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PLOT 3, ASHROYD BUSINESS PARK, HOYLAND, BARNSLEY

NETWORK SPACE DEVELOPMENTS LTD

DRAINAGE STRATEGY

11756-WMS-ZZ-XX-RP-C-39201-S8-P1-DRAINAGE_STRATEGY

MAY 2018

DOCUMENT CONTROL

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Contract: Plot 3 Ashroyd Business Park, Hoyland, Barnsley

Document Title: Drainage Strategy

Our Ref: 11756-WMS-ZZ-XX-RP-C-39201-S8-P1-DRAINAGE_STRATEGY

Prepared by: C.Melton EngTech MICE MCIHT MIHE **Date:** May 2018

RECORD OF AMENDMENTS TO DOCUMENT

Ref	Description	Date

Verified by: A.Gibson BEng CEng MICE MCIHT MIRSE **Date:** May 2018

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C O N T E N T S

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1.0 INTRODUCTION

William Saunders have been instructed by Network Space Developments Ltd to prepare a Drainage Strategy for an industrial development at Plot 3, Ashroyd Business Park, Hoyland, Barnsley.

2.0 PROPOSED DEVELOPMENT

2.1 SITE LOCATION AND DESCRIPTION

The site currently comprises rough grassland and is an un-developed plot of a business park. The business park was initially re-developed in from 2005 to 2006, plateaus were constructed into the pre-existing hillside to allow development. The grid reference for the site is 436477E, 401277N or SE360412. The postcode of the site is S74 9SB. A location plan is given in Appendix A.

To the east is plot 4 and 5 of Ashroyd business park, the northern section is currently used as a self-storage warehouse, the southern section is currently the vacant Plot 5. To the west and south is an existing residential area,

Further north are plots 1 and 2 of the business park with the A6195 Dearne Valley Parkway beyond. Further west the land is undeveloped consisting of rough grazing. Further east is Platts Common industrial estate and to the south is the residential area of Hoyland.

The A6195 is approx. 350m north and the M1 is approx. 1.9km south-west. The centre of Barnsley is approx. 5.5km NNW, Rotherham is approx. 10km south-east, Sheffield is approx. 13km south and Doncaster is approx. 20km east.

The site is a previously levelled plateau which lies between approx. 154 and 154.5mOD, there is a gentle fall to the east across the majority of the site. There are planted earthwork slopes along the north (up to 3m below site level), south (6m above site level) and west (up to 6m above site level).

The site has an approximate area of 2.55 hectares.

2.2 DEVELOPMENT PROPOSALS

The proposals are for a new development of an industrial unit or units with a new access road. There is not yet a fixed proposed layout for the plot.

3.0 FLOOD RISK

Current GOV.uk records indicate that the proposed development site is wholly within Flood Zone 1 and as such is not located in an area considered to be at risk of flooding from fluvial, tidal or any natural or artificial water bodies.

The surface water flood map indicates areas of low to high flooding in channels around the perimeter of the site. These are related to the drainage channels that have been constructed at the base of the embankments in order to convey run off to the land drainage system. These channels are to be retained through French drains within the new development. The French drains will be used to direct the surface water runoff from higher levels around the built development away from the buildings.

The current GOV.uk Flood Risk Maps are given in Appendix C.

4.0 DRAINAGE STRATEGY

Through the initial enabling works for the wider Ashroyd Business Park new infrastructure including adoptable foul and surface water sewers were constructed. The Section 104 sewer layout as built drawings can be found in Appendix D

4.1 FOUL DRAINAGE

The foul drainage from the development plot is to be discharged to the 150mm diameter stub to FPN 1.004. The adoptable sewer network installed has been sized up to be able to allow for the future development from Plot 3.

4.2 SURFACE WATER DRAINAGE

The drainage for the business park benefits from an off-site attenuation pond, built specifically for the site.

During the S104 approval process for the wider infrastructure allowable flow rates were determined for the individual plots across the business park. For Plot 3 the allowable discharge rates in each storm period were agreed with Yorkshire Water as the following, from an impermeable area of 17456 m2 (1.75ha):

1 year = 235.8 l/s
30 year = 544.0 l/s
100 year = 683.7 l/s

For the proposed development at Plot 3, it is proposed to achieve the agreed discharge rates with at least an additional 30% reduction, therefore the proposed modelled discharge rates from Plot 5 are not to exceed the following:

1 year = 165.1 l/s
30 year = 380.8 l/s
100 year (+ 30% climate change) = 478.6 l/s

The connection to the surface water sewer will be through the 450mm diameter stub connected to PN 1.004.

4.3 QUICK STORAGE ESTIMATE

Based on an impermeable area of 1.75ha, a quick storage estimate has been carried out to determine the required attenuation to achieve the required discharge rates in the 1 year, 30 year and 100 year + 30 % climate change events.

Storm Return Period	Allowable Discharge Rate	Storage Volume Required (m3)
1 year	165.1 l/s	0.0 – 59.0
30 year	380.8 l/s	0.0 – 152.0
100 year + 30% c/c	478.6 l/s	29.0 – 321.0

4.4 FLOOD RISK/DRAINAGE MANAGEMENT STRATEGY

In order to manage the run off from the developed site, and accommodate future climate change, the detailed design of the surface water drainage system will need to include the following: -

- Petrol/Oil Interceptors
  All the service yards are to include a Full Retention petrol interceptor to treat the service yard area before the surface water is connected into the surface water system.

- Flood Flow Routes
  To address the residual risks of surface water flows and potential infrastructure failure, flow routes for such waters should be analysed and demonstrated to not present a hazard to the development or adjacent properties.

- Floor Levels
  Floor levels to be set a minimum of 150mm above prevailing ground levels in Flood Zone 1 and above adjacent ground levels in areas of flood flow routes and areas at risk from surface water flooding to minimise the flood risk.

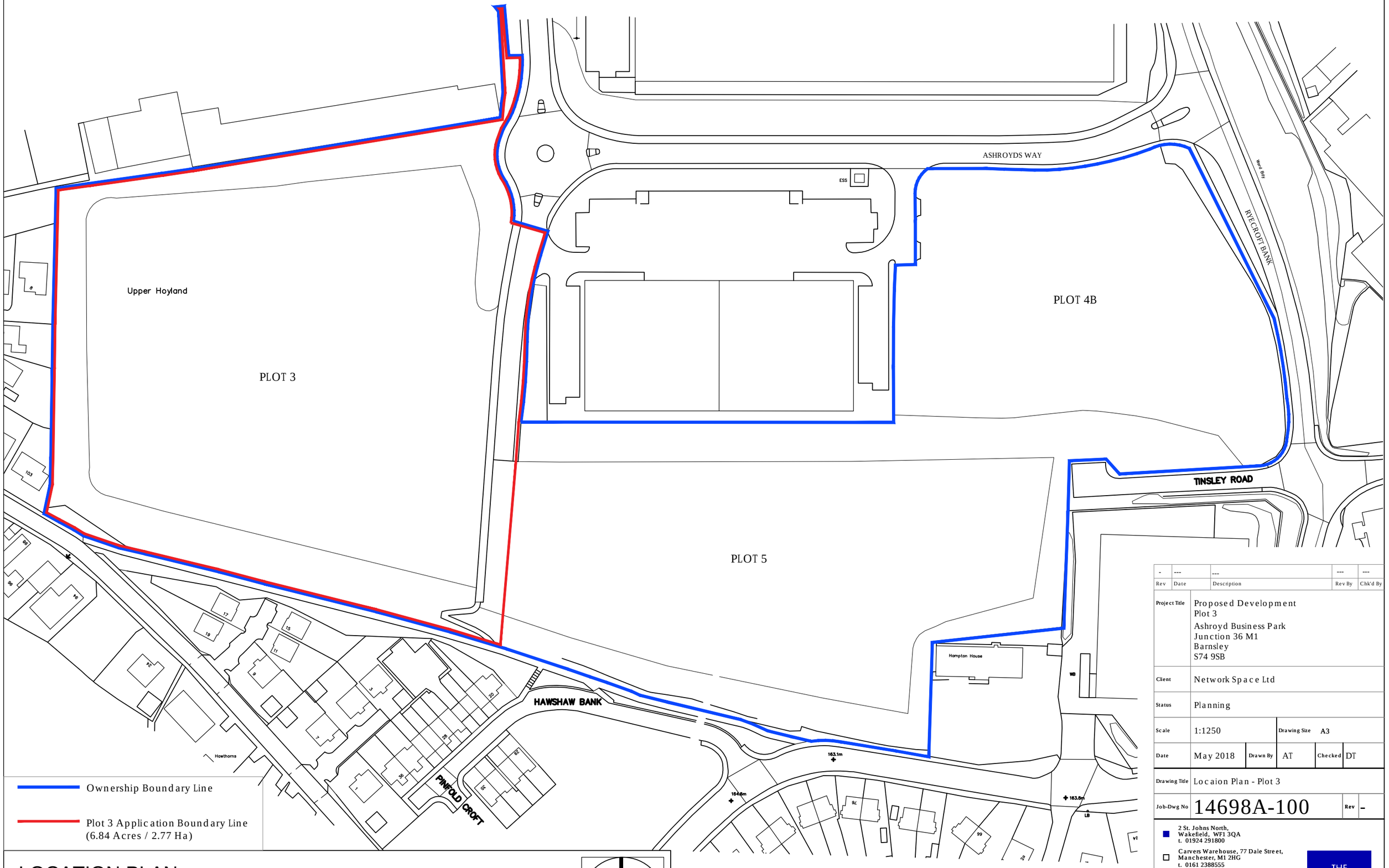
- Design/Construction Standard
  All on-site foul and surface water drainage will be designed and constructed in accordance with current Building Regulation Standards.

5.0 CONCLUSIONS

- The proposed development is not at risk of flooding from fluvial, tidal or any natural or artificial water bodies.
- The development will generate quantities of surface water runoff which could pose flood risk to the development itself or to its neighbours, unless appropriate design and management measures are taken.
- The surface water runoff generated by the proposed development will be managed in a manner which will ensure no risk of flooding or increased risk to surrounding properties, at present and taking into account allowances for future climate change.
- The residual risks from surface water and infrastructure failure will be addressed by consideration of flood flow routes through the development.
- Floor levels to be set to minimise the flood risk from adjacent areas at risk from surface water flooding.

APPENDIX A

Site Location Plan



Ownership Boundary Line

Plot 3 Application Boundary Line
(6.84 Acres / 2.77 Ha)

LOCATION PLAN
scale 1:1250 @ A3

0 12.5 25 37.5 50 62.5 m
SCALE 1:1250

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CAD file reference 14698A \17.0 Drawings\100 Series-Planning

Rev	Date	Description	Rev By	Chk'd By
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Project Title	Proposed Development Plot 3 Ashroyd Business Park Junction 36 M1 Barnsley S74 9SB					
Client	Network Space Ltd					
Status	Planning					
Scale	1:1250		Drawing Size	A3		
Date	May 2018	Drawn By	AT	Checked	DT	
Drawing Title	Locaion Plan - Plot 3					
Job-Dwg No	14698A-100			Rev	-	

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APPENDIX B

EA Flood Risk Map

Flood map for planning

Your reference	Location	Created
Plot 5	**436560/401165**	**20 Mar 2018 2:18**

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

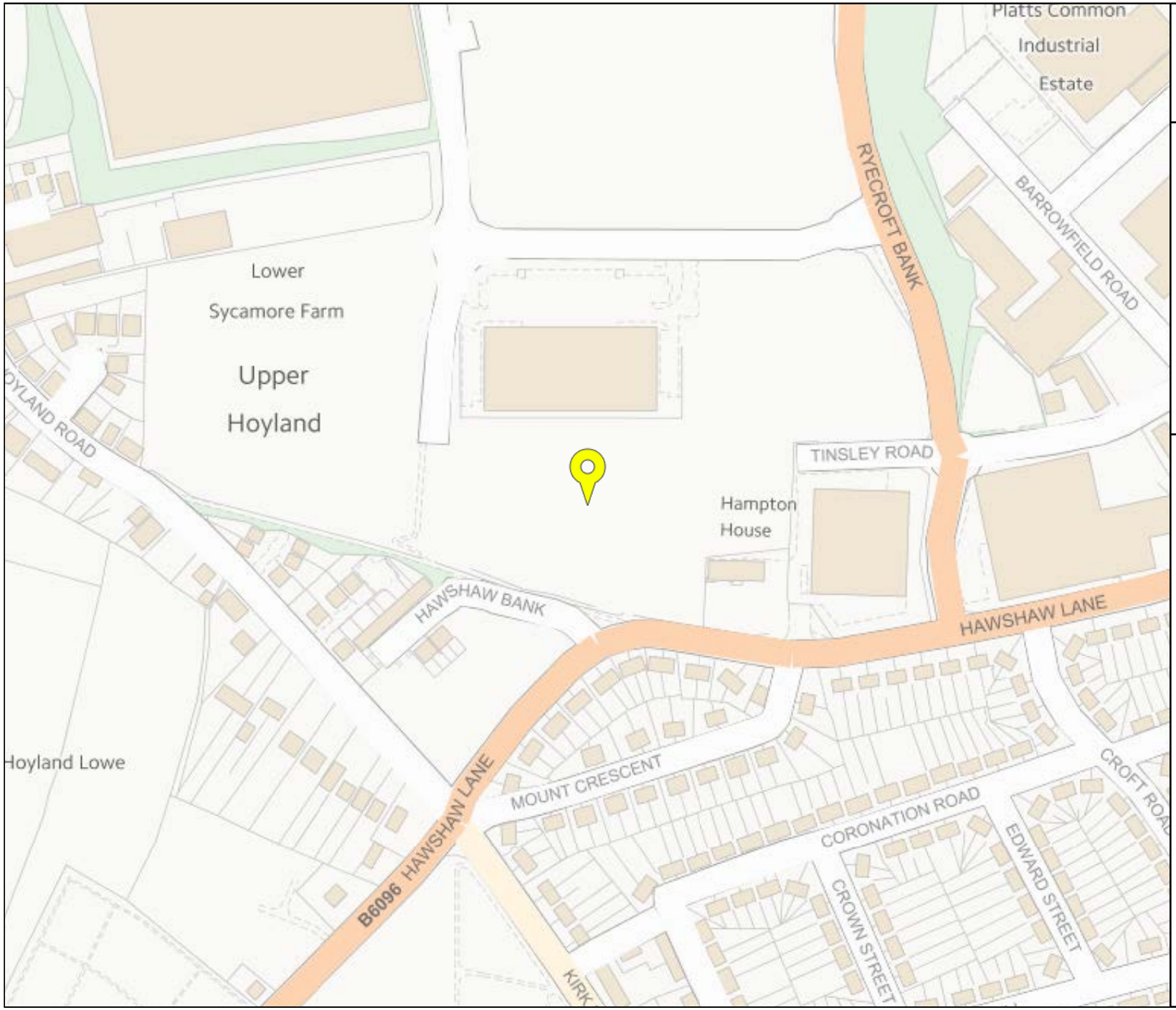
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn’t include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

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Environment Agency

Flood map for planning

Your reference
Plot 5

Location
436560/401165

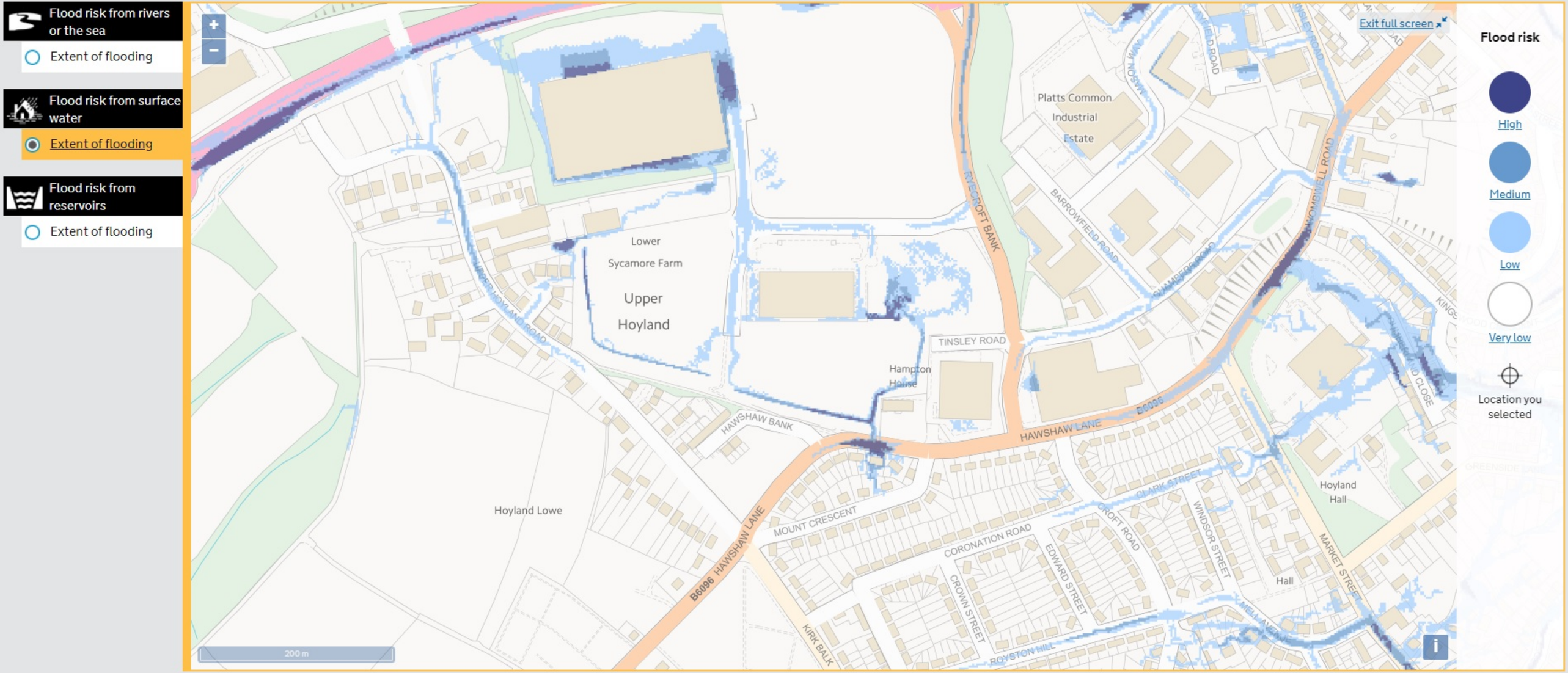
Scale
1:3125

Created
20 Mar 2018 2:18

- Development location
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 50 100 150m

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Flood risk from rivers or the sea
Extent of flooding
Flood risk from surface water
Extent of flooding
Flood risk from reservoirs
Extent of flooding
Exit full screen
Flood risk
High
Medium
Low
Very low
Location you selected
Lower Sycamore Farm
Upper Hoyland
Hoyland Lowe
Platts Common Industrial Estate
Hampton House
Hoyland Hall
TINSLEY ROAD
HAWSHAW LANE
HAWSHAW BANK
B6096
B6096 HAWSHAW LANE
RIVERCROFT BANK
BARROWFIELD ROAD
CHAMBERS ROAD
MOUNT CRESCENT
CORONATION ROAD
CROWN STREET
EDWARD STREET
CROFT ROAD
CLARK STREET
WINDSOR STREET
MARKET STREET
ROYSTON HILL
KIRK BALK
200 m

APPENDIX C

S104 As Built Sewer Layout

YWS ref: H-3-261-550

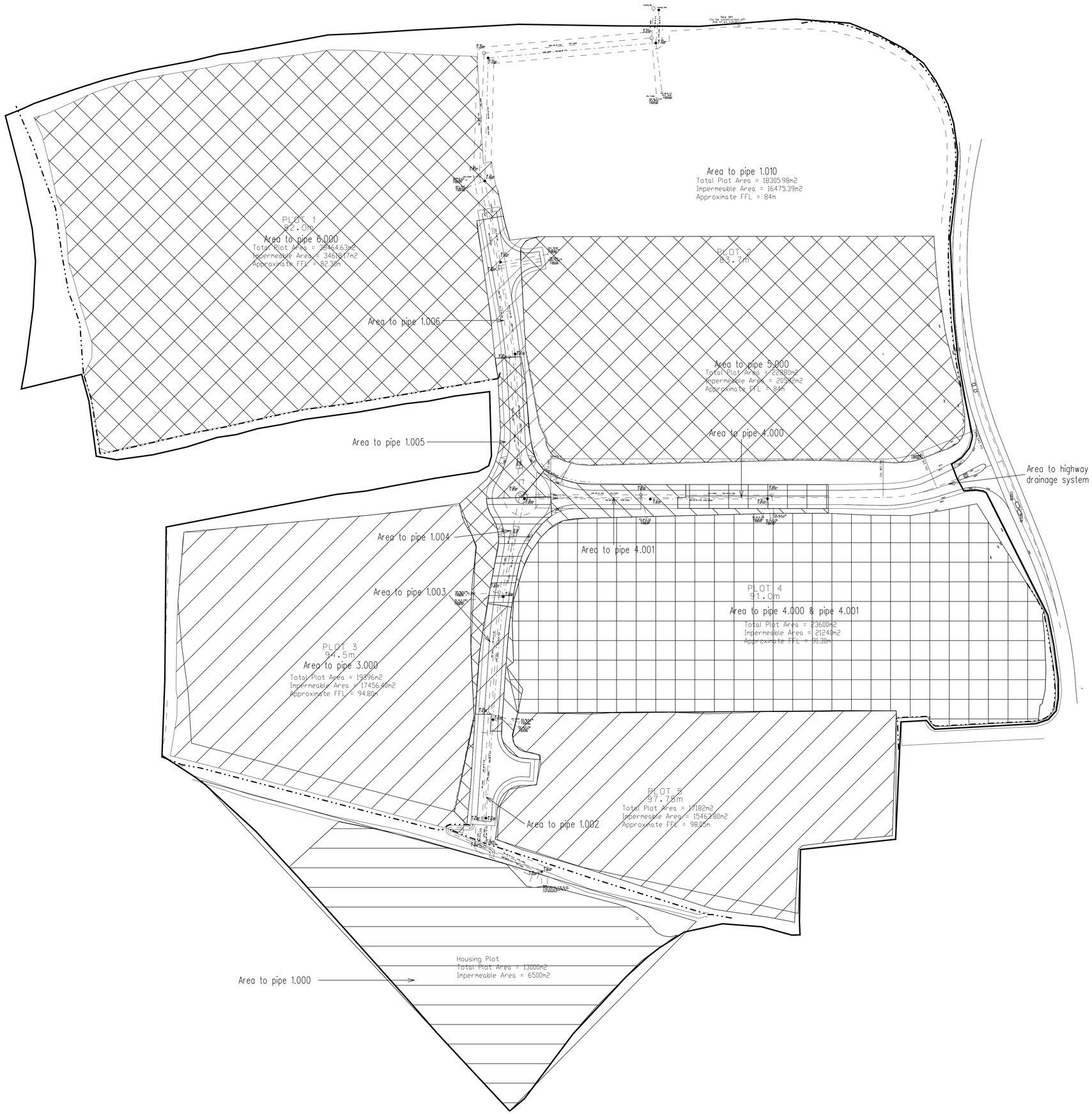
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Contractors must verify all dimensions at the site before commencing any work or making any shop drawings: no dimensions to be taken from drawing

In accordance with CDM Regulation 13, residual hazards have been identified and are annotated thus: [I]

Refer to the current designers risk assessments for further details



VERIFICATION STATUS	VERIFIED BY	DATE
INFORMATION		
DESIGN	ACG	09/00
BUILDING CONTROL		
PLANNING	ACG	09/00
MEASUREMENT	ACG	09/00
TENDER		
CONSTRUCTION		
FINAL ISSUE INCORPORATING ALL AUTHORISED VARIATIONS		
RISK ASSESSMENT ck'd		
ACCESS/DDA COMPLIANCE CHECK		DATE

REV	DESCRIPTION	CK'D	DATE
A	Redrawn	ACG	01/05
B	General redesign to SFA 5th	ACG	07/05
C	Plot Areas, Impermeable Areas and FFL added	ACG	08/05
D	Plot Areas& Impermeable Areas amended	ACG	09/05

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Project

Proposed Infrastructure Works, Ashroyd Business Park, nr. Barnsley.

Client

Ackroyd & Abbott Ltd.

Title

S.104 Works - Areas

Date Sept '00 Drawing No. SL6924(9)307D

Drawn IB Scale 1:1000 @A1

APPENDIX D

Allowable Discharge Rate Calculations

S104 Storm Sewer
Ashroyd Bus. Park.

XP Solutions Network 2017.1.2 ©1982-2017 XP Solutions

Pipe Number	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Infiltration Flow (l/s)	Infiltration Vol (m³)	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
1.000	6	15 minute 1 year Winter I+0%	101.200	99.788	-0.137	0.000	0.57				0.178	47.057	93.1	OK
1.001	7	15 minute 1 year Winter I+0%	100.400	98.975	-0.206	0.000	0.22				0.133	47.057	93.1	OK
1.002	8	15 minute 1 year Winter I+0%	97.800	96.028	-0.171	0.000	0.38				0.148	53.590	104.7	OK
2.000	9	15 minute 1 year Winter I+0%	97.750	93.178	-0.102	0.000	0.87				0.384	98.045	208.9	OK
1.003	10	15 minute 1 year Winter I+0%	94.100	92.659	-0.241	0.000	0.43				0.335	157.089	320.2	OK
3.000	11	15 minute 1 year Winter I+0%	94.500	89.477	-0.152	0.000	0.76				0.419	110.665	235.8	OK
1.004	12	15 minute 1 year Winter I+0%	90.700	89.116	-0.359	0.000	0.33				0.897	281.834	579.9	OK
4.000	13	15 minute 1 year Winter I+0%	89.875	87.377	-0.323	0.000	0.31				0.348	72.616	165.0	OK
4.001	14	15 minute 1 year Winter I+0%	89.015	86.594	-0.270	0.000	0.47				1.336	144.660	281.2	OK
1.005	15	15 minute 1 year Winter I+0%	88.600	85.668	-0.219	0.000	0.72				1.979	434.741	880.2	OK
1.006	16	15 minute 1 year Winter I+0%	85.100	83.208	-0.326	0.000	0.43				0.904	439.245	888.2	OK
5.000	17	15 minute 1 year Winter I+0%	83.700	79.742	-0.208	0.000	0.56				0.340	130.579	278.6	OK
1.007	18	15 minute 1 year Winter I+0%	82.850	78.949	-0.365	0.000	0.66				2.135	574.516	1162.0	OK
6.000	19	15 minute 1 year Winter I+0%	82.000	79.020	0.145	0.000	1.28				1.175	216.645	483.9	SURCHARGED
1.008	20	15 minute 1 year Winter I+0%	82.000	78.188	-0.443	0.000	0.51				4.338	791.167	1633.6	OK
1.009	21	15 minute 1 year Winter I+0%	79.500	76.122	-0.505	0.000	0.40				2.486	791.176	1628.2	OK
7.000	22	15 minute 1 year Winter I+0%	83.700	80.118	-0.332	0.000	0.16				0.162	104.527	239.5	OK
1.010	23	15 minute 1 year Winter I+0%	74.800	72.579	-0.256	0.000	0.86				4.662	895.714	1833.0	OK

PLOT 5
PLOT 3
PLOT 4B

Agreed discharge rates from plots

File: C:\Users\ChrisM\Desktop\ashroyd.mdx : 1 year return period Critical Summary of Results by Maximum Level (Rank 1)

XP Solutions Network 2017.1.2 ©1982-2017 XP Solutions

Pipe Number	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Infiltration Flow (l/s)	Infiltration Vol (m³)	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
1.000	6	15 minute 30 year Winter I+0%	101.200	100.380	0.455	0.000	1.27				0.849	115.400	208.1	SURCHARGED
1.001	7	15 minute 30 year Winter I+0%	100.400	99.028	-0.153	0.000	0.48				0.259	115.400	207.6	OK
1.002	8	15 minute 30 year Winter I+0%	97.800	96.115	-0.084	0.000	0.85				0.262	131.420	231.1	OK
2.000	9	15 minute 30 year Winter I+0%	97.750	94.581	1.301	0.000	2.01				2.392	240.440	485.4	SURCHARGED
1.003	10	15 minute 30 year Winter I+0%	94.100	93.173	0.273	0.000	0.96				2.346	385.236	714.9	SURCHARGED
3.000	11	15 minute 30 year Winter I+0%	94.500	90.835	1.206	0.000	1.75				2.363	271.389	544.0	SURCHARGED
1.004	12	15 minute 30 year Winter I+0%	90.700	90.071	0.596	0.000	0.72				6.850	691.152	1256.4	SURCHARGED
4.000	13	15 minute 30 year Winter I+0%	89.875	89.198	1.498	0.000	0.68				3.566	178.074	359.9	SURCHARGED
4.001	14	15 minute 30 year Winter I+0%	89.015	89.016	2.152	0.594	1.09				19.444	354.658	643.1	FLOOD
1.005	15	15 minute 30 year Winter I+0%	88.600	88.339	2.452	0.000	1.43				29.059	1066.030	1743.5	FLOOD RISK
1.006	16	15 minute 30 year Winter I+0%	85.100	83.362	-0.172	0.000	0.85				1.929	1077.075	1757.1	OK
5.000	17	15 minute 30 year Winter I+0%	83.700	81.057	1.107	0.000	1.25				2.222	320.224	624.4	SURCHARGED
1.007	18	15 minute 30 year Winter I+0%	82.850	80.021	0.707	0.000	1.32				11.571	1408.889	2326.4	SURCHARGED
6.000	19	15 minute 30 year Winter I+0%	82.000	80.823	1.948	0.000	2.93				4.361	531.278	1111.3	SURCHARGED
1.008	20	15 minute 30 year Winter I+0%	82.000	78.950	0.319	0.000	1.02				31.240	1940.177	3254.4	SURCHARGED
1.009	21	15 minute 30 year Winter I+0%	79.500	76.880	0.253	0.000	0.81				18.067	1940.188	3259.0	SURCHARGED
7.000	22	15 minute 30 year Winter I+0%	83.700	80.193	-0.257	0.000	0.38				0.269	256.336	587.4	OK
1.010	23	15 minute 30 year Winter I+0%	74.800	74.454	1.619	0.000	1.68				35.920	2196.539	3595.1	FLOOD RISK

Pipe Number	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Infiltration Flow (l/s)	Infiltration Vol (m³)	Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
1.000	6	15 minute 100 year Winter I+0%	101.200	101.059	1.134	0.000	1.57				1.617	149.631	257.2	FLOOD RISK
1.001	7	15 minute 100 year Winter I+0%	100.400	99.049	-0.132	0.000	0.60				0.314	149.632	257.9	OK
1.002	8	15 minute 100 year Winter I+0%	97.800	97.591	1.392	0.000	1.02				2.396	170.403	279.0	FLOOD RISK
2.000	9	15 minute 100 year Winter I+0%	97.750	96.498	3.218	0.000	2.43				5.135	311.764	587.2	SURCHARGED
1.003	10	15 minute 100 year Winter I+0%	94.100	94.121	1.221	21.141	1.02				25.790	499.510	753.3	FLOOD
3.000	11	15 minute 100 year Winter I+0%	94.500	92.302	2.673	0.000	2.20				4.463	351.893	683.7	SURCHARGED
1.004	12	15 minute 100 year Winter I+0%	90.700	90.720	1.245	21.210	0.77				29.906	896.173	1346.1	FLOOD
4.000	13	15 minute 100 year Winter I+0%	89.875	89.718	2.018	0.000	0.85				4.486	230.881	447.1	FLOOD RISK
4.001	14	15 minute 100 year Winter I+0%	89.015	89.099	2.235	83.922	1.61				102.785	460.003	952.1	FLOOD
1.005	15	15 minute 100 year Winter I+0%	88.600	88.623	2.736	23.683	1.47				53.378	1382.394	1792.8	FLOOD
1.006	16	15 minute 100 year Winter I+0%	85.100	84.211	0.677	0.000	0.89				10.320	1396.715	1836.0	SURCHARGED
5.000	17	15 minute 100 year Winter I+0%	83.700	82.885	2.935	0.000	1.45				4.838	415.214	724.4	SURCHARGED
1.007	18	15 minute 100 year Winter I+0%	82.850	81.222	1.908	0.000	1.38				17.950	1826.871	2421.5	SURCHARGED
6.000	19	15 minute 100 year Winter I+0%	82.000	82.022	3.147	21.873	3.36				28.138	688.873	1272.5	FLOOD
1.008	20	15 minute 100 year Winter I+0%	82.000	80.066	1.435	0.000	1.10				37.090	2515.756	3501.6	SURCHARGED
1.009	21	15 minute 100 year Winter I+0%	79.500	77.659	1.032	0.000	0.87				36.946	2515.770	3494.2	SURCHARGED
7.000	22	15 minute 100 year Winter I+0%	83.700	80.224	-0.226	0.000	0.50				0.314	332.374	761.6	OK
1.010	23	15 minute 100 year Winter I+0%	74.800	74.817	1.982	17.801	1.80				58.557	2848.162	3856.5	FLOOD

YWS ref: H-3-261-550



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TENDER		
CONSTRUCTION		
FINAL ISSUE INCORPORATING ALL AUTHORISED VARIATIONS		
RISK ASSESSMENT ck'd		
ACCESS/DDA COMPLIANCE CHECK		DATE

REV	DESCRIPTION	CK'D	DATE
A	Redrawn	ACG	01/05
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C	Plot Areas, Impermeable Areas and FFL added	ACG	08/05
D	Plot Areas& Impermeable Areas amended	ACG	09/05

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Project

Proposed Infrastructure Works,
Ashroyd Business Park,
nr. Barnsley.

Client

Ackroyd & Abbott Ltd.

Title

S.104 Works - Areas

Date Sept '00 Drawing No. SL6924(9)307D

Drawn IB Scale 1:1000 @A1

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