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PLOT 3, ASHROYD BUSINESS PARK, HOYLAND, BARNSLEY

NETWORK SPACE DEVELOPMENTS LTD

DRAINAGE STRATEGY

10770-WMS-ZZ-XX-RP-C-39201-S8-P2

MAY 2022

DOCUMENT CONTROL

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Contract: Plot 3 Ashroyd Business Park, Hoyland, Barnsley

Document Title: Drainage Strategy

Our Ref: 11770-WMS-ZZ-XX-RP-C-39201-S8-P1-DRAINAGE_STRATEGY

Prepared by: A.C. Gibson **Date:** September 2021

RECORD OF AMENDMENTS TO DOCUMENT

Ref	Description	Date
P1	First issue	September 2021
P2	Revised Architect layout added to Appendix B.	May 2022

Verified by: CEng MICE FCIHT MIRSE **Date:** May 2022

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C O N T E N T S

1.0 INTRODUCTION

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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 436564E, 401164N or SE365011. The postcode of the site is S74 9ND. A location plan is given in Appendix A.

To the North is an area of farm buildings with industrial development beyond. To the South and West are residential development, and to the East plots 4 and 5 of Ashroyd Business Park comprising storage and industrial units.

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 at approx. 154mOD. There are earthworks slopes along the North (up to 6.5m below site level), South (up to 6.5m above site level) and West (0 - 5m above site level).

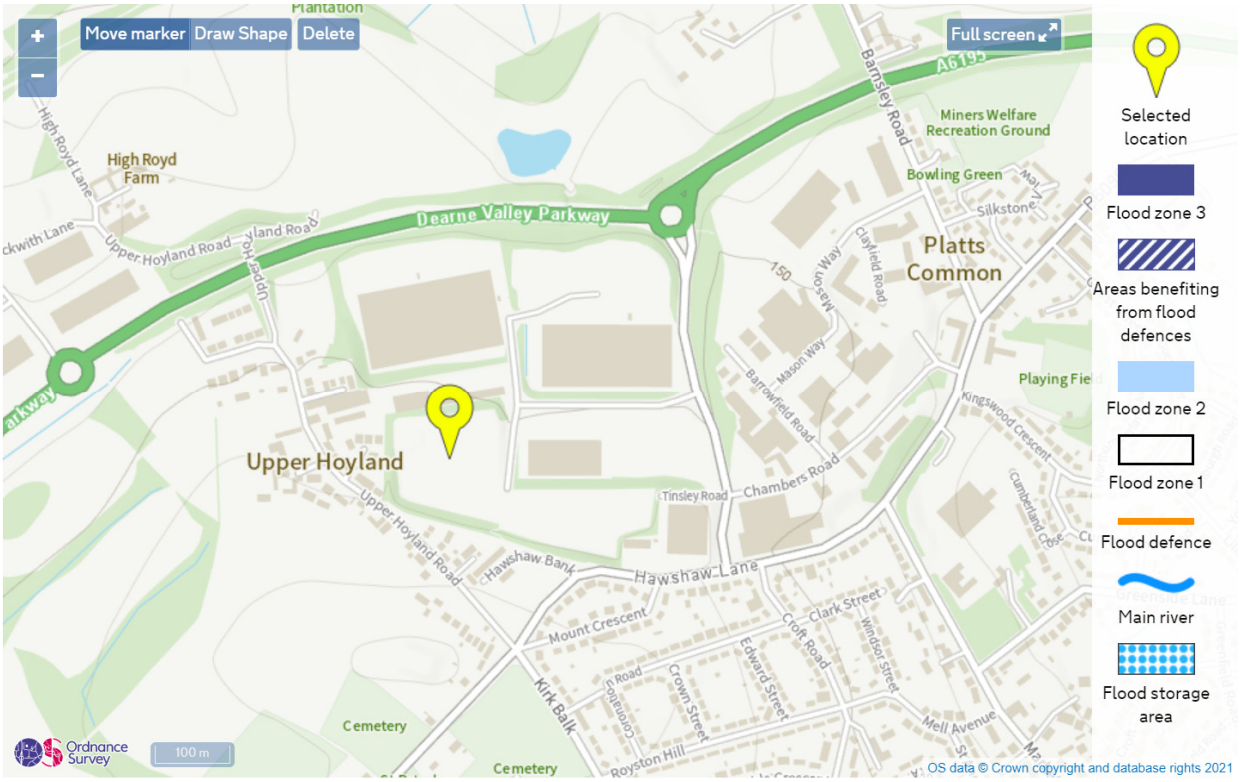
The site has an approximate area of 2.4 hectares.

2.2 DEVELOPMENT PROPOSALS

The proposals are for a new development comprising a single industrial / distribution unit with a service yard and car park. The proposed site layout is shown at Appendix B.

3.0 FLOOD RISK

The current gov.uk Flood Map for Planning records (below) 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.



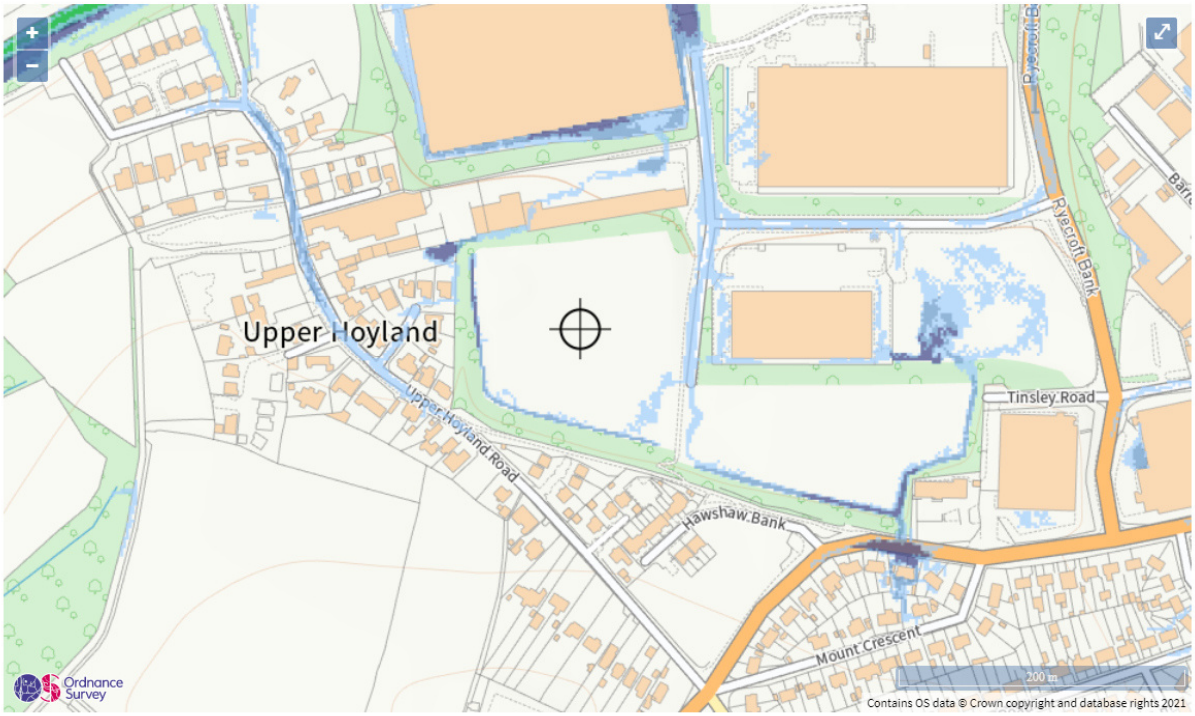
The gov.uk surface water flood map (overleaf) indicates areas of low to high flooding in channels around the perimeter of the site. These are related to the drainage channels that have been constructed at the base of the embankments in order to convey run off to the land drainage system. These channels 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.

Flood risk

Extent of flooding

Location

Enter a place or postcode



Extent of flooding from surface water

High Medium Low Very low Location you selected

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 C and calculations of maximum flow rates at Appendix D.

4.1 FOUL DRAINAGE

The foul drainage from the development 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 19,396m2 (1.94ha):

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 3 are not to exceed the following:

1 year = 165.0 l/s
30 year = 380.8 l/s
100 year (+ 30% climate change) = 478.6 l/s

This will be achieved through the use of attenuation tanks within the service yard, prior to connecting to the surface water sewer which will be through the 450mm diameter stub connected to PN 1.004.

4.3 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.

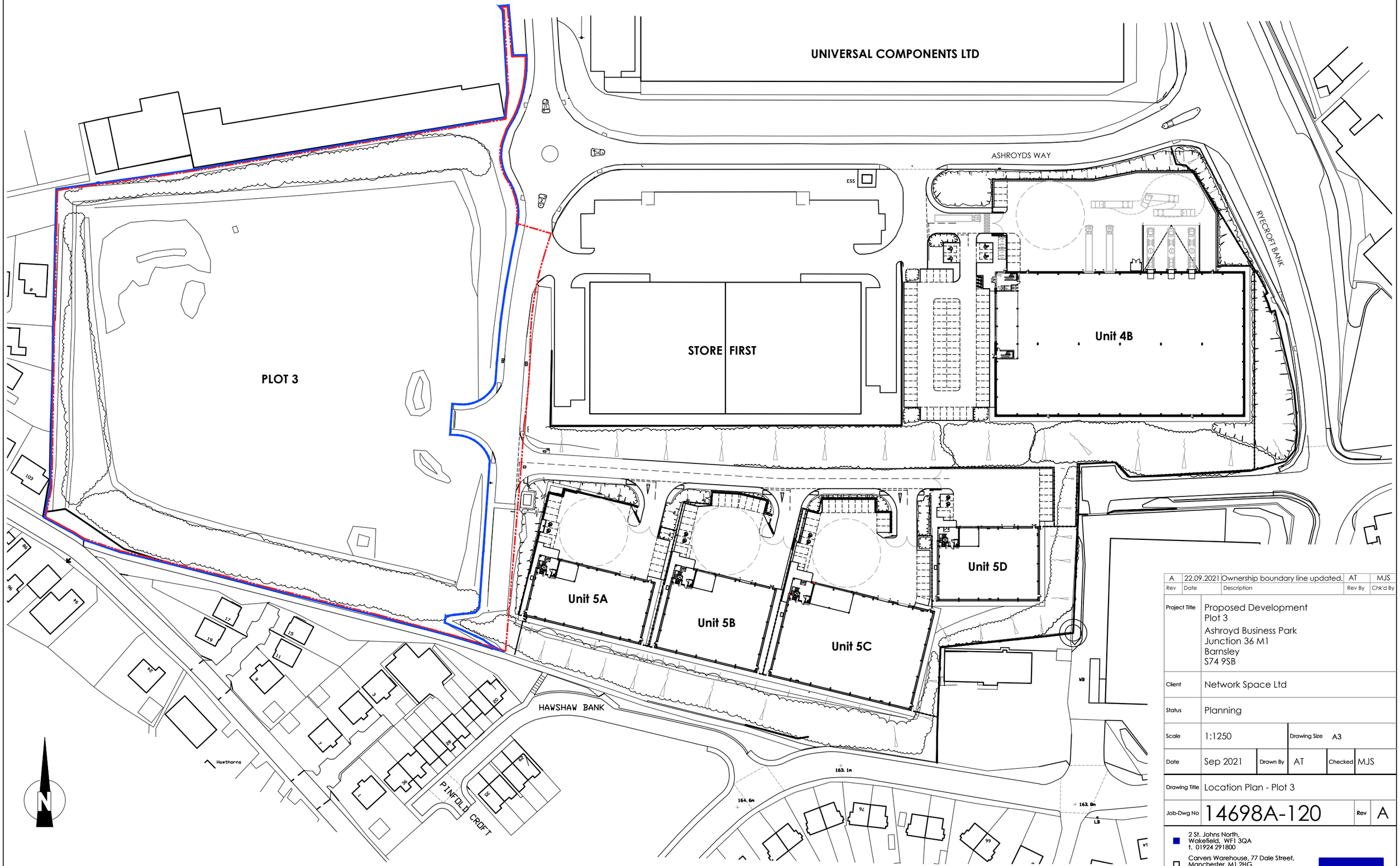
- Design/Construction Standard
  All on-site foul and surface water drainage will be designed and constructed in accordance with current Building Regulation Standards.

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)

0 12.5 25 37.5 50 62.5m

SCALE 1:1250

Rev	Date	Description	Rev By	Chk'd By
A	22.09.2021	Ownership boundary line updated.	AT	MJS

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	Sep 2021
Drawn By	AT
Checked	MJS
Drawing Title	Location Plan - Plot 3
Job-Dwg No	14698A-120
Rev	A

2 St. Johns North, Wakefield, WF1 3QA t. 01924 291800
Carvers Warehouse, 77 Dale Street, Manchester, M1 2HG t. 0161 2388555
The Old Rectory, 79 High Street, Newport Pagnell, MK16 8AB t. 01908 211577
101 London Road, Reading, RG1 5BY t. 0118 9507700
10 Gees Court, St Christophers Place, London, W1U 1JJ t. 0207 4091215

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APPENDIX B

Proposed Site Layout

Note:
Information is based on topographical survey and received information.
Assumed site boundary and site constraints subject to confirmation.
All Legal easements and extent of existing underground services locations are subject to confirmation.

LEVELS

+000.00	Existing levels
+000.00	Proposed levels

Note: For further details regarding levels, refer to Engineer's latest levels layout proposal.

LANDSCAPING

Note: Landscape design shown indicatively, for further details regarding landscaping, refer to Landscape Architect's latest proposal.

BOUNDARIES

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

N

0 5 10 15 20 25m
SCALE 1:500

Proposed Unit 3B
90,000 sq.ft / 8,361 sq.m
Ground Floor Footprint
Plus
4,500 sq.ft / 418sq.m
First Floor Offices

TOTAL GIA
94,500 sq.ft / 8,779 sq.m

(FFL 154.75m AOD)

110No. Parking Spaces
(2.4 x 4.8m) Including 5no. Disabled & 12No. Charging Spaces

ASHROYDS WAY

HAWSHAW BANK

Rev	Date	Description	Rev By	Chk'd By
D	24-05-2022	Amended GA plan and entry to service yard. Added cycle parking.	TM	JMH
C	20-05-2022	Building moved 5m from residential. Service yard entrance modified.	TM	JMH
B	09-05-2022	Pedestrian crossing removed from Main entrance bell mouth.	EG	JMH
A	23.09.2021	Updated to client's comments.	AT	MJS

Project Title	Proposed Development Plot 3 Ashroyd Business Park Junction 36 M1 Barnsley S74 9SB
Client	Network Space Ltd
Status	Planning
Scale	1:500 — Drawing Size A1
Date	Sep 2021 — Drawn By TM — Checked JMH
Drawing Title	Proposed Site Plan
Job-Dwg No	14698A-125 — Rev D

2 St. Johns North, Wakefield, WF1 3QA t. 01924 291800
Carvers Warehouse, 77 Dale Street, Manchester, M1 2HG t. 0161 2388555
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APPENDIX C

S104 As Built Sewer Layout

YWS ref: H-3-261-550

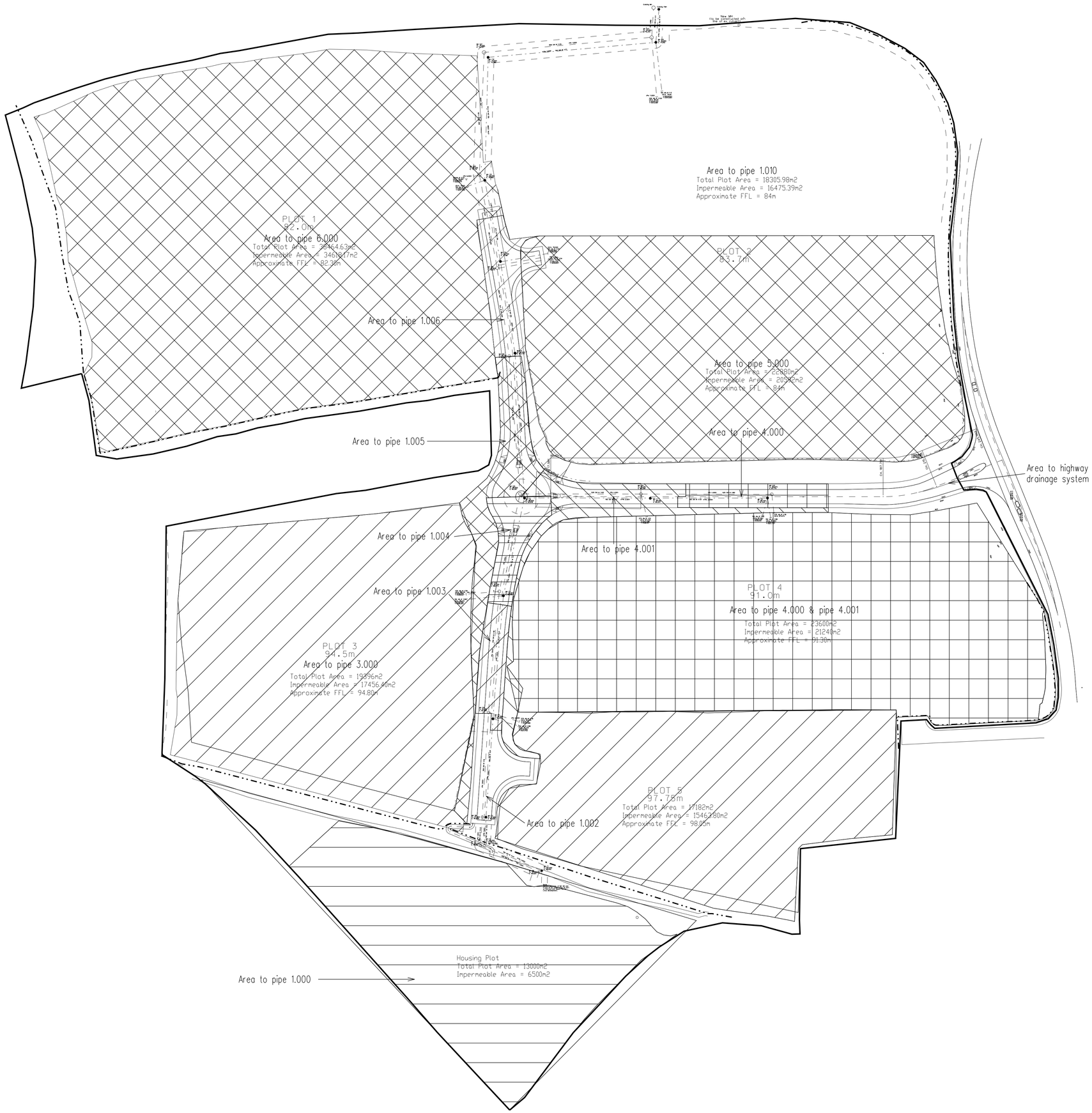
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Contractors must verify all dimensions at the site before commencing any work or making any shop drawings: no dimensions to be taken from drawing

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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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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website: www.wm-saunders.co.uk

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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