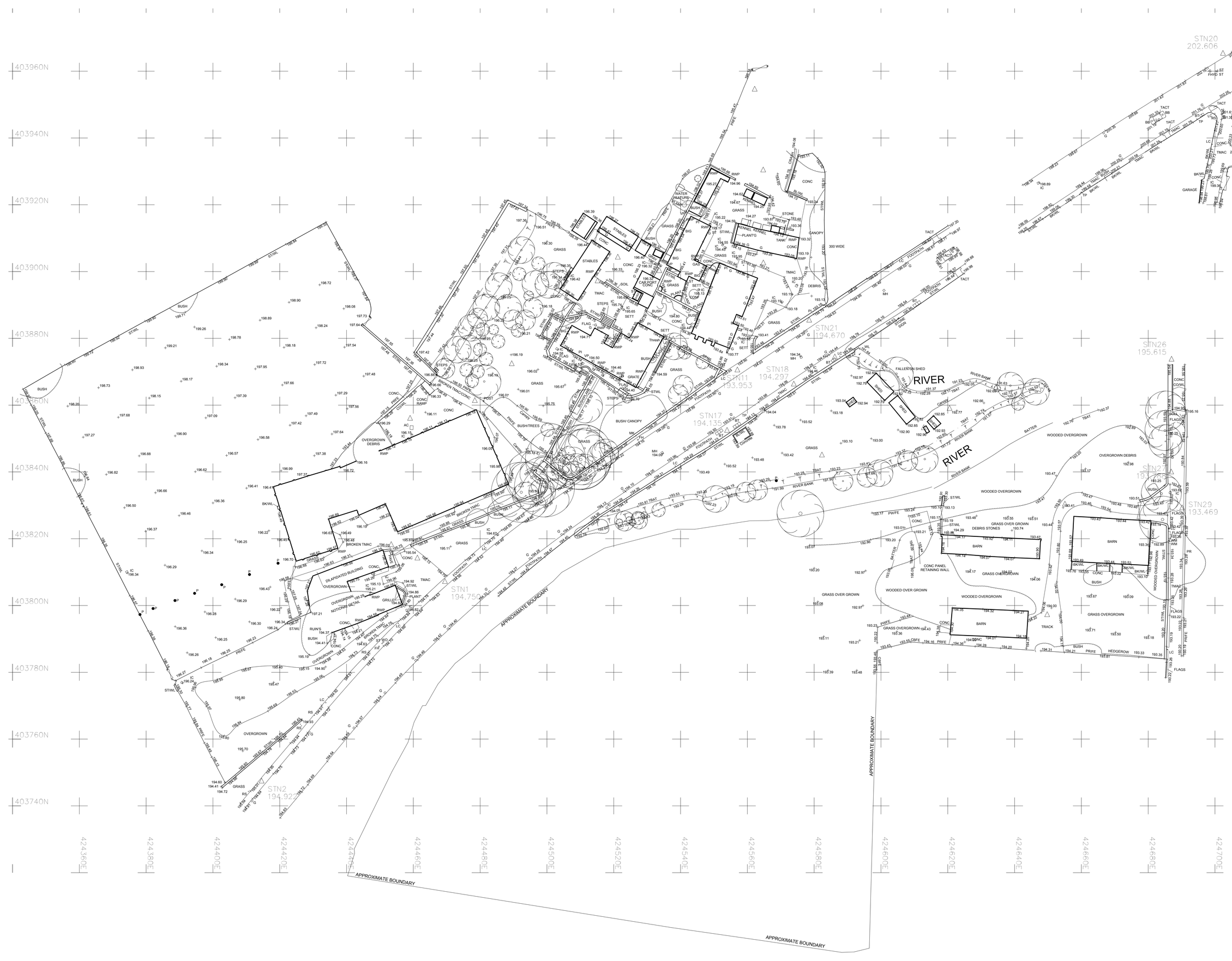


DO NOT SCALE
All dimensions in Millimetres unless specified otherwise and subject to verification on site

PROPOSED RESIDENTIAL DEVELOPMENT
NETHER MILL FARM
PENISTONE
SOUTH YORKSHIRE

PLANNING

TOPOGRAPHICAL SURVEY

CHRIS CARR
ARCHITECTS

Orchard Farm, Goathland,
Whitby, YO22 5JX
Tel: (01947) 896051 Fax: (01947) 896001
email: chris@cca-arch.co.uk

Scale. 1:500 AT A1 Drawn.

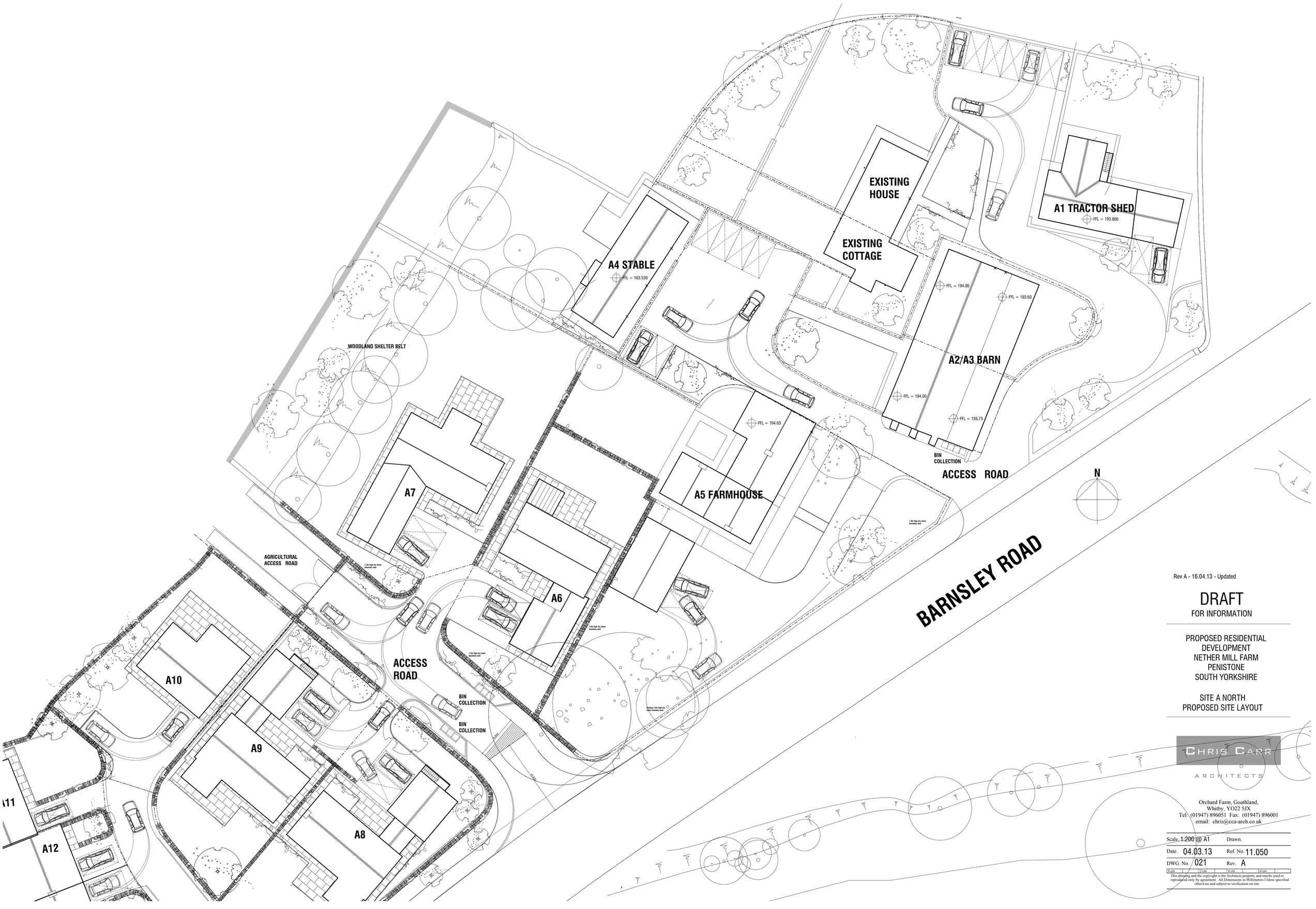
Date. 28.06.12 Ref. No. 11.050

DWG. No. 001 Rev.

0 cm | 2 cm | 4 cm | 6 cm

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APPENDIX B
Development Proposals



Rev A - 16.04.13 - Updated

DRAFT

FOR INFORMATION

PROPOSED RESIDENTIAL
DEVELOPMENT
NETHER MILL FARM
PENISTONE
SOUTH YORKSHIRE

SITE A NORTH
PROPOSED SITE LAYOUT

CHRIS CARR
ARCHITECTS

Orchard Farm, Goathland,
Whitby, YO22 5JX
Tel: (01947) 896051 Fax: (01947) 896001
email: chris@cca-arch.co.uk

Scale. 1:200 @ A1	Drawn.
Date. 04.03.13	Ref. No. 11.050
DWG. No. 021	Rev. A

0 cm | 2 cm | 4 cm | 6 cm

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Rev A - 16.04.13 - Updated

DRAFT

FOR INFORMATION

PROPOSED RESIDENTIAL
DEVELOPMENT
NETHER MILL FARM
PENISTONE
SOUTH YORKSHIRE

SITE A SOUTH
PROPOSED SITE LAYOUT

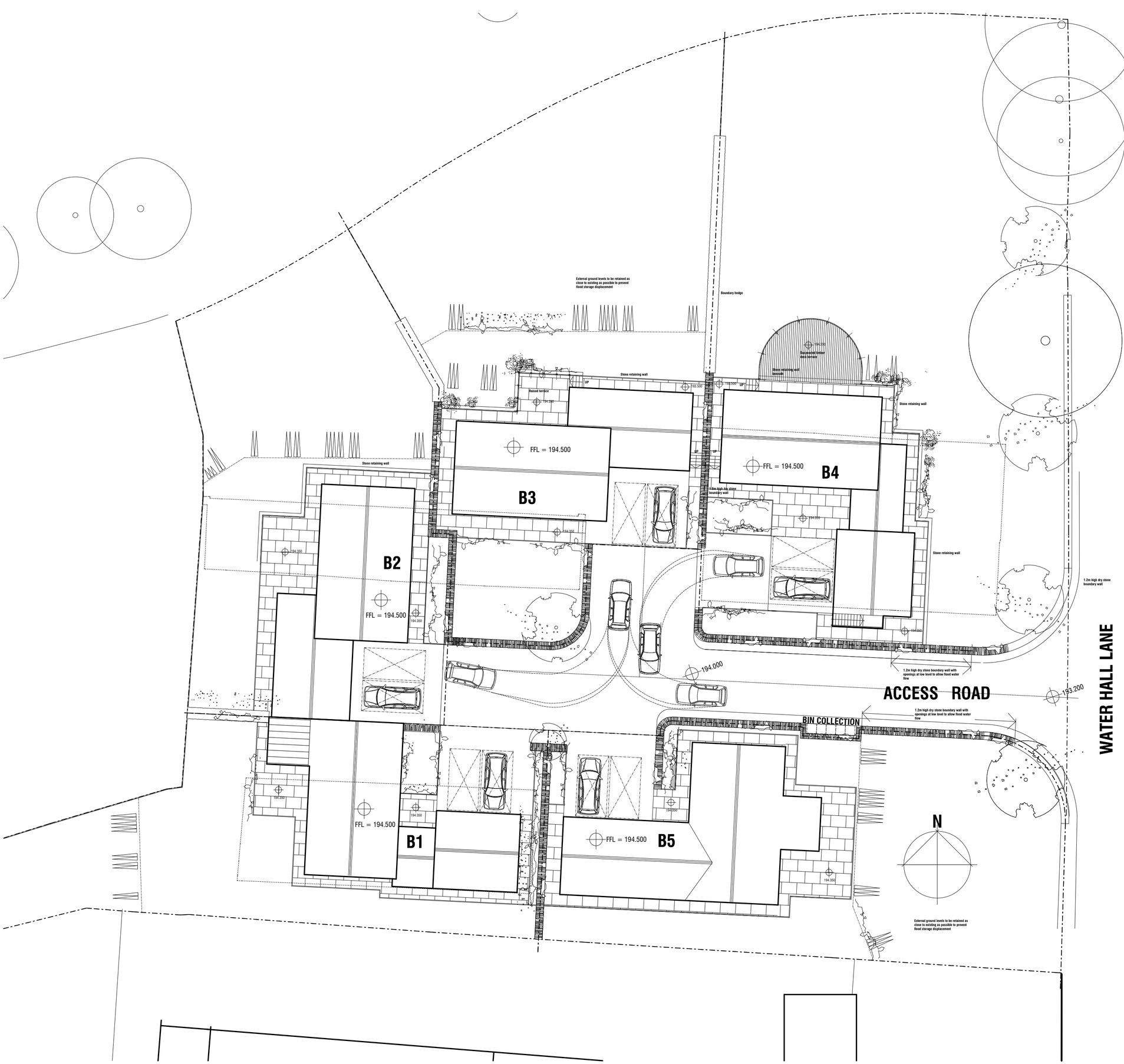
CHRIS CARR
ARCHITECTS

Orchard Farm, Goathland,
Whitby, YO22 5JX
Tel: (01947) 896051 Fax: (01947) 896001
email: chris@cca-arch.co.uk

Scale. 1:200 @ A1	Drawn.
Date. 07.03.13	Ref. No. 11.050
DWG. No. 022	Rev. A

0 cm | 2 cm | 4 cm | 16 cm

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Rev A - 16.04.13 - Updated

DRAFT

FOR INFORMATION

PROPOSED RESIDENTIAL
DEVELOPMENT
WATER HALL LANE
PENISTONE
SOUTH YORKSHIRE

SITE B
PROPOSED SITE LAYOUT

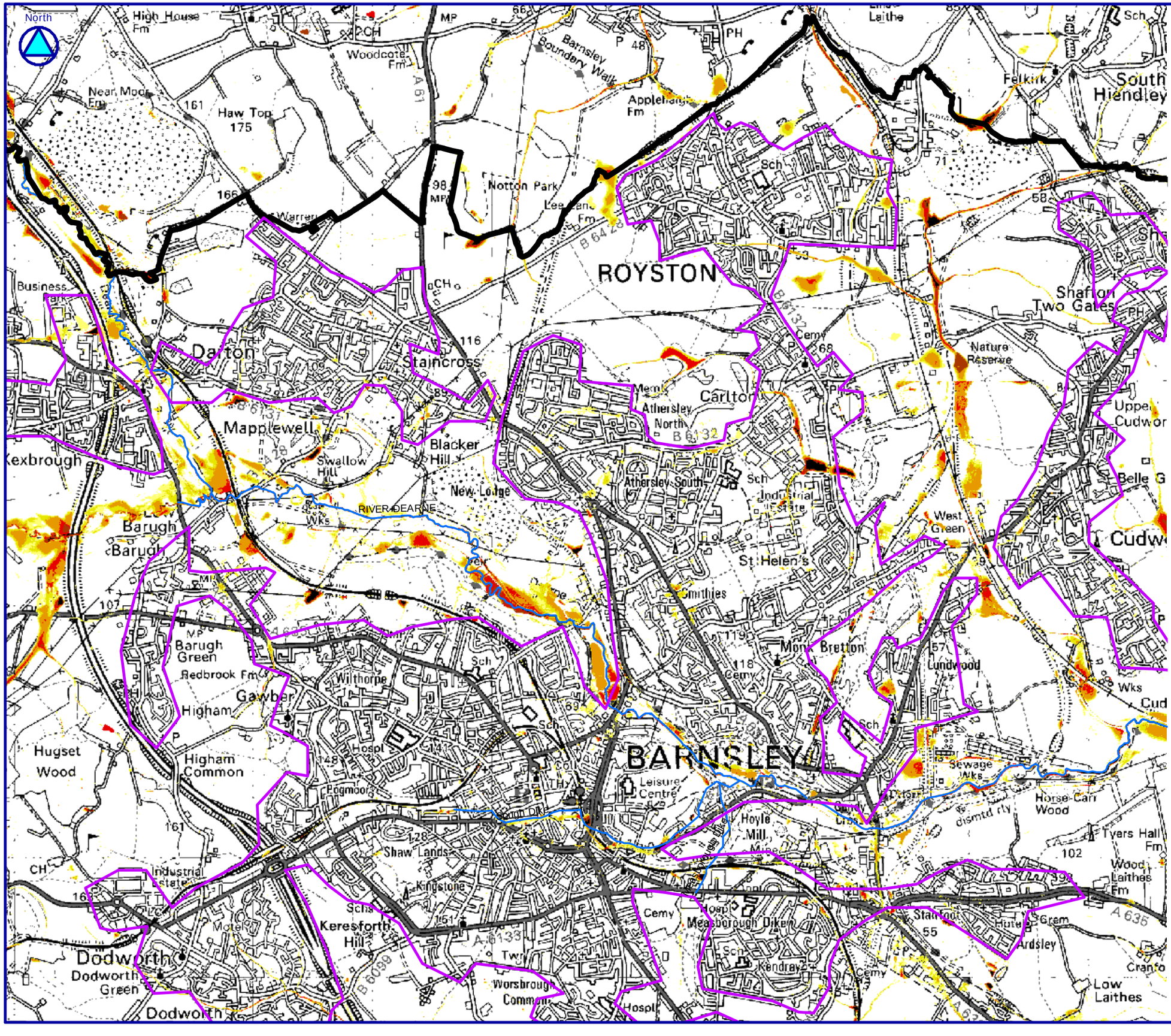
CHRIS CARR
ARCHITECTS

Orchard Farm, Goathland,
Whitby, YO22 5JX
Tel: (01947) 896051 Fax: (01947) 896001
email: chris@cca-arch.co.uk

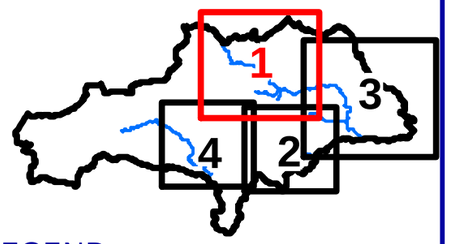
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DWG. No.	023	Rev.	A

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APPENDIX C
PFRA & SFRA Maps



KEYPLAN



LEGEND 1:30,809

- 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.

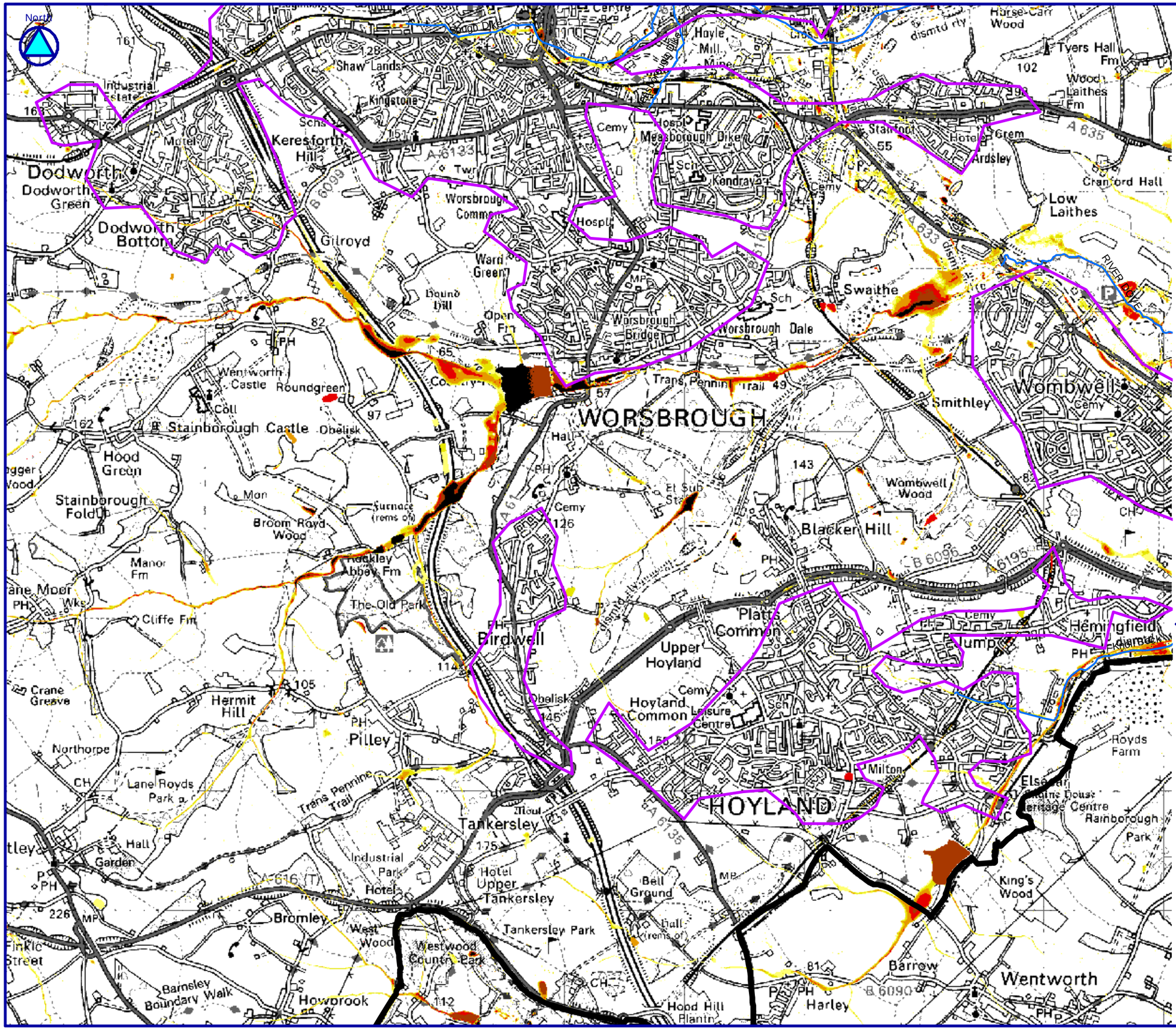
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jba CONSULTING

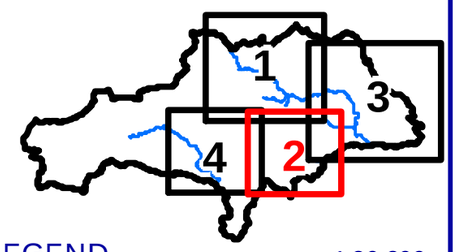


MAP C - 1

PLUVIAL FLOODING CAUSED BY 100YEAR RAINSTORM



KEYPLAN



LEGEND

1:30,809

- 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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jba CONSULTING

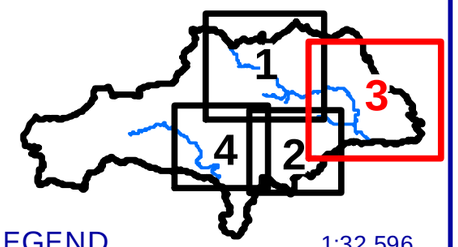


MAP C - 2

PLUVIAL FLOODING CAUSED BY 100YEAR RAINSTORM

North

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.

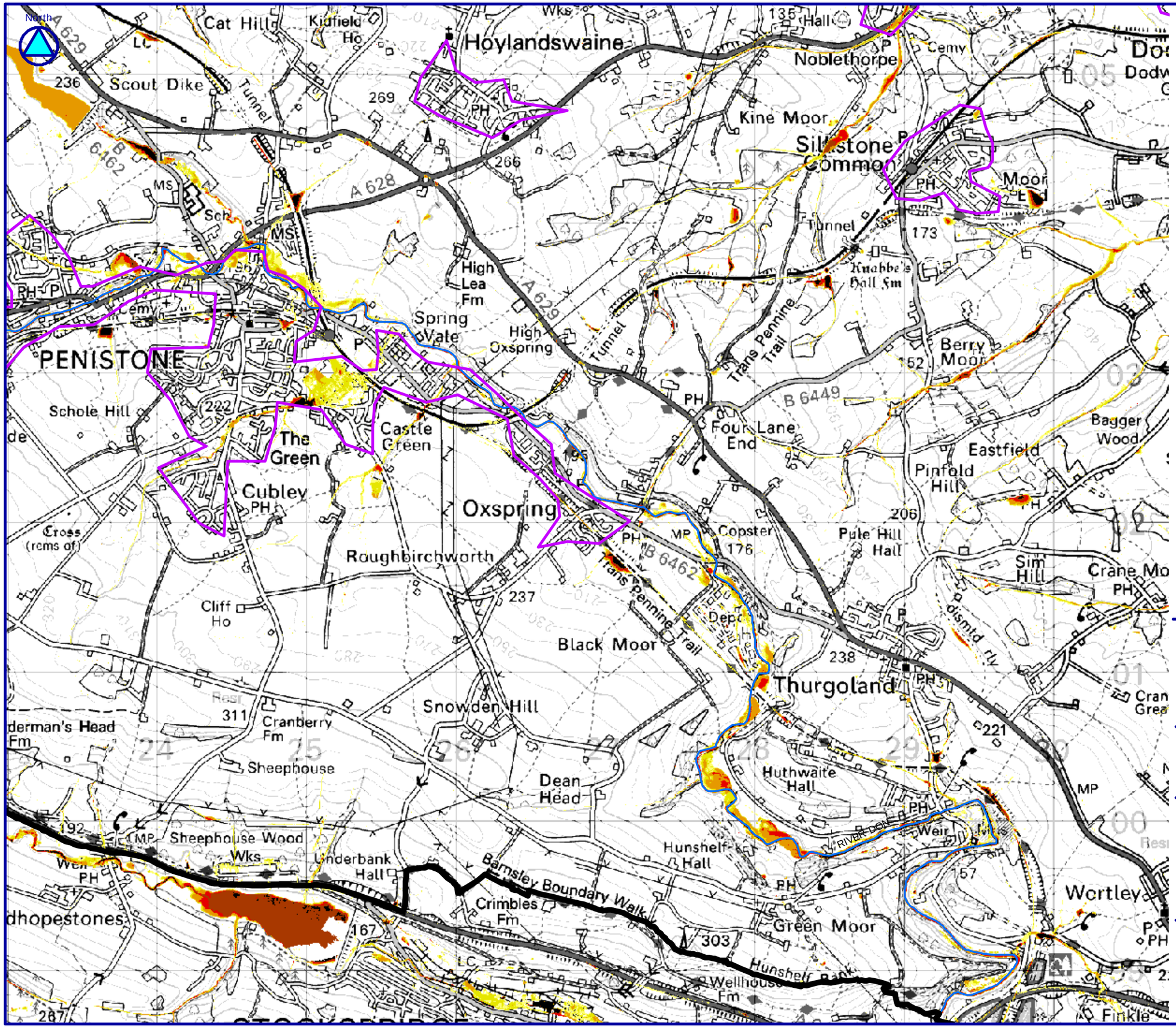
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jba CONSULTING

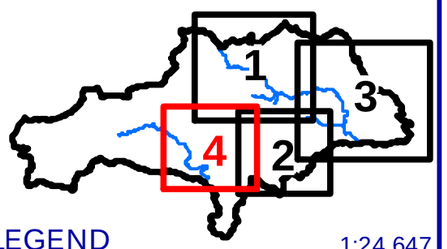


MAP C - 3

PLUVIAL FLOODING CAUSED BY 100YEAR RAINSTORM



KEYPLAN



LEGEND

1:24,647

- 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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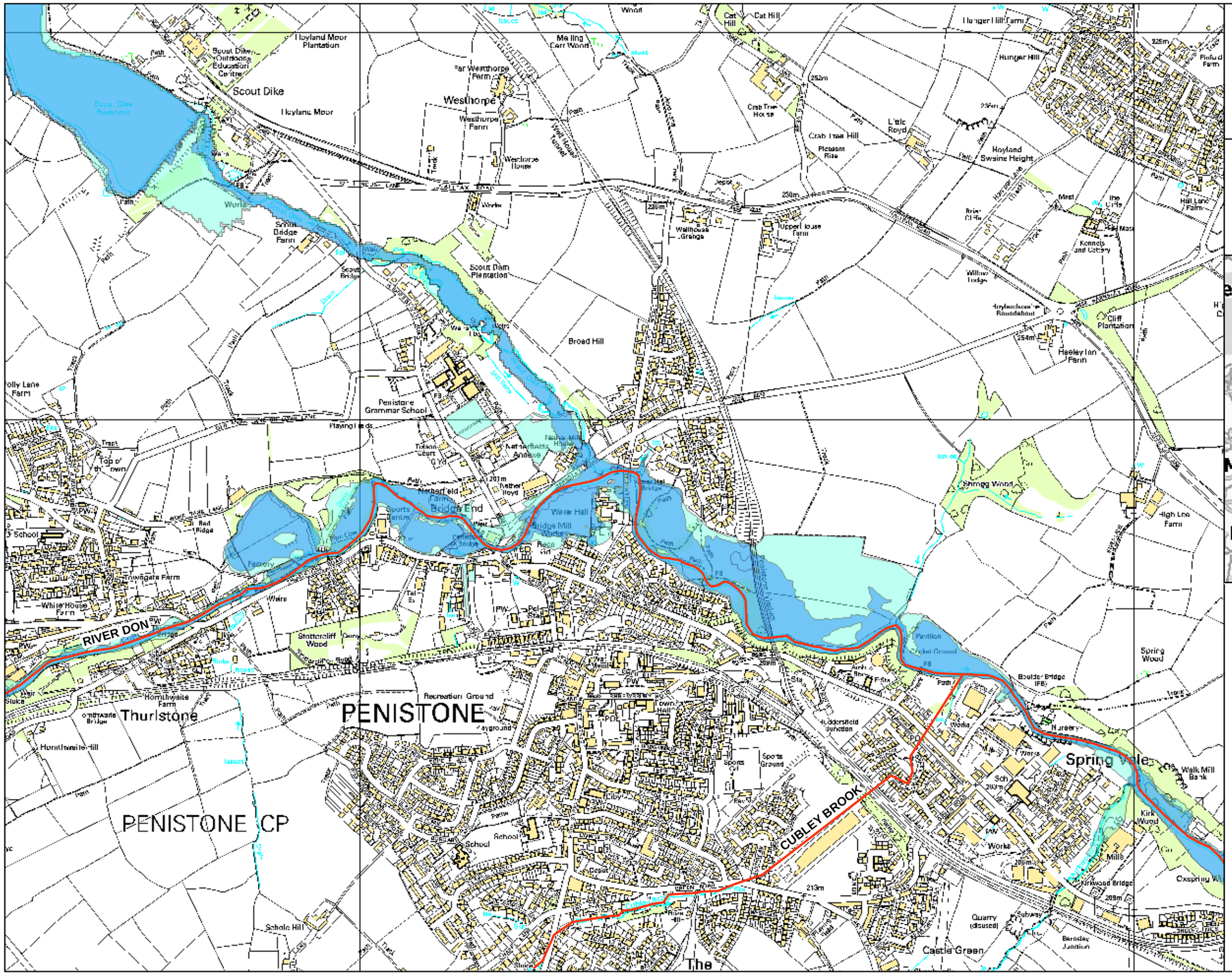
jba CONSULTING

MAP C - 4

PLUVIAL FLOODING CAUSED BY 100YEAR RAINSTORM

APPENDIX D
Environment Agency Data

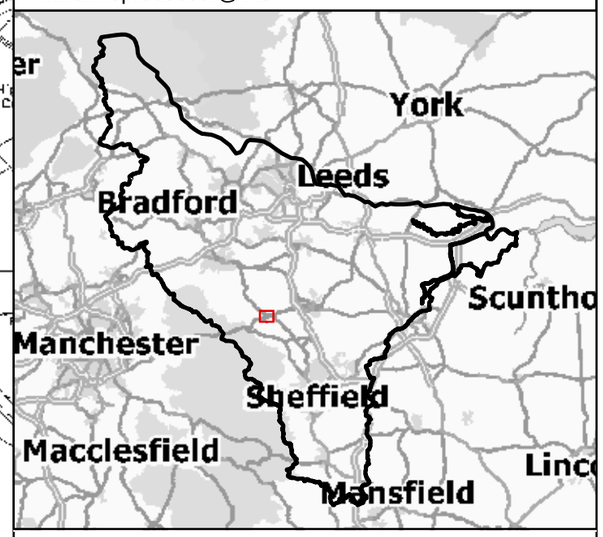
Flood Map centred at 424659 403823- Date Created: 08/05/2012 [Ref: 22023]



www.environment-agency.gov.uk

Scale: 1:10,000

when reproduced @ A3



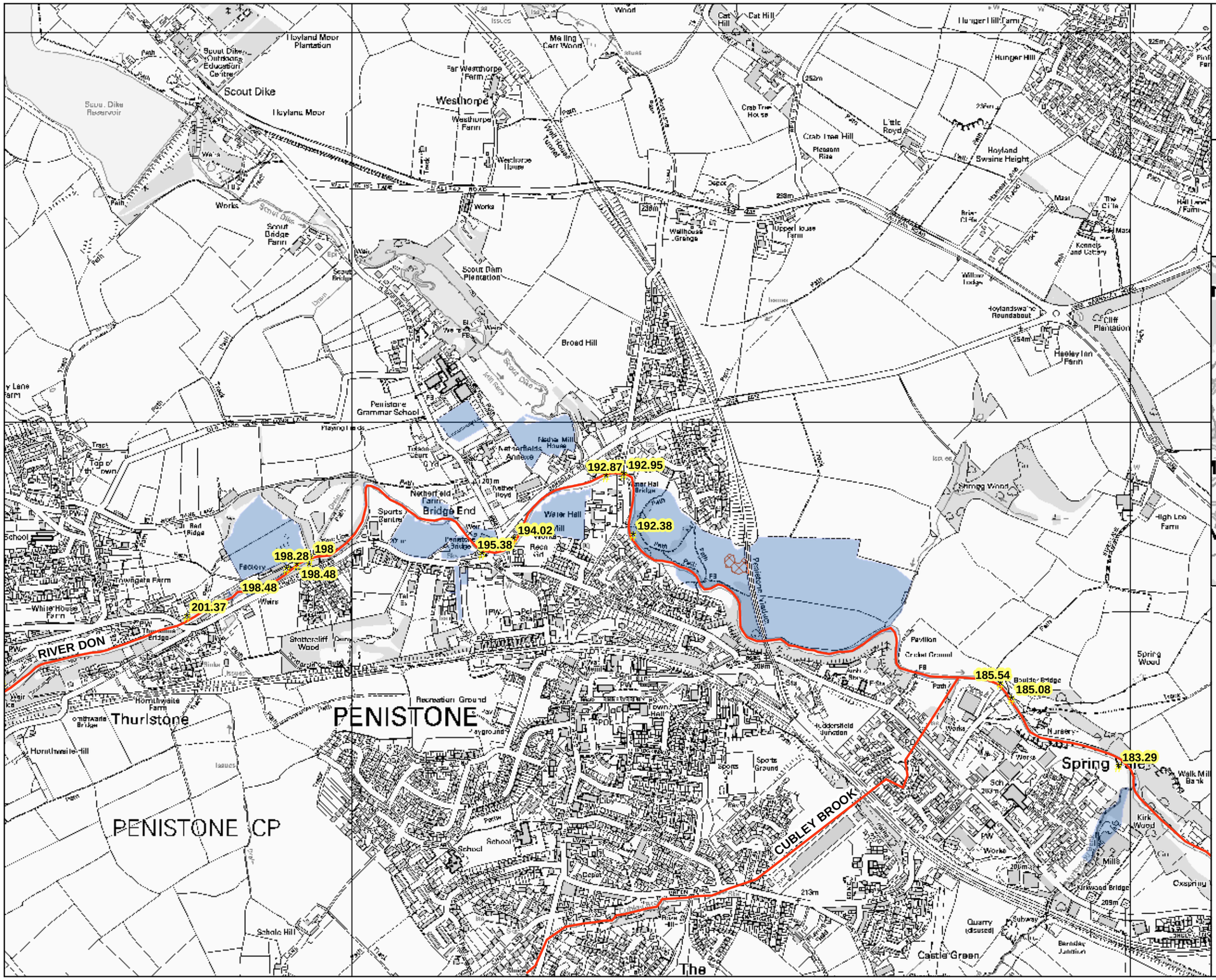
LEGEND

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

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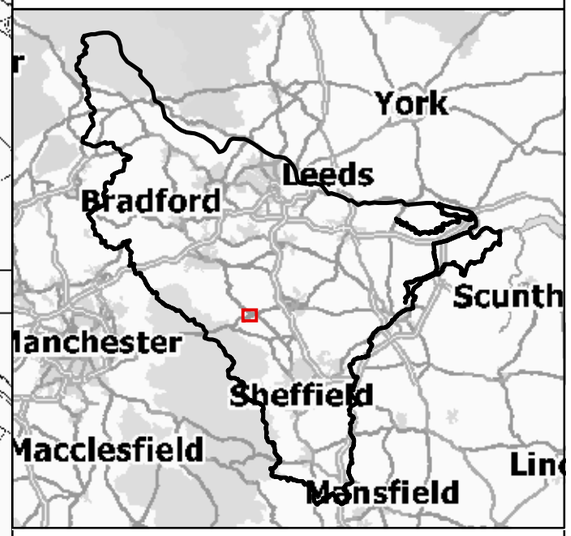
Flood History Map centred at 424659 403823 - dated:10/05/2012 [Ref: 22023]



www.environment-agency.gov.uk

Scale: 1:10,000

when reproduced @ A3



Flood Extents

Legend

- Main River
- Autumn 2000 Flood Event Flood Level (m)
- Autumn 2000 Flood Event Flood Extent
- 2007 Flood Events Flood Extent

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Layer: **Flood Event Outline By Date**

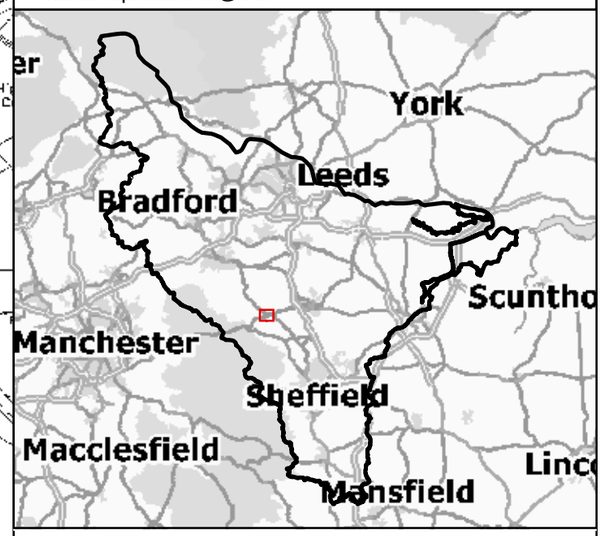
Flood Event Group Code	Outline Code	Name	Comments	Start Date	End Date	Estimated Return Period	Source Of Boundary	Source Of Flooding	Cause Of Flooding	Fluvial	Tidal	Coastal	No. Residential Properties Flooded	No. Comm Prope Flood
12311	32	2007 River Don Penistone		15/06/2007	30/06/2007		Local Authority	main river	channel capacity exceeded (no raised defences)	1	0	0		

Asset Location Map centred at 424659 403823- Date Created: 08/05/2012[Ref: 22023]

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Scale: 1:10,000

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LEGEND

- Asset
- Main River

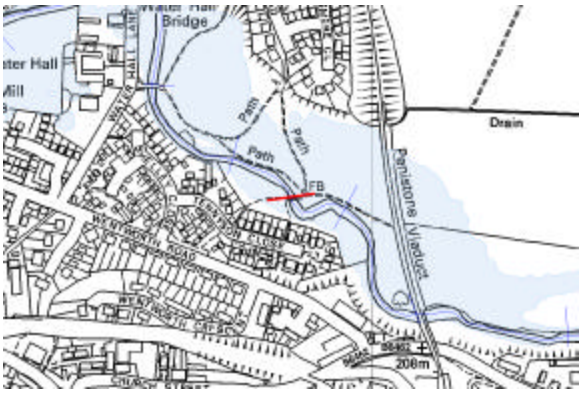
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AssetReference	AssetType	AssetDescription	AssetLocation	Bank	Maintainer	Design Standard	Overall Condition	Actual Upstream Crest Level	Actual Downstream Crest Level
1231302521801R01	maintained channel	Open Channel	Bullhouse Lane -Thurgoland to Bower Hill Penistone	right	private	No Data	2	No Data	No Data
1231302521801L01	maintained channel	Open Channel and High Ground	Penistone Road Bridge to Bower Hill /Oxspring Road Bridge	left	private	No Data	2	No Data	No Data
1231302521801L03	maintained channel	Open Channel and high ground	Bullhouse Br - Manchester Rd to Penistone Rd Bridge	left	private	No Data	2	No Data	No Data
1231302521801L02	maintained channel	MASONRY WALL WITH CONCRETE CAP	u/s of and PENISTONE BRIDGE	left	private	No Data	2	195.63	195.63
1231302521801B01	non-flood defence structure	WEIR	PENISTONE BRIDGE. NORTH OF PENISTONE	both	private	No Data	3	No Data	No Data

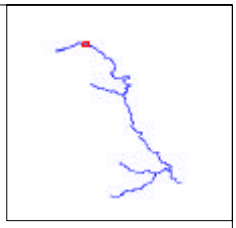
Environment Agency - North East Region
Upper Don Flood Warning Improvements
ISIS Hydraulic Model Summary Sheet

Location Plan



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Cross Section References



River: RIVER DON

Reach: REACH 18

Chainage: 27269

Section Type: BRIDGE, SECTION, SPILL

OS NGR: SE 24894 03589

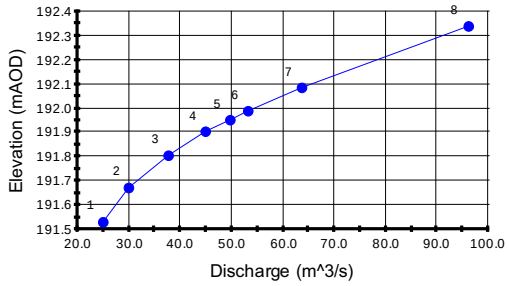
Survey Dwg Ref: N/A

Photograph Ref: DON18_27269us.JPG

Next
Section d/s: 27269d
Section u/s: 27363



Rating Curve



Number represents model profile number

Summary of Results

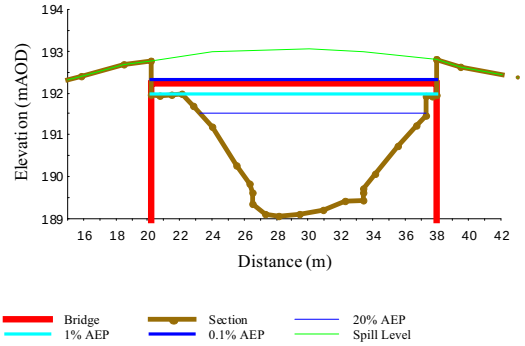
Profile No	AEP (%)	Flow (m^3/s)	Water Level (mAOD)	Velocity (m/s)
1	20.0	25.0	191.531	1.08
2	10.0	30.0	191.674	1.08
3	4.0	37.7	191.806	1.08
4	2.0	44.9	191.905	1.08
5	1.3	49.7	191.953	1.08
6	1.0	53.2	191.989	1.08
7	0.5	63.6	192.085	1.08
8	0.1	96.0	192.338	1.08

Level of Left Bank 191.989 mAOD

Level of Right Bank 191.938 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



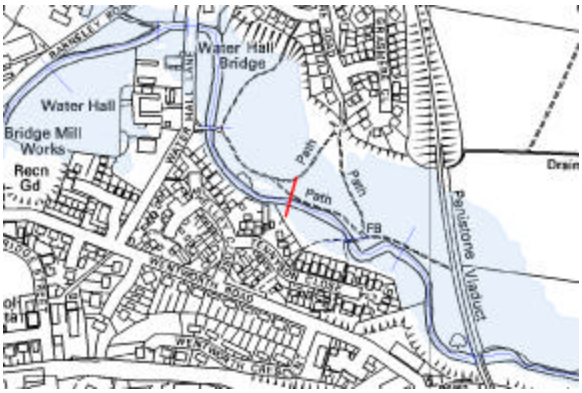
RIVER DON: REACH 18: CROSS SECTION NUMBER 27269u

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Print Date: 16/03/2007

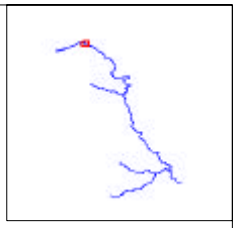
Environment Agency - North East Region
Upper Don Flood Warning Improvements
ISIS Hydraulic Model Summary Sheet

Location Plan



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Cross Section References



River: RIVER DON

Reach: REACH 18

Chainage: 27363

Section Type: SECTION

OS NGR: SE 24819 03643

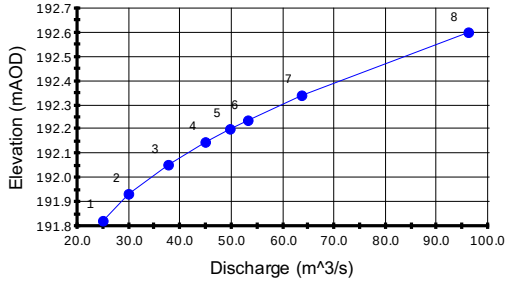
Survey Dwg Ref: N/A

Photograph Ref: DON18_27363.JPG

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Section d/s: 27269u
Section u/s: 27521d



Rating Curve



Number represents model profile number

Summary of Results

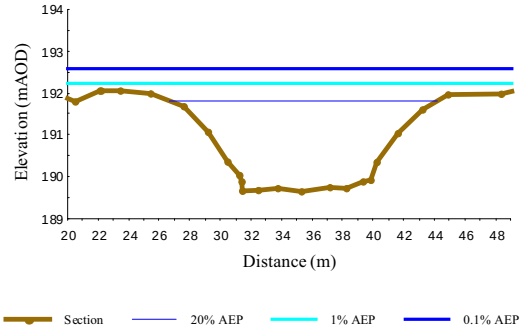
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2	10.0	30.0	191.936	1.04
3	4.0	37.7	192.055	1.04
4	2.0	44.9	192.149	1.04
5	1.3	49.7	192.202	1.04
6	1.0	53.2	192.238	1.04
7	0.5	63.6	192.341	1.04
8	0.1	96.0	192.600	1.04

Level of Left Bank 191.998 mAOD

Level of Right Bank 191.975 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



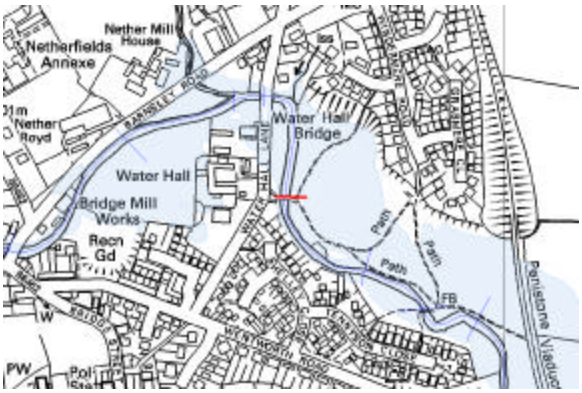
RIVER DON: REACH 18: CROSS SECTION NUMBER 27363

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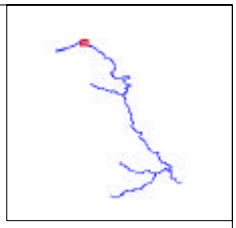
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ISIS Hydraulic Model Summary Sheet

Location Plan



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Cross Section References



River: RIVER DON

Reach: REACH 18

Chainage: 27521

Section Type: BRIDGE, SECTION, SPILL

OS NGR: SE 24721 03734

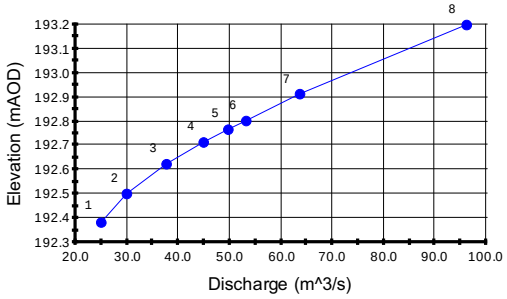
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Section u/s: 27678d



Rating Curve



Number represents model profile number

Summary of Results

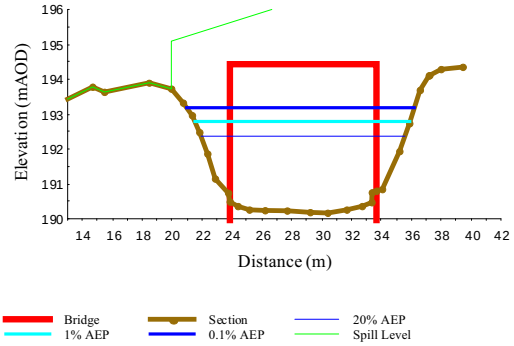
Profile No	AEP (%)	Flow (m^3/s)	Water Level (mAOD)	Velocity (m/s)
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2	10.0	30.0	192.502	1.03
3	4.0	37.8	192.625	1.03
4	2.0	44.9	192.714	1.03
5	1.3	49.7	192.767	1.03
6	1.0	53.2	192.803	1.03
7	0.5	63.6	192.913	1.03
8	0.1	96.0	193.197	1.03

Level of Left Bank 193.909 mAOD

Level of Right Bank 194.293 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



RIVER DON: REACH 18: CROSS SECTION NUMBER 27521u

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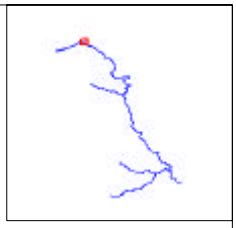
Environment Agency - North East Region
Upper Don Flood Warning Improvements
ISIS Hydraulic Model Summary Sheet

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Cross Section References



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Reach: REACH 18

Chainage: 27678

Section Type: BRIDGE, SECTION, SPILL

OS NGR: SE 24686 03864

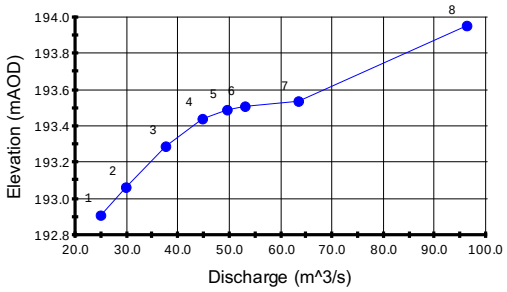
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Photograph Ref: DON18_27678.JPG

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Section u/s: 27718d



Rating Curve



Number represents model profile number

Summary of Results

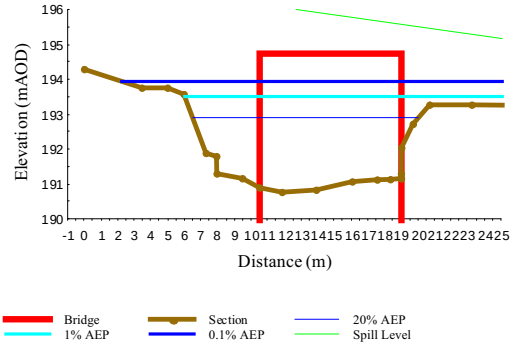
Profile No	AEP (%)	Flow (m^3/s)	Water Level (mAOD)	Velocity (m/s)
1	20.0	24.9	192.912	1.12
2	10.0	29.9	193.067	1.17
3	4.0	37.6	193.292	1.17
4	2.0	44.7	193.442	1.17
5	1.3	49.5	193.492	1.17
6	1.0	53.0	193.511	1.18
7	0.5	63.4	193.538	1.18
8	0.1	96.0	193.952	1.20

Level of Left Bank 193.764 mAOD

Level of Right Bank 193.282 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



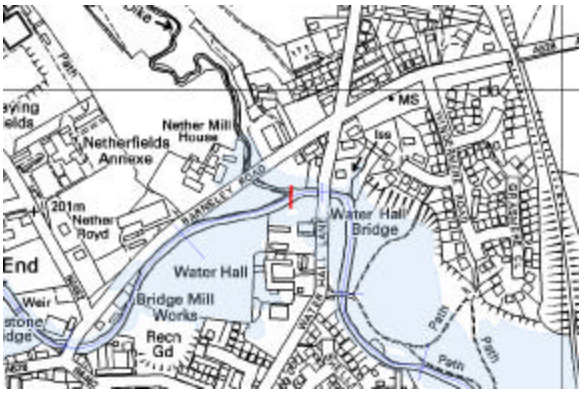
RIVER DON: REACH 18: CROSS SECTION NUMBER 27678u

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Environment Agency - North East Region
Upper Don Flood Warning Improvements
ISIS Hydraulic Model Summary Sheet

Location Plan



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Cross Section References



River: RIVER DON

Reach: REACH 18

Chainage: 27718

Section Type: SECTION

OS NGR: SE 24646 03860

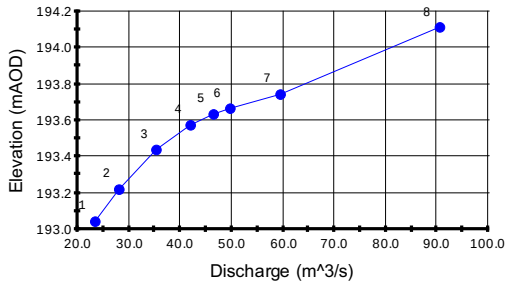
Survey Dwg Ref: N/A

Photograph Ref: N/A

Next
Section d/s: 27718d
Section u/s: 27870

No Photograph Available

Rating Curve



Number represents model profile number

Summary of Results

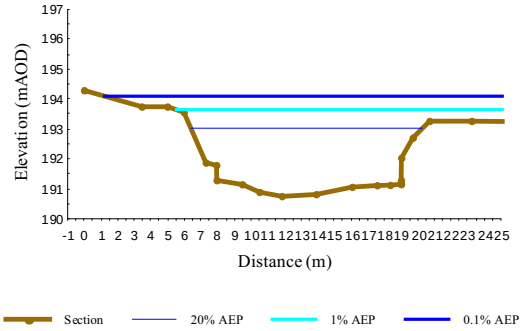
Profile No	AEP (%)	Flow (m^3/s)	Water Level (mAOD)	Velocity (m/s)
1	20.0	23.5	193.046	0.96
2	10.0	28.1	193.223	0.96
3	4.0	35.4	193.440	0.96
4	2.0	42.0	193.576	0.96
5	1.3	46.5	193.635	0.96
6	1.0	49.7	193.666	0.96
7	0.5	59.4	193.743	0.96
8	0.1	90.4	194.112	0.97

Level of Left Bank 193.764 mAOD

Level of Right Bank 193.282 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



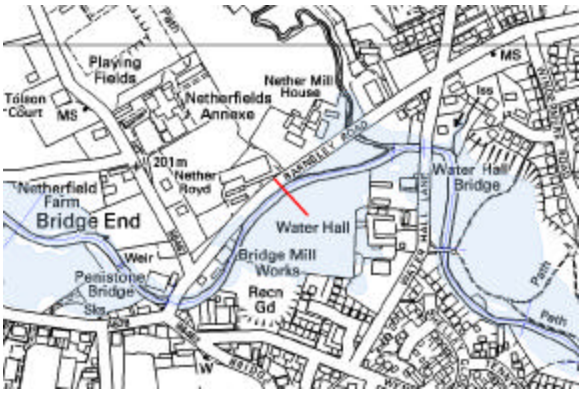
RIVER DON: REACH 18: CROSS SECTION NUMBER 27718u

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Print Date: 16/03/2007

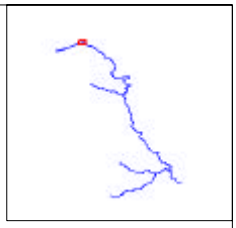
Environment Agency - North East Region
Upper Don Flood Warning Improvements
ISIS Hydraulic Model Summary Sheet

Location Plan



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Cross Section References



River: RIVER DON

Reach: REACH 18

Chainage: 27870

Section Type: SECTION

OS NGR: SE 24514 03802

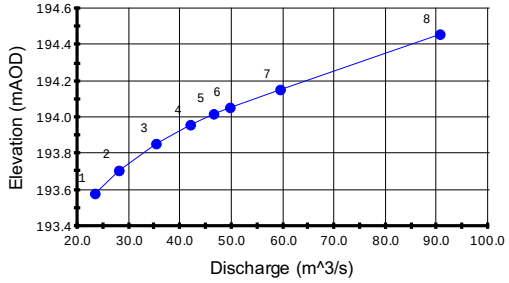
Survey Dwg Ref: N/A

Photograph Ref: DON18_27870.JPG

Next
Section d/s: 27718u
Section u/s: 28100d



Rating Curve



Number represents model profile number

Summary of Results

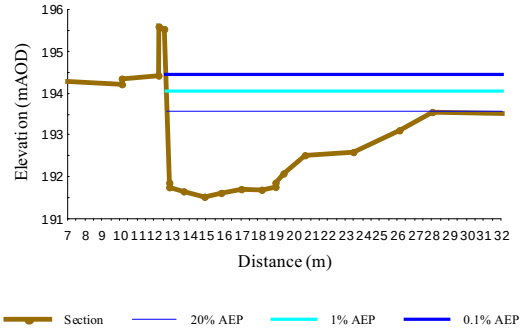
Profile No	AEP (%)	Flow (m^3/s)	Water Level (mAOD)	Velocity (m/s)
1	20.0	23.5	193.582	1.32
2	10.0	28.1	193.709	1.32
3	4.0	35.4	193.856	1.32
4	2.0	42.0	193.959	1.32
5	1.3	46.5	194.019	1.32
6	1.0	49.7	194.054	1.32
7	0.5	59.4	194.152	1.32
8	0.1	90.4	194.457	1.32

Level of Left Bank 195.528 mAOD

Level of Right Bank 193.557 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



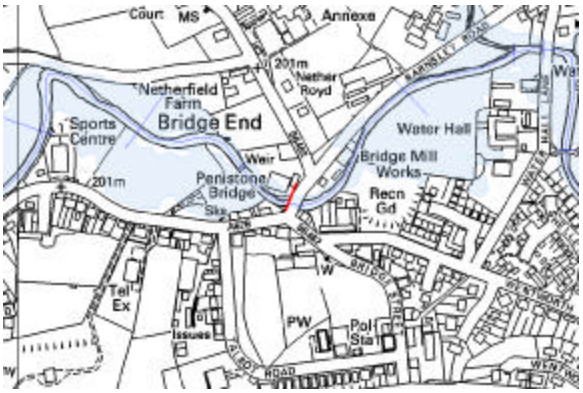
RIVER DON: REACH 18: CROSS SECTION NUMBER 27870

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Print Date: 16/03/2007

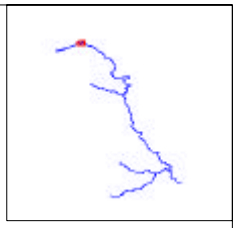
Environment Agency - North East Region
Upper Don Flood Warning Improvements
ISIS Hydraulic Model Summary Sheet

Location Plan



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Cross Section References



River: RIVER DON

Reach: REACH 18

Chainage: 28100

Section Type: BRIDGE, SECTION, SPILL

OS NGR: SE 24356 03673

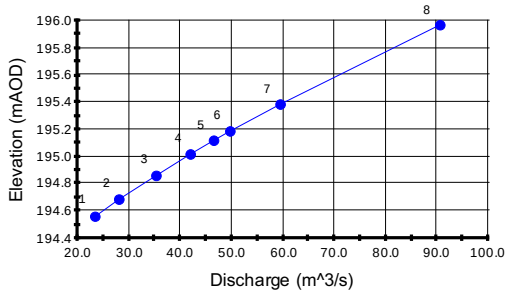
Survey Dwg Ref: N/A

Photograph Ref: DON18_28100us.JPG

Next
Section d/s: 28100d
Section u/s: 28180d



Rating Curve



Number represents model profile number

Summary of Results

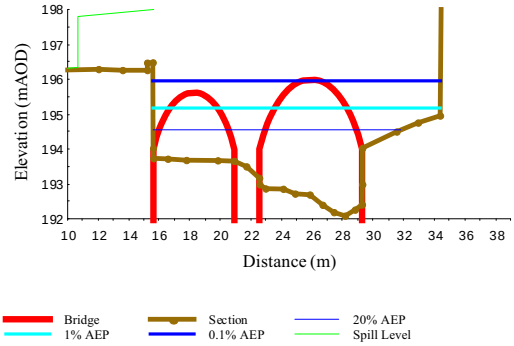
Profile No	AEP (%)	Flow (m^3/s)	Water Level (mAOD)	Velocity (m/s)
1	20.0	23.5	194.564	1.16
2	10.0	28.1	194.690	1.26
3	4.0	35.4	194.862	1.40
4	2.0	42.0	195.019	1.49
5	1.3	46.5	195.121	1.54
6	1.0	49.7	195.188	1.58
7	0.5	59.4	195.384	1.69
8	0.1	90.4	195.966	1.84

Level of Left Bank 196.485 mAOD

Level of Right Bank 198.765 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile

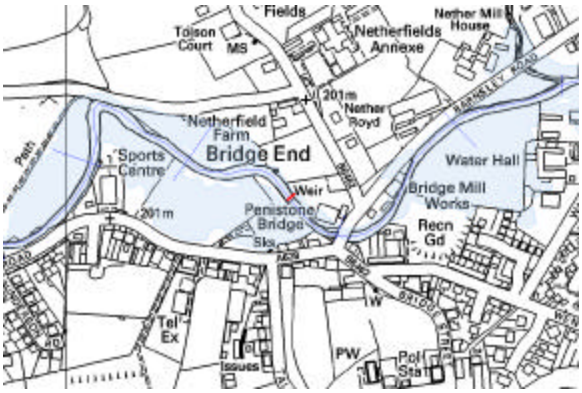


RIVER DON: REACH 18: CROSS SECTION NUMBER 28100u

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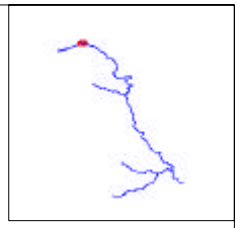
Print Date: 16/03/2007

Location Plan



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Cross Section References



River: RIVER DON

Reach: REACH 18

Chainage: 28180

Section Type: SECTION, SPILL

OS NGR: SE 24293 03714

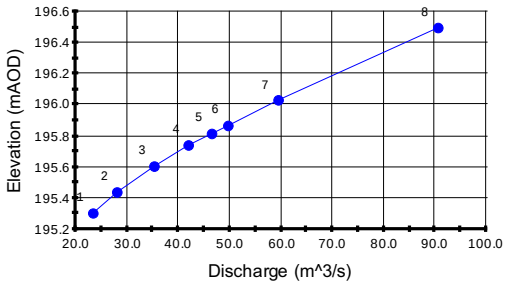
Survey Dwg Ref: N/A

Photograph Ref: DON18_28180us.JPG

Next
Section d/s: 28180d
Section u/s: 28338



Rating Curve



Number represents model profile number

Summary of Results

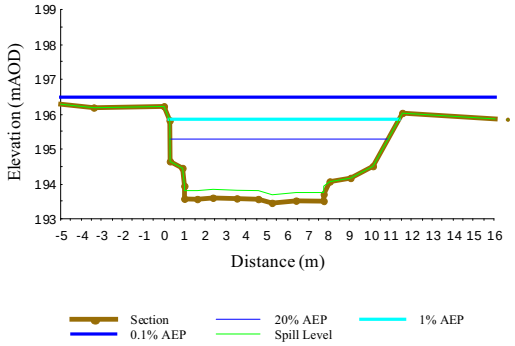
Profile No	AEP (%)	Flow (m^3/s)	Water Level (mAOD)	Velocity (m/s)
1	20.0	23.5	195.306	1.56
2	10.0	28.1	195.441	1.58
3	4.0	35.4	195.608	1.57
4	2.0	42.0	195.742	1.58
5	1.3	46.5	195.816	1.58
6	1.0	49.7	195.867	1.57
7	0.5	59.4	196.030	1.57
8	0.1	90.4	196.493	1.58

Level of Left Bank 196.235 mAOD

Level of Right Bank 196.045 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



RIVER DON: REACH 18: CROSS SECTION NUMBER 28180u

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APPENDIX E
Yorkshire Water
Asset Records

YORKSHIRE WATER

PROTECTION OF MAINS AND SERVICES

1. The position of Yorkshire Water Services Ltd (YWS) apparatus shown on the existing mains record drawing(s) indicates the ***general*** position and nature of our apparatus and the accuracy of this information cannot be guaranteed. Any damage to YWS apparatus as a result of your works may have serious consequences and you will be held responsible for all costs incurred. Prior to commencing major works, the exact location of apparatus must be determined on site, if necessary by excavating trial holes. The actual position of such apparatus and that of service pipes which have not been indicated must be established on site by contacting the Customer Helpline (0845 124 24 24) for water and (0845 124 24 29) for sewerage.

2. The public sewer network is lawfully retained in its existing position and the sewerage undertaker is entitled to have it remain so without any disturbance. The provisions of section 159 of the Water Industry Act 1991 provides that the sewerage undertaker may "inspect, maintain, adjust, repair or alter" the network. Those rights are given to enable the sewerage undertaker to perform its statutory duties. Any development of the land or any other action that unacceptably hindered the exercise of those rights would be unlawful.

3. Ground levels over existing YWS apparatus are to be maintained. Sewers in highways will ***generally*** be laid to give 1200mm of cover from finished ground level working to kerb races, other permanent identification of the limits of the road or to an agreed line and level. Substantial increases or decreases to this 1200mm depth of cover will result in the sewer being re-laid at your expense.

4. If surface levels are to be decreased / increased significantly the effects on existing water supply apparatus will be carefully considered and if any alterations are necessary, the costs of the alterations will be recharged to you in full. Outlets on fire hydrants must be no more than 300mm below the new levels and all surface boxes must be adjusted as part of the scheme.

5. To enable future repair works to be carried out without hindrance; any pipe, cable, duct, etc. installed parallel to a water main or service pipe should not be installed directly over or within 300mm of a water main or service pipe or 1000mm of a waste water asset. Where a pipe, cable, duct, etc. crosses a main or service it should preferably cross perpendicular or at an angle of no less than 45° and with a minimum clearance of 150mm. These requirements apply to activities within an existing highway and are relevant to the installation of pipes, cables, ducts, etc. up to and including 250mm in diameter. Necessary protection measures for installations greater than 250mm in diameter and/or in private land will need to be agreed on an individual basis. Installations within a new development site must comply with the National Joint Utilities Group publication Volume 2: NJUG Guidelines On The Positioning Of Underground Utilities Apparatus For New Development Sites.

6. All excavation works near to YW apparatus should be by hand digging only.

7. Backfilling with a suitable material to a minimum 300mm above YW apparatus is required.

8. Adequate support must be provided where any works pass under YW apparatus.

9. Jointing chambers, lighting columns and other structures must be installed in such a way that future repair or maintenance works to YW apparatus will not be hindered.

10. Apparatus such as; railings, sign posts, etc. must not be placed in such a way that they prevent access to or full operation of controlling valves, hydrants or similar apparatus. YWS surface boxes must not be covered or buried. Any adjustment, alteration or replacement of manhole covers must be agreed on site prior to the commencement of the works with a YWS Inspector who may be contacted via our Call Centre on 0845 124 24 29.

11. Explosives shall not be used within 100 metres of any Yorkshire Water Services apparatus or installations.

12. Vibrating plant should not be used directly over any apparatus. Movement or operation by vehicles or heavy plant is not to be permitted in the immediate vicinity of YWS plant or apparatus unless there has been prior consultation and, if necessary, adequate protection provided without cost to YWS.

13. ***Under no circumstances*** should thrust boring or similar trenchless techniques commence until the actual position of the Company's mains/services along the proposed route have been confirmed by trial holes.

14. Any alterations to the highway should be notified following the procedures outlined in the New Road and Street Works Act 1991 Code of Practice; Measures Necessary Where Apparatus Is Affected By Major Works (Diversionary Works).

15. You will be held responsible for any damage or loss to YWS apparatus during and after completion of work, caused by yourselves, your servant or agent. Any damage caused or observed to YWS plant or apparatus should be immediately reported to YWS. Should YW incur any costs as a result of non-compliance with the above, all costs will be rechargeable in full.

16. You should ensure that nothing is done on the site to prejudice the safety or operation of YWS employees, plant or apparatus.

17. In accordance with the New Roads and Street Works Act 1991, Chapter 22, Part 3, Section 80. The location of any identified YW asset "*which is not marked, or is wrongly marked, on the records made available* " should be communicated back to Yorkshire Water. The location of the apparatus should be identified on copies of the supplied plans which should be returned to Yorkshire Water (Asset Records Team) with photographic supporting evidence where possible.

18. The Government has decided that responsibility for private sewers serving two or more properties and lateral drains (the

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Western House, Halifax Road, Bradford BD6 2SZ. Registered in England and Wales No. 2366682

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section of pipe beyond the boundary of a single property, connecting it to the public sewer) will be transferred to the water companies on Oct 1 2011. Private pumping stations will also transfer during the period 1 October 2011 – 1 Oct 2016. Records of these assets may not yet be shown on the existing mains record drawing(s). If you encounter any of these assets you must inform Yorkshire Water Services Ltd (YWS).

19. Please note that the information supplied on the enclosed plans is reproduced from Ordnance Survey material with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office, © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number 1000019559.

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Sewer Legend


Combined Sewer


S24 Combined Sewer


Surface Water Sewer


S24 Surface Water Sewer


Foul Sewer


S24 Foul Sewer


Section 104 Sewer

Public Rising Main


Pumping Station


Abandoned Sewer



Public Sewage
Treatment Works


Syphon Sewer &
Vacuum Sewer

\+ Property Identifier

Water Legend

Water Main 4" and below

Water Main 4" and above

Raw Water Main

Private Water Main


Fire Hydrant


Pumping Station

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Nether Mill House
Bump Hall
FB
199.9m
Vale Cottage
Issues
Torside
The Gambit
Stone
Watersmeet
FB
Water Hall Bridge
201.2m
194.8m
BARNSLEY ROAD
River Don
Depot
Nether Royd
Sunnymede
196.9m
END
El Sub Sta
Bridge Mill Works
Path
WATER HALL LANE
Wordsworth Court
A 628
204.5
MS
LB
AIR SCOURED
ASSUMED COA
80ft OF PVC LAID IN DUCT
4ins AC SURVEYED AT THIS POINT SEP 11
100mm-Ductile Iron-1984
4ins-Cast Iron-1966
4ins-Asbestos cement-1978

Water Network features are not shown above a scale of 1:50,000

424336 : 403733	Map Name : SE2403NW	Title	Partial Key Water mains up to 4" in diameter Water mains over 4" in diameter Raw water mains Private water mains	The position and depths of apparatus shown on this plan are approximate only. The exact positions and depths should be obtained by excavation trial holes.
YorkshireWater Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : Ms H Webster Contact Tel :	Notes	(Ody) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2004. All rights reserved Ordnance Survey Licence number 100019559	Scale : 1:1250 Drg No : Maris No : Date Req : 26/10/2012, 11:35:39 Date Gen : 26/10/2012, 11:35:40 Source : Water Network Enquiry	

UPN: Undefined Originator: H Webster, Safe Move,

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Western House, Halifax Road, Bradford BD6 2SZ. Registered in England and Wales No. 2366682

safe-move
A part of YorkshireWater

Nether Mill House
FB
Bump Hall
199.9m
Vale Cottage
LB
MS
A 628
204.5
Issues
Torside
The Gambit
Stone
Watersmeet
FB
Water Hall Bridge
201.2m
Depot
194.8m
BARNSLEY ROAD
River Don
Nether Royd
Sunnymede
196.9m
END
El Sub Sta
Bridge Mill Works
B 6462
A 628
Wordsworth Court
WATER HALL LANE
Path

424336 : 403733	Map Name : SE2403NW	Title	Partial Key Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS
YorkshireWater Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : Ms H Webster Contact Tel :		Notes (Ody) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2004. All rights reserved Ordnance Survey Licence number 100019559	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 connection
			Date Req : 26/10/2012, 11:35:50 — Date Gen : 26/10/2012, 11:35:51
			Source : Sewer Network Enquiry

UPN: Undefined Originator: H Webster, Safe Move,

APPENDIX F
Existing Surface Water Runoff Calculations:
Modified Rational Method
(Development Areas A1; A2; A3 & B)

Modified Rational Method

Length (m)	58	**m**
Area (ha)	0.261	**Ha**
Max Height	195.9	**mAOD**
Min Height	194.6	**mAOD**
DeltaH	1.3	
Slope (%)	2.17	
Te (mins)	10.32	**mins**
ARF	0.998	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.49	

Cv	0.836185
Cr	1.3

Peak 1 in 2 yr runoff	20.3	l/s

Return Period **flood** **2** years
Pre Development **Rainfall** **2** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.17	0.007	4.38	4.76	25.76	20.32	77.84
0.25	0.010	5.43	5.90	21.72	17.13	65.64
0.50	0.021	7.90	8.59	15.80	12.46	47.75
0.75	0.031	9.73	10.58	12.97	10.23	39.21
1.00	0.042	11.24	12.22	11.24	8.87	33.97
1.25	0.052	12.54	13.63	10.03	7.91	30.32
1.50	0.063	13.71	14.90	9.14	7.21	27.62
1.75	0.073	14.76	16.04	8.43	6.65	25.49
2.00	0.083	15.74	17.11	7.87	6.21	23.78
2.25	0.094	16.65	18.10	7.40	5.84	22.36
2.50	0.104	17.50	19.02	7.00	5.52	21.15
2.75	0.115	18.31	19.90	6.66	5.25	20.12
3.00	0.125	19.07	20.73	6.36	5.01	19.21

DEVELOPMENT AREA A1

Modified Rational Method

Length (m)	58	**m**
Area (ha)	0.261	**Ha**
Max Height	195.9	**mAOD**
Min Height	194.6	**mAOD**
DeltaH	1.3	
Slope (%)	2.17	
Te (mins)	10.32	**mins**
ARF	0.998	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.49	

Cv	0.836185
Cr	1.3

Peak 1 in 30 yr runoff	58.9	l/s

Return Period **flood** **30** years
Pre Development **Rainfall** **30** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.17	0.007	12.70	13.81	74.71	58.93	225.77
0.25	0.010	15.29	16.62	61.16	48.24	184.82
0.50	0.021	21.04	22.87	42.08	33.19	127.16
0.75	0.031	25.08	27.26	33.44	26.38	101.05
1.00	0.042	28.30	30.76	28.30	22.32	85.52
1.25	0.052	31.03	33.73	24.82	19.58	75.02
1.50	0.063	33.42	36.33	22.28	17.57	67.33
1.75	0.073	35.56	38.66	20.32	16.03	61.41
2.00	0.083	37.50	40.76	18.75	14.79	56.66
2.25	0.094	39.30	42.72	17.47	13.78	52.78
2.50	0.104	40.96	44.53	16.38	12.92	49.51
2.75	0.115	42.52	46.22	15.46	12.20	46.73
3.00	0.125	43.99	47.82	14.66	11.57	44.31

DEVELOPMENT AREA A1

Modified Rational Method

Length (m)	58	**m**
Area (ha)	0.261	**Ha**
Max Height	195.9	**mAOD**
Min Height	194.6	**mAOD**
DeltaH	1.3	
Slope (%)	2.17	
Te (mins)	10.32	**mins**
ARF	0.998	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.49	

Cv	0.836185
Cr	1.3

Peak 1 in 100 yr runoff	90.5	l/s

Return Period **flood** **100** years
Pre Development **Rainfall** **100** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.17	0.007	19.51	21.20	114.74	90.50	346.74
0.25	0.01	23.20	25.22	92.80	73.19	280.44
0.50	0.02	31.21	33.93	62.42	49.23	188.63
0.75	0.03	36.72	39.92	48.96	38.62	147.96
1.00	0.04	41.06	44.63	41.06	32.39	124.08
1.25	0.05	44.70	48.59	35.76	28.21	108.07
1.50	0.06	47.85	52.01	31.90	25.16	96.40
1.75	0.07	50.67	55.08	28.95	22.84	87.50
2.00	0.08	53.21	57.84	26.61	20.98	80.40
2.25	0.09	55.54	60.37	24.68	19.47	74.60
2.50	0.10	57.70	62.72	23.08	18.20	69.75
2.75	0.11	59.71	64.91	21.71	17.13	65.62
3.00	0.13	61.60	66.96	20.53	16.20	62.05

DEVELOPMENT AREA A1

Modified Rational Method

Length (m)	70	**m**
Area (ha)	0.329	**Ha**
Max Height	196.4	**mAOD**
Min Height	193.9	**mAOD**
DeltaH	2.5	
Slope (%)	3.57	
Te (mins)	9.24	**mins**
ARF	0.998	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.39	

Cv	0.836185
Cr	1.3

Peak 1 in 2 yr runoff	27.2	l/s

Return Period **flood** **2** years
Pre Development **Rainfall** **2** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.15	0.006	4.10	4.46	27.33	27.17	82.58
0.25	0.010	5.43	5.90	21.72	21.59	65.64
0.50	0.021	7.90	8.59	15.80	15.71	47.75
0.75	0.031	9.73	10.58	12.97	12.90	39.21
1.00	0.042	11.24	12.22	11.24	11.18	33.97
1.25	0.052	12.54	13.63	10.03	9.97	30.32
1.50	0.063	13.71	14.90	9.14	9.09	27.62
1.75	0.073	14.76	16.04	8.43	8.39	25.49
2.00	0.083	15.74	17.11	7.87	7.82	23.78
2.25	0.094	16.65	18.10	7.40	7.36	22.36
2.50	0.104	17.50	19.02	7.00	6.96	21.15
2.75	0.115	18.31	19.90	6.66	6.62	20.12
3.00	0.125	19.07	20.73	6.36	6.32	19.21

DEVELOPMENT AREA A2 & A3

Modified Rational Method

Length (m)	70	**m**
Area (ha)	0.329	**Ha**
Max Height	196.4	**mAOD**
Min Height	193.9	**mAOD**
DeltaH	2.5	
Slope (%)	3.57	
Te (mins)	9.24	**mins**
ARF	0.998	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.39	

Cv	0.836185
Cr	1.3

Peak 1 in 30 yr runoff	79.5	l/s

Return Period **flood** **30** years
Pre Development **Rainfall** **30** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.15	0.006	12.00	13.04	79.97	79.51	241.67
0.25	0.010	15.29	16.62	61.16	60.81	184.82
0.50	0.021	21.04	22.87	42.08	41.84	127.16
0.75	0.031	25.08	27.26	33.44	33.25	101.05
1.00	0.042	28.30	30.76	28.30	28.14	85.52
1.25	0.052	31.03	33.73	24.82	24.68	75.02
1.50	0.063	33.42	36.33	22.28	22.15	67.33
1.75	0.073	35.56	38.66	20.32	20.20	61.41
2.00	0.083	37.50	40.76	18.75	18.64	56.66
2.25	0.094	39.30	42.72	17.47	17.37	52.78
2.50	0.104	40.96	44.53	16.38	16.29	49.51
2.75	0.115	42.52	46.22	15.46	15.37	46.73
3.00	0.125	43.99	47.82	14.66	14.58	44.31

DEVELOPMENT AREA A2 & A3

Modified Rational Method

Length (m)	70	**m**
Area (ha)	0.329	**Ha**
Max Height	196.4	**mAOD**
Min Height	193.9	**mAOD**
DeltaH	2.5	
Slope (%)	3.57	
Te (mins)	9.24	**mins**
ARF	0.998	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.39	

Cv	0.836185
Cr	1.3

Peak 1 in 100 yr runoff	122.5	l/s

Return Period **flood** **100** years
Pre Development **Rainfall** **100** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.15	0.006	18.49	20.10	123.26	122.55	372.49
0.25	0.01	23.20	25.22	92.80	92.26	280.44
0.50	0.02	31.21	33.93	62.42	62.06	188.63
0.75	0.03	36.72	39.92	48.96	48.68	147.96
1.00	0.04	41.06	44.63	41.06	40.82	124.08
1.25	0.05	44.70	48.59	35.76	35.55	108.07
1.50	0.06	47.85	52.01	31.90	31.72	96.40
1.75	0.07	50.67	55.08	28.95	28.79	87.50
2.00	0.08	53.21	57.84	26.61	26.45	80.40
2.25	0.09	55.54	60.37	24.68	24.54	74.60
2.50	0.10	57.70	62.72	23.08	22.95	69.75
2.75	0.11	59.71	64.91	21.71	21.59	65.62
3.00	0.13	61.60	66.96	20.53	20.41	62.05

DEVELOPMENT AREA A2 & A3

Modified Rational Method

Length (m)	76	**m**
Area (ha)	0.109	**Ha**
Max Height	194.3	**mAOD**
Min Height	192.4	**mAOD**
DeltaH	1.9	
Slope (%)	2.55	
Te (mins)	10.24	**mins**
ARF	0.999	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.45	

Cv	0.836185
Cr	1.3

Peak 1 in 2 yr runoff	8.4	l/s

Return Period **flood** **2** years
Pre Development **Rainfall** **2** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.17	0.007	4.35	4.73	25.58	8.43	77.30
0.25	0.010	5.43	5.90	21.72	7.15	65.64
0.50	0.021	7.90	8.59	15.80	5.20	47.75
0.75	0.031	9.73	10.58	12.97	4.27	39.21
1.00	0.042	11.24	12.22	11.24	3.70	33.97
1.25	0.052	12.54	13.63	10.03	3.30	30.32
1.50	0.063	13.71	14.90	9.14	3.01	27.62
1.75	0.073	14.76	16.04	8.43	2.78	25.49
2.00	0.083	15.74	17.11	7.87	2.59	23.78
2.25	0.094	16.65	18.10	7.40	2.44	22.36
2.50	0.104	17.50	19.02	7.00	2.31	21.15
2.75	0.115	18.31	19.90	6.66	2.19	20.12
3.00	0.125	19.07	20.73	6.36	2.09	19.21

DEVELOPMENT AREA B

Modified Rational Method

Length (m)	76	**m**
Area (ha)	0.109	**Ha**
Max Height	194.3	**mAOD**
Min Height	192.4	**mAOD**
DeltaH	1.9	
Slope (%)	2.55	
Te (mins)	10.24	**mins**
ARF	0.999	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.45	

Cv	0.836185
Cr	1.3

Peak 1 in 30 yr runoff	24.5	l/s

Return Period **flood** **30** years
Pre Development **Rainfall** **30** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.17	0.007	12.62	13.72	74.26	24.46	224.42
0.25	0.010	15.29	16.62	61.16	20.15	184.82
0.50	0.021	21.04	22.87	42.08	13.86	127.16
0.75	0.031	25.08	27.26	33.44	11.01	101.05
1.00	0.042	28.30	30.76	28.30	9.32	85.52
1.25	0.052	31.03	33.73	24.82	8.18	75.02
1.50	0.063	33.42	36.33	22.28	7.34	67.33
1.75	0.073	35.56	38.66	20.32	6.69	61.41
2.00	0.083	37.50	40.76	18.75	6.18	56.66
2.25	0.094	39.30	42.72	17.47	5.75	52.78
2.50	0.104	40.96	44.53	16.38	5.40	49.51
2.75	0.115	42.52	46.22	15.46	5.09	46.73
3.00	0.125	43.99	47.82	14.66	4.83	44.31

DEVELOPMENT AREA B

Modified Rational Method

Length (m)	76	**m**
Area (ha)	0.109	**Ha**
Max Height	194.3	**mAOD**
Min Height	192.4	**mAOD**
DeltaH	1.9	
Slope (%)	2.55	
Te (mins)	10.24	**mins**
ARF	0.999	
SAAR	1252.000	**mm**
UCWI	132	**mm**
PIMP	100.0	**%**
SOIL	0.44	
Percentage Runoff PR	83.62	
DEEPSTOR	0.45	

Cv	0.836185
Cr	1.3

Peak 1 in 100 yr runoff	37.6	l/s

Return Period **flood** **100** years
Pre Development **Rainfall** **100** years

Rainfall Duration (hours)	Rainfall Duration (days)	Rainfall Depth (mm)	Effective Depth (mm)	Rainfall Intensity (mm/hr)	FLOW (l/s)	FLOW (l/s/ha)
0.17	0.007	19.40	21.08	114.10	37.58	344.80
0.25	0.01	23.20	25.22	92.80	30.57	280.44
0.50	0.02	31.21	33.93	62.42	20.56	188.63
0.75	0.03	36.72	39.92	48.96	16.13	147.96
1.00	0.04	41.06	44.63	41.06	13.52	124.08
1.25	0.05	44.70	48.59	35.76	11.78	108.07
1.50	0.06	47.85	52.01	31.90	10.51	96.40
1.75	0.07	50.67	55.08	28.95	9.54	87.50
2.00	0.08	53.21	57.84	26.61	8.76	80.40
2.25	0.09	55.54	60.37	24.68	8.13	74.60
2.50	0.10	57.70	62.72	23.08	7.60	69.75
2.75	0.11	59.71	64.91	21.71	7.15	65.62
3.00	0.13	61.60	66.96	20.53	6.76	62.05

DEVELOPMENT AREA B

APPENDIX G
Contributing Areas:
Proposed Development

DRAWING REF: 12051-C-SK01
CONTRIBUTING AREAS -
DEVELOPMENT AREA A1
(NOT TO SCALE)

