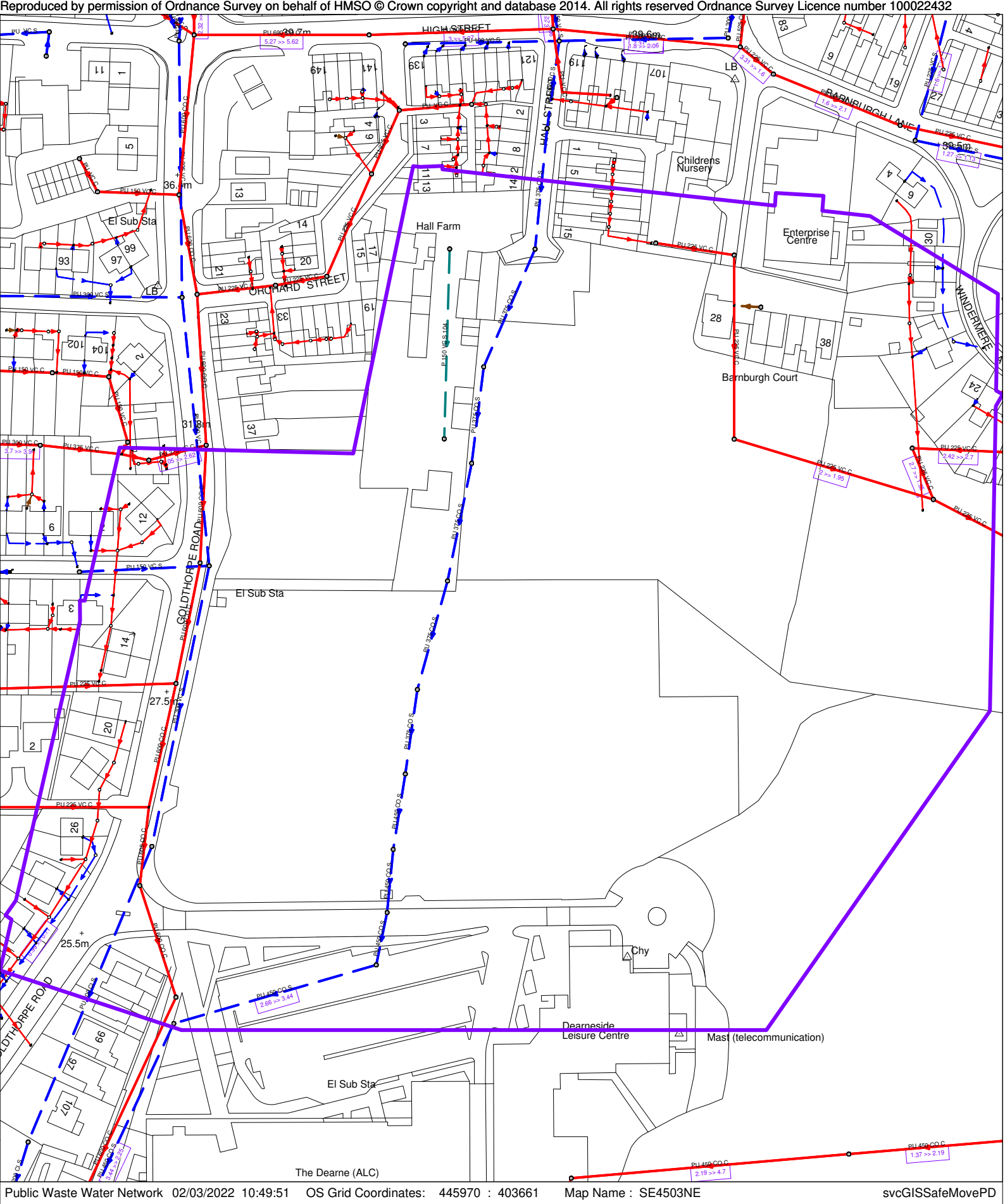
Pumping Station



Public Sewer Treatment Works

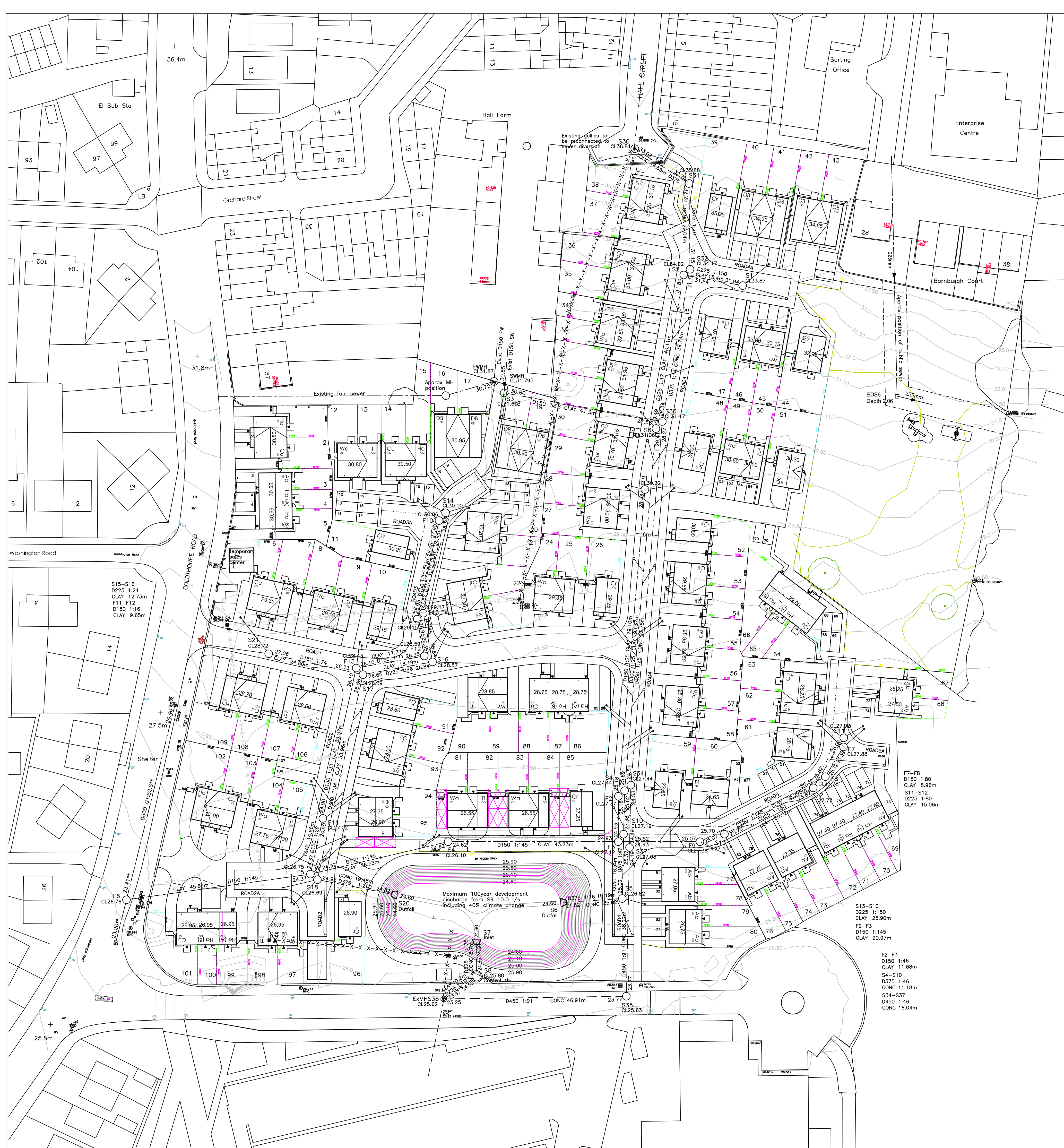
Water Legend





APPENDIX 7

RAB Engineering Design Ltd		Page 1
12 Berry Holm Close Sheffield S35 1AB	Redmile Homes Goldthorpe ICP SUDS runoff	
Date 01/04/2019 07:15 File	Designed by RAB Checked by	
XP Solutions		
Source Control 2017.1.2		
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 1 SAAR (mm) 606 Urban 0.000 Area (ha) 2.960 Soil 0.450 Region Number Region 3 Results 1/s QBAR Rural 11.0 QBAR Urban 11.0 Q1 year 9.4 Q1 year 9.4 Q30 years 19.3 Q100 years 22.8		
©1982-2017 XP Solutions		



DRAINAGE STRATEGY
The site was previously occupied by a comprehensive school which was demolished in 2010, there was also a public house which was demolished in 2004. The site is generally overgrown with areas of demolition rubble and hard standings. The PH car park still exists and discharges to the public sewer system. There is also a hard standing which we suspect discharges to the existing sewer within the development.
The YW sewer records show a 375/450mm surface water sewer passing through the site from Hall Street to the southern boundary. Site investigation shows the actual route is more 'dog legged' we suspect an illegal diversion has taken place whilst the site was occupied by the school. Further topographical and drainage investigation is to be carried out to establish the actual gradient of the existing sewer in order that an assessment of flow can be calculated and therefore be the basis of the sewer diversion design.
The sewer diversion will be carried out under a section 185 agreement and work on the sewer will not take place until the agreement is signed. Once the diversion is complete the redundant manholes will be removed and the sewer grouted.
The sewer records also show a section 104 SW sewer in the adjacent Hall Farm development, our drainage investigation shows this being capped off just within the development site. As a precaution we intend to connect this to the sewer diversion at S33 with a similar D150mm pipe. There is also a D150mm foul drain entering the site from Hall Farm. Sewer investigation shows this flows at the rear of plot 17 and into No 37 Goldthorpe Road. This will remain.
The investigation of the existing SW sewer shows a connection from the north west (plot 19) this may have been from the existing bungalow. This is to be further investigated along with all other connections.
There is a foul sewer located in the northeast corner of the site, however this is within the PDS allocated area and therefore unaffected by development.

FOUL WATER DRAINAGE
A pre-planning enquiry has been made with YW (R865067), the advice is that foul drainage from the development should discharge to the existing D600mm combined sewer located in Goldthorpe Road in the southwest corner of the site.
We await further topographical / drainage investigation to confirm the depth / invert of the existing sewer in order to complete the design.

SURFACE WATER DRAINAGE
A pre-planning enquiry has been made with YW (R865067), the advice is that surface water drainage from the development should discharge to soakways, however the ground report from Eastwood and Partners (42241) suggests this is not possible due to the underlying strata (point 7.8).
Whilst the YW response suggests a permitted SW discharge to the existing sewer this is based on an analysis of existing flows, in that demolition of the school was 2010 and the existing public house 2004 neither of these can be considered. However the car park area to the public house still exists and discharges either by overland flow or direct connection to the sewer in Goldthorpe Road. In addition there is a bungalow on the site which is positively drained possibly to the connection with the sewer passing through the site.
Correspondence with YW resulted in an agreed maximum surface water discharge of 10 l/s YW ref X020512 (25-11-21)

Based on the above we propose a maximum discharge from the site of 10.0 l/s for the 100year development discharge. The design will also include an allowance of 40% for climate change.

-X-X-X-X-X-X-X-X- Existing SW public sewer to be grouted and manholes removed following section 184 sewer diversion

GRID- Related to
Ordnance Survey using
One Point Localisation on
Station SB, Orientation at
OS Grid North.

LEVEL- Related to
Ordnance Survey by
connection to the OS
Active Network by G.P.S

Floor levels are preliminary and subject to external works and private drainage check
Block paving omitted for clarity

S30-S31-S32-S33-S34-S37-S35-S36
section 185 sewer diversion

- A01. These notes are intended to augment drawings and specifications. Where conflict of requirements exists the order of precedence shall be as shown in the specification. Otherwise the strictest provision shall govern.
- A02. This drawing to be read in conjunction with all other relevant engineers and architects drawings.
- A03. 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.

No part of this drawing may be reproduced, stored in a retrieval system or transmitted in any form or by any means without prior permission in writing from RAB Engineering LTD
Manhole construction - refer to CPA technical bulletin Sept 2001 outlining changes to relevant British Product Standards BS5911-1:2001/1994. All precast concrete products are to be kile marked or they will be rejected as part of an adoptable system. Manhole cover slabs to BS5911
Manhole covers to have a clear opening of 600 x 600mm and shall be class D400 to BS EN124 with 150mm deep frames.
Filled ground must be filled and consolidated under the supervision of YW before any sewer works are carried out. All adoptable sewers to be 850 kilemarked, (certified to WS-4-35-01)

Plastic channels are not acceptable
All custom built ironwork to be hot dipped galvanised prior to final fitting.
Adoptable sewer pipes to be laid in max 3m lengths unless there is a specific operational need to lay longer lengths.
The chamber size of manholes with more than one connection in them may need to be increased one increment to accommodate the connection and bends.

Yorkshire Water policy is not to accept type C brick manholes and 105mm diameter manhole rings, instead it is preferred to use a type B manhole construction with a 1200 or 1500mm cover slab with the opening sited over the channel where the depth of cover to pipe soffit is 1.0-1.5m.

Contractors should be aware of significantly large diameter pipes and manhole chamber rings proposed in this design and precautions should be taken in movement and placing of such items. Also to be considered is the depth of excavation of the drainage works especially the large diameter components up to 8m deep excavations.

All adoptable sewer works and materials to be in accordance with Sewers for Adoption 6th edition. The relevant British / European and Yorkshire Water standards / requirements / addendum & Kitemarked.

Manhole covers shall / must have a clear opening of 600mm and shall be class D400 BS EN124 and be 150mm deep in highways
Where B125 cover & frame has been approved this must be Kitemarked, ductile iron and not coated in plastic and must have suitable size lifting eyes. Screw down covers not acceptable

Filled ground must be filled and consolidated under the supervision of YW before any sewer works are carried out.

Yorkshire water are not obliged to accept filter drain / land drainage runoff into the public sewer network or adoptable drainage network (directly or indirectly). An alternative method of disposal of land drainage runoff will therefore be required and you will have to liaise with the Local Authority, Land Drainage Section with regard to the disposal of the filter drain/land drainage run-off.

Cover slabs must carry the BSI Kitemark or will be rejected by Yorkshire Water Inspector. Where the clear opening of the Kitemarked product is different to that of the cover and frame, a loading bearing slab should be fitted above the cover slab to bring the size down to 600mm x 600mm for the Yorkshire Water specified cover size. Please refer to Concrete Pipe Systems Association (CPSA), 'Technical Bulletin' issued Autumn 2004 for Kitemarked cover slab opening sizes.

Sulphate resistant cement (C20-DC2) and precast concrete products must be used or a laboratory report provided proving that such precautions are not necessary.
The adoptable sewers shall be a min 1.0m and manholes 0.5m from the kerb and service margins.

Sewers must have 5 metres clearance from trees and hedges (please also refer to Figure 2.3 on page 33 in 'Sewers for Adoption' 6th Edition for restrictions on tree planting adjacent to sewers).

Sewers to be laid in class S bedding (150mm granular bed and surround. Where depth of cover is less than 1.2m in highways and verges (or less than 900mm in non vehicle access areas) then a concrete slab should be provided above the granular bed and surround.

Bedding and backfill material to conform with the Water Industry specification 4-08-02 (table A2)
Lifting eyes to be painted

GEN3 CONCRETE USED THROUGHOUT

- F. Adjustments to planning layout, full drainage redesign, floor levels adjusted to redesigned road vertical alignment 3-2-22
- E. Plots 17, 18, 19 and SW drain diversion revised 2-11-21
- D. Layout revised to accommodate SW basin, drainage adjusted 19-10-21
- C. SW discharge rate revised 2-4-19
- B. SW discharge rate reduced 1-4-19
- A. Revised following layout changes 21-3-19

R.A.B. ENGINEERING DESIGN LTD
12 BERRY HOLME CLOSE
SHEFFIELD S35 1AB
TEL.(0114)2464871

Redmile Homes

Goldthorpe Road, Goldthorpe
Engineering layout and
drainage strategy

DRAWN BY rab

SCALE 1:500

DRAWING No 1117-1

DATE Mar18

REV E

PRELIMINARY ONLY

APPENDIX 8

SUDS Type	SUDS Technique	Description	Suitable	Comments
Source Control	Green roof	Vegetated roof that reduces runoff volume and rate	No	Expected planning requirement for traditional pitched roofs to match neighbouring housing.
	Rainwater harvesting/rainwater butts	Rainwater is stored and re-used	No	Individual storage tank capacity unlikely to meet volume required. Individual water butts can be used for garden watering.
	Permeable paving	Paving which allows inflow of rainwater into underlying construction/soil	Possible	May be suitable for private drives. Private permeable paving areas could provide limited infiltration within the underlying construction material.
Infiltration	Soakaway	Pit or trench which stores and disposes of water to the ground	No	Slow infiltration rates caused by impermeable ground.
	Filter Drain	Trench which conveys and/or disposes of water to the ground.	No	
	Infiltration Basin	Shallow basin which stores and disposes of water to the ground	No	
Conveyance	Swale	Shallow vegetated depression which conducts and retains water	No	Difficulties of adoption.
Detention	Subsurface storage	Traditional underground pipes, tank storage, or modular systems	Yes	Suitable but a basin will be provided.
	Detention Basin	Normally dry but may have small permanent water pools at the inlet and outlet. They can function as POS	Yes	Basin to be provided in the open space in the south of the site.
	Pond	Permanent body of water	No	
	Wetland	Permanent body of shallow water or marsh	No	