

APPENDIX E Drainage Strategy

JNP Group		Page 1
Link House		
St Marys Way		A State of the second s
Chesham HP5 1HR		Micro
Date 26/11/2021 11:43	Designed by JNP.User	Drainago
File	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	
ICP SUD	<u>S Mean Annual Flood</u>	
	Input	
Return Period (yea: Area (l SAAR (r	rs) 5 Soil 0.150 ha) 1.000 Urban 0.000 nm) 684 Region Number Region 6	
	Results 1/s	
	QBAR Rural 0.4 QBAR Urban 0.4	
	Q5 years 0.5	
	Q1 year 0.3 Q30 years 0.9 Q100 years 1.3	





,71.30

IL: 70.98

Maximum Discharge: 6.2L/s

adopted and private roads and 1.398 Ha of roofs and private driveways.

6. As per the OCC Local Standards, a 10% allowance should be made for urban creep, to take account of potential increases in impermeable area that do not require consent, such as paving of gardens or small extentions etc. The 10% allowance has been applied to the area of the roofs and private driveways. Therefore the total area made impermeable by the proposed development is estimated at 3.134 ha.

The greenfield Qbar discharge rate was calculated using the IoH124 methodology with the ICP SuDS correction for small catchments. The HR Wallingford maps indicate the site has a WRAP class of 1, representing well drained permeable soils. The resulting greenfield Qbar discharge rate was 0.4 L/s/Ha.

8. The intrusive ground investigation carried out at the site (refer to C86354-JNP-XX-XX-RP-G-1004), found that shallow groundwater was present across the site. Therefore the WRAP class of 3 is more appropriate for the site, representing permeable soils with shallow groundwater in low lying areas.

 Therefore, an increased discharge rate of 2.0 L/s/Ha has been selected and agreed with the LLFA by email, dated 27/04/2022.



	Indicative site boundary
L XX.XXX	Indicative plot finished floor level (FFL)
	Proposed surface water sewer
·	Proposed foul water sewer
~~~~~	Proposed foul water rising main
<b>—•</b> —	Existing public foul water sewer
~~~~~	Existing public foul water rising main
	Proposed pervious pavement / permeable construction
	Extent of potentially adoptable road, discharging directly to adjacent swale or filter drain, subject to consultation with the highways authority.
	Proposed swale. 500mm wide base channel, banks max. 1:3.
	Proposed filter drain
	Proposed detention basin. Banks vary, max. 1 in 3. To landscape architect's design
	Basin low flow channel
	Basin top of water level
	Basin maintenance buffer (3m offset)
	Indicative extent of 1 in 3 banking from development down to existing ground.
	Bioretention system / raingarden
$\langle \rangle$	Proposed permeable construction infiltrating to grou
	Fin drain pervious paving outlet



HAZARD IDENTIFICATION BOX								
Т	This table is provided to assist the Principal Contractor to fulfil their obligations under the CDM Regulations 2015							
Hazard Ref	Hazard Type (Construction/Maintenance/ Cleaning/Demolition/Adaptation)	Hazard Description	Mitigation Measures/ Residual Risk					
	Construction	Shallow groundwater (site wide)	Contractor to follow appropriate construction methodology for shallow groundwater. Appropriate construction types for buried structures should also be used.					
	Construction/ Maintenance/ Cleaning	Detention basins	The detention basin has been sited to be visible to the public, with banks no steeper than 1 in 3. The basin should be unfenced and any planting should be limited to reeds that will not obstruct visibility into the basin.					
	Construction/ Maintenance	Overhead electricity cable.	All construction plant to keep away from cables. Ground level barriers to be installed as per HSE Guidance Note GS6, and all relevant HSE and SSEN guidance to be followed at all times.					

P01	12/10/2022	First Issue	AS/MAH/MAH					
Rev.	Date	Description	Drn / Chk'd / App'd					
Suitabilit	Suitability: S2 - Suitable for Information							



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P01	10/11/2022	First Issue	AS/MAH/MAH				
Rev.	Date	Description	Drn / Chk'd / App'd				
Suitabilit	Suitability: S2 - Suitable for Information						



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	Indicative site boundary
0	Proposed surface water sewer
	Proposed swale. 500mm wide base channel, banks max. 1:3.
	Proposed filter drain
	Proposed detention basin. Banks vary, max. 1 in 3. To landscape architect's design
	Basin low flow channel
	Basin top of water level
	Basin maintenance buffer (3m offset)
	Fin drain pervious paving outlet
	11kV High Voltage Overhead Cable

General Notes

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2. All dimensions are millimetres (mm), and levels are in metres (m) unless noted otherwise and should be checked on site prior to

- Do not scale from this drawing. Only figured dimensions are to be relied upon. Don't hesitate to get in touch with JNP Group if additional information is required.
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Rev.	Date	Description	Drn / Chk'd / App'd					
Suitabilit	Suitability: S2 - Suitable for Information							

Wates Developments

Land South of Green Lane, Chesterton

Exceedance Flow Plan Sheet 2 of 2

P01

JNP Group		Page 1				
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1004 P01					
Chesham, Buckinghamshire	Western Parcel					
HP5 1HR	Green Lane, Chesterton	Micco				
Date 10/11/2022	Designed by AS					
File C86354-JNP-XX-XX-CA-	Checked by MAH	Diamaye				
Innovyze	Network 2020.1.3					
STORM SEWER DESIGN	by the Modified Rational Method Criteria for Storm					
Pipe Sizes STA	NDARD Manhole Sizes STANDARD					
FE	EH Rainfall Model					
Return Peri	od (years)	100				
FEH Rainfa	11 Version 2	013				
Sit	e Location GB 455736 220987 SP 55736 20	987				
	Data Type Po	int				
Maximum Rainfa	ll (mm/hr)	50				
Maximum Time of Concentrat	ion (mins)	30				
Foul Sewag	e (l/s/ha) 0.	000				
Volumetric Run	off Coeff. 1.	000				
	PIMP (%)	100				
Add Flow / Climate	Change (%)	U 200				
Minimum Backdrop	Height (m) U.	200				
Maximum Backdrop .	Height (m) I.	200				
Min Design Depth for Optimi	Min Design Depth for Optimisation (m) 1.2					
Min Slope for Optimisa	tion (1:X)	500				
Design	ed with Level Soffits					

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Ba Flow	ase (l/s)	k (mm)	n HYD SECT	DIA (mm)	Section Type	Auto Design
1.000 1.001	5.000 18.600	0.050 0.460	100.0 40.4	0.309 0.000	5.00 0.00		0.0	0.600 0.600	000 0	225 150	Triple Pipe Pipe/Conduit	* 8
2.000 2.001	5.000 46.000	0.050 0.460	100.0 100.0	0.281 0.000	5.00 0.00		0.0	0.600 0.600	000 0	225 150	Triple Pipe Pipe/Conduit	8 8
1.002	43.700	0.220	198.6	0.189	0.00		0.0	0.600	0	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (1/s)	Flow (l/s)
1.000	50.00	5.06	73.250	0.309	0.0	0.0	0.0	1.31	156.0	55.8
1.001	50.00	5.26	73.200	0.309	0.0	0.0	0.0	1.59	28.1«	55.8
2.000 2.001	50.00 50.00	5.06 5.83	73.250 73.200	0.281 0.281	0.0	0.0	0.0	1.31 1.00	156.0 17.8«	50.7 50.7
1.002	50.00	6.48	72.590	0.779	0.0	0.0	0.0	1.11	78.6«	140.6
				©1982-2	2020 Innov	vyze				

JNP (Group									Page 2			
Link	House	e, St I	Mary's	s Way		C86354-JN	P-XX-X	X-CA-C-1	004 P	01			
Ches	ham, 1	Bucking	ghamsł	nire	1	Western Parcel							
HP5	1HR					Green Lane, Chesterton Micro							
Date	10/13	1/2022			1	Designed	by AS			Dcaip			
File	C863	54-JNP	-xx-xx	K-CA-		Checked by MAH							
Inno	vyze				1	Network 2	020.1.	3					
				Netwo	ork De	sign Tabl	e for	Storm					
	_					_							
PN	Lengt (m)	h Fall (m)	Slope	I.Area (ha)	T.E. (mins)	Base Flow (1/s)	k (mm)	n HYD SECT	DIA (mm)	Section Type	Design		
	()	()	(=,	(110)	(()		(,				
1.003	51.70	0 0.250	206.8	0.078	0.00	0.0	0.600	C	375	Pipe/Conduit	: 🔒		
3.000	5.00	0 0.050	100.0	0.295	5.00	0.0	0.600	000	225	Triple Pipe			
3.001	13.40	0 0.230	58.3	0.000	0.00	0.0	0.600	(5 150	Pipe/Conduit	. 🍝		
4.000	5.00	000.050	100.0	0.321	5.00	0.0	0.600	000	5 300 5 150	Triple Pipe			
1.001	55.50	0.100	, , , , , , , , , , , , , , , , , , , ,	0.000	0.00	0.0	0.000	· · · · · · · · · · · · · · · · · · ·	5 150	ripe/conduit			
1.004	18.40	0.040	460.0	0.238	0.00	0.0	0.600	(o <u>600</u>	Pipe/Conduit	•		
1.005	100.00	0.175	571.4	0.080	0.00	0.0	0.600	(o 600	Pipe/Conduit	. 🔶		
1 007	6.00 40.00	$10 \ 0.080$	320 0	0.561	0.00	0.0	0.600	0453\-	5 600 / 150	Pipe/Conduit			
1.007	10.00	0.125	520.0	0.000	0.00	0.0		.015 5 (-)	150	1.5 Bwaie			
5.000	10.00	0.100	100.0	0.733	5.00	0.0	(0.045 000	525	Triple Pipe	e 🐣		
5.001	35.10	00 0.400	87.8	0.000	0.00	0.0	0.600	(5 150	Pipe/Conduit	: 🔶		
1.008	80.00	00 0.420	190.5	0.000	0.00	0.0	(0.045 3 \=,	/ 150	1:3 Swale	e 💧		
					Networ	ck Results	s Table	2					
	PN	Rain	T.C.	US/IL	Σ I.Are	ea ΣBase	Foul	Add Flow	Vel	Cap Flow			
	((mm/hr)	(mins)	(m)	(ha)	Flow (1/s	s) (l/s)	(1/s)	(m/s)	(l/s) (l/s)			
	1 003	50 00	7 17	72 295	0.85	57 0	0 0 0	0.0	1 26	138 7/ 154 7			
	1.003	50.00	/.1/	12.295	0.01		0.0	0.0	1.20	130.7% 134.7			
:	3.000	50.00	5.06	72.550	0.29	95 0.	0.0	0.0	1.31	156.0 53.3			
	3.001	50.00	5.23	72.500	0.29	95 0.	0.0	0.0	1.32	23.3« 53.3			
	4.000	50.00	5.05	72.800	0.32	21 0	0 0.0	0.0	1.57	333.4 58 0			
	4.001	50.00	5.55	72.750	0.32	21 0.	0 0.0	0.0	1.17	20.7« 58.0			
							a -						
	1.004	50.00	7.44	71.820	1.71	LL 0.	0.0	0.0	1.13	319.2 308.9			
.	1.005	50.00	9.12	71.605	2.35	52 0.	.0 0.0	0.0	2.81	795.7 424 7			
	1.007	50.00	10.48	71.525	2.35	52 0.	0.0	0.0	0.49	405.7« 424.7			
				-		-			o				
	5.000 5.001	50.00	5.29 5.21	71.900	0.73	330. 330		0.0	0.57	3'/2.'/ 132.3			
'	J.UU1	50.00	5.84	/1.000	0.73	J. U.	0.0	0.0	1.0/	132.3 × • • • • • • • • • • • • • • • • • •			
:	1.008	50.00	12.57	71.400	3.08	35 0.	0.0	0.0	0.64	525.9« 557.0			
			Fre	ee Flor	wing O	utfall De	tails	for Stor	<u>m</u>				
			Outfal	.1 Out	fall C.	Level I. L	evel	Min D,I	w				
		P	ipe Num	lber Na	ame	(m) (r	n) I.	Level (mm) (mm)				
								(m)					

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1.008 71.500 70.980 70.980 0 0

JNP Group		Page 3
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1004 P01	
Chesham, Buckinghamshire	Western Parcel	
HP5 1HR	Green Lane, Chesterton	Mirro
Date 10/11/2022	Designed by AS	Desinado
File C86354-JNP-XX-XX-CA-	Checked by MAH	Dialitage
Innovyze	Network 2020.1.3	

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Storage Structures 6 Number of Online Controls 6 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model						FEH
Return Period (years)						100
FEH Rainfall Version						2013
Site Location	GB	455736	220987	SP	55736	20987
Data Type						Point
Summer Storms						Yes
Winter Storms						No
Cv (Summer)						1.000
Cv (Winter)						0.840
Storm Duration (mins)						30

JNP Group		Page 4									
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1004	4 P01									
Chesham, Buckinghamshire	Western Parcel										
HP5 1HR	Green Lane, Chesterton	Micco									
Date 10/11/2022	Designed by AS										
File C86354-JNP-XX-XX-CA-	Checked by MAH	Drainage									
Innovyze	Network 2020.1.3										
Online	Controls for Storm										
Orifice Manhole: 2,	DS/PN: 1.001, Volume (m ³)	: 2.2									
Diameter (m) 0.024 Discharge Coefficient 0.600 Invert Level (m) 73.200											
Orifice Manhole: 4,	DS/PN: 2.001, Volume (m ³)	: 2.2									
Diameter (m) 0.029 Discharge	Coefficient 0.600 Invert Level	(m) 73.200									
Orifice Manhole: 8,	DS/PN: 3.001, Volume (m ³)	: 1.8									
Diameter (m) 0.037 Discharge	Coefficient 0.600 Invert Level	(m) 72.500									
Orifice Manhole: 10,	DS/PN: 4.001, Volume (m ³)	: 2.7									
Diameter (m) 0.037 Discharge	Coefficient 0.600 Invert Level	(m) 72.750									
Hydro-Brake® Optimum Manhol	e: 15, DS/PN: 1.007, Volum	e (m³): 143.4									
		5100									
Desic	Reference MD-SHE-0101-5100-13/5 n Head (m)	-5100 1.375									
Design	Flow (1/s)	5.1									
	Flush-Flo™ Calcu	lated									
A	objective Minimise upstream sto pplication Su:	orage rface									
Sump	Available	Yes									
Dia	meter (mm)	101									
Invert	Level (m) 7	1.525									
Suggested Manhole Dia	meter (mm) meter (mm)	1200									
Control Points Head (m) Flow	7 (1/s) Control Points	Head (m) Flow (l/s)									
Design Point (Calculated) 1.375 Flush-Flo™ 0.406	5.1 Kick-Flo@ 5.1 Mean Flow over Head Range	0.840 4.1 - 4.5									
The hydrological calculations have be	en based on the Head/Discharge re	elationship for the									
Hydro-Brake® Optimum as specified.	hould another type of control dev	vice other than a									
Hydro-Brake Optimum® be utilised then invalidated	these storage routing calculation	ons will be									
Depth (m) Flow (l/s) Depth (m) Flow	7 (l/s) Depth (m) Flow (l/s) Dep	th (m) Flow (l/s)									
0.100 3.4 0.800	4.3 2.000 6.1	4.000 8.4									
0.200 4.7 1.000	4.4 2.200 6.3	4.500 8.9									
0.300 5.0 1.200	4.8 2.400 6.6	5.000 9.3									
0.400 5.1 1.400	5.1 2.600 $6.95.5 3.000 7.2$	5.500 9.8 6.000 10.2									
0.600 4.9 1.800	5.8 3.500 7.9	6 500 10 6									
		0.500 10.0									
		0.000 10.0									
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				Page 5						
Link House, St Mary's Way	C86354-JNP-X	X-XX-CA-C-	1004 P01							
Chesham, Buckinghamshire	Western Parc	el								
HP5 1HR	Green Lane,	Chesterton		Micco						
Date 10/11/2022	Designed by	AS								
File C86354-INP-XX-XX-CA-	Checked by M	ан		Drainage						
	Network 2020	1 3								
111100 920	Network 2020	.1.5								
Hydro-Brake® Optimum Manhol	e: 15, DS/PN:	1.007, Vo	lume (m³)	: 143.4						
Depth (m) Flow (1/s) Depth (m) Flow	w (l/s) Depth (n	n) Flow (l/s)	Depth (m)	Flow (l/s)						
7.000 11.0 8.000	11.7 9.00	0 12.4								
7.500 11.3 8.500	12.0 9.50	12.7								
Hydro-Brake® Optimum Manhole: 16, DS/PN: 5.001, Volume (m³): 9.0										
Unit	Reference MD-S	HE-0055-1100-	0550-1100							
Desig	n Head (m)		0.550							
Design	Flow (1/s) Flush-Flo™	C	⊥.⊥ alculated							
	Objective Min	imise upstream	m storage							
I	Application		Surface							
Sum	Available		Yes							
Dia	ameter (mm) Level (m)		55 71 800							
Minimum Outlet Pipe Dia	ameter (mm)		75							
Suggested Manhole Dia	ameter (mm)		1200							
Control Points Head (m) Flo	w (l/s) Co	ntrol Points	Head	(m) Flow (l/s)						
Design Point (Calculated) 0.550 Flush-Flo™ 0.166	1.1 1.1 Mean Flo	Kick- w over Head F	Flo® 0.3 Range	360 0.9 - 1.0						
The hydrological calculations have be Hydro-Brake® Optimum as specified. S Hydro-Brake Optimum® be utilised ther invalidated	een based on the Should another ty h these storage :	Head/Discharg ype of contro routing calcu	ge relations l device ot lations wil	ship for the her than a l be						
Depth (m) Flow (l/s) Depth (m) Flor	w (l/s) Depth (m	1) Flow (l/s)	Depth (m)	Flow (l/s)						
0 100 1 1 1 200	16 200									
0.100 1.1 1.200	1.0 5.00	2.4	/.000	3.5						
0.200 1.1 1.200	1.7 3.50	10 2.4 10 2.5 10 0.5	7.500	3.5 3.7						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1.0 $3.001.7$ $3.501.8$ $4.001.9$ 4.50	10 2.4 10 2.5 10 2.7 10 2.9	7.500	3.5 3.7 3.8 3.9						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000	1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0	7.500 7.500 8.000 8.500 9.000	3.5 3.7 3.8 3.9 4.0						
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1.7 3.50 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.00	0 2.4 0 2.5 0 2.7 0 2.9 0 3.0 0 3.1 0 3.3	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.50 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.00 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.50 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.00 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.000 0.600 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.00 2.2 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						
0.100 1.1 1.200 0.200 1.1 1.400 0.300 1.0 1.600 0.400 1.0 1.800 0.500 1.1 2.200 0.800 1.3 2.400 1.000 1.4 2.600	1.0 3.00 1.7 3.50 1.8 4.00 1.9 4.50 2.0 5.00 2.1 5.50 2.1 6.50	10 2.4 10 2.5 10 2.7 10 2.9 10 3.0 10 3.1 10 3.3 10 3.4	7.500 8.000 8.500 9.000 9.500	3.5 3.7 3.8 3.9 4.0 4.1						

JNP Group		Page 6										
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1004 P01											
Chesham, Buckinghamshire	Western Parcel											
HP5 1HR	Green Lane, Chesterton	Micro										
Date 10/11/2022	Designed by AS											
File C86354-JNP-XX-XX-CA-	Checked by MAH											
Innovyze	Network 2020.1.3											
Storage Structures for Storm												
Tank or Pond Manhole: 2, DS/PN: 1.001												
Invert Level (m) 73.200												
Depth (m) Area (m ²) Depth (m) Area	ea (m^2) Depth (m) Area (m^2) Depth (m) A	rea (m²)										
0.000 0.0 0.150	50.0 0.151 462.0 0.700	758.0										
Tank or Pond	Manhole: 4, DS/PN: 2.001											
Inve	rt Level (m) 73.200											
Depth (m) Area (m ²) Depth (m) Area	ea (m ²) Depth (m) Area (m ²) Depth (m) A	rea (m²)										
0.000 0.0 0.100	50.0 0.101 426.0 0.700	654.0										
Tank or Pond	Manhole: 8, DS/PN: 3.001											
Inve	rt Level (m) 72.500											
Depth (m) Area (m ²) Depth (m) Area	ea (m ²) Depth (m) Area (m ²) Depth (m) A	rea (m²)										
0.000 0.0 0.200	50.0 0.201 634.0 0.500	972.0										
Tank or Pond I	Manhole: 10, DS/PN: 4.001											
Inver	rt Level (m) 72.750											
Depth (m) Area (m ²) Depth (m) Area	ea (m ²) Depth (m) Area (m ²) Depth (m) A	rea (m²)										
0.000 0.0 0.150	50.0 0.151 634.0 0.500	972.0										
Tank or Pond I	Manhole: 15, DS/PN: 1.007											
Inver	rt Level (m) 72.000											
Depth (m) Area (m ²) Depth (m) Area	ea (m ²) Depth (m) Area (m ²) Depth (m) A	rea (m²)										
0.000 0.0 0.150	50.0 0.151 1431.0 1.050	2008.0										
Tank or Pond I	Manhole: 16, DS/PN: 5.001											
Inve	rt Level (m) 71.800											
Depth (m) Area (m ²) Depth (m) Area	ea (m ²) Depth (m) Area (m ²) Depth (m) A	rea (m²)										
0.000 0.0 0.200	50.0 0.201 2062.0 0.550	2446.0										
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JNP Gr	oup									I	Page 7
Link H	ouse,	St	Marv'	s Wav	(286354	-JNP-X	X-XX-CA-	C-1004	1 P01 r	
Chesha	m. Bu	ckir	nghams	hire	7	Wester	n Parc	el			
HP5 1H	R .					Green	Lane	Chestert	on		
Date 1	0/11/	2022)			Degian	ad by	70	.011		MICIO
	0/11/	2022 TNT	vv v	v an		Theale	d br M				Drainage
FILE C	00334	-UNE		X-CA-							,
Innovy	ze				1	Networ	k 2020	0.1.3			
<u>2 year</u>	Retu	rn I	Period	Summa	ry of (Critic for St	al Res	sults by	Maximu	um Leve	l (Rank 1)
м	anhole Foul	Are H Head Sewag Nuu	eal Redu Hot Iot Star Iloss Co ge per P mber of Number	Iction F Start (rt Level Deff (Gl Nectare Input N of Onlin	<u>Sim</u> 'actor 1. mins) (mm) obal) 0. (1/s) 0. Hydrograp ne Contro	ulation 0 0 5500 Flo .000 phs 0 N ols 6 N	Criteri Addition MADE ow per F umber o umber o	a hal Flow -) Factor * Inl Person per f Storage f Time/Are	% of To 10m³/ha .et Coef Day (1/ Structum a Diagra	tal Flow Storage fiecient per/day) res 6 ams 0	0.000 2.000 0.800 0.000
		N	umber o	f Offlin	ne Contro	ols O N	umber o	f Real Tim	e Contro	ols O	
	Synthetic Rainfall DetailsRainfall ModelFEHFEH Rainfall Version2013Site Location GB 455736 220987 SP 55736 20987Data TypePointCv (Summer)1.000Cv (Summer)1.000										
		Ма	argin fo	or Flood	l Risk Wa Analysi	arning (.s Times DTS Sta	mm) 300 tep Fi tus	.0 DVI ne Inertia ON) Status Status	OFF OFF	
	Det	Dı	uration	Profile((s) (mir	(s) ns) 720,	15, 30, , 960, 1	60, 12 440, 21	20, 180, 24 60, 2880,	Summer 0, 360, 4320, 5 8	and Winte 480, 600 760, 7200 640, 1008	er),), 30
	Ret	CI	limate (s) (year Change ([8) [8]					0, 0, 4	10 10
DN	US/MH	e.	torm	Return	Climate	First	: (X)	First	(Y)	First (Z) Overflow
				004		24101		1100	-	2.21110	
1.000	1	600	Winter	2	+0%	2/240	Summer				
	2	600 480	Winter Winter	2 2	+0% +0%	2/15	Summer				
2.000	3 4	480	Winter	2	+0%	2/15	Summer				
1.002	5	15	Summer	2	+0%	30/15	Summer	100/15	Summer		
1.003	6	15	Summer	2	+0%	30/15	Summer				
3.000	7	360	Winter	2	+0%	30/15	Summer				
3.001	8 0	360 360	Winter Winter	2	+0% +0%	2/15	Summer				
4.001	9 10	360	Winter	∠ 2	+0응 +0응	2/15	Summer				
1.004	11	960	Winter	2	+0%	30/15	Summer	100/10080	Summer		
1.005	12	960	Winter	2	+0%	30/15	Summer				
1.006	14	960	Winter	2	+0%	2/120	Summer				
5 000	15 15	960 15	Winter	2	+0% +0%	100/15	Summer				
5.000			~~~~	2			-				
					©1982	2-2020	Innov	yze			

JNP G	Group								Pa	ige 8		
Link	House	e, St M	Mary's Wa	Y	C8635	54-JNP-X	X-XX-CA-C	-1004	: P01 🦵]		
Chesh	nam, E	Bucking	ghamshire		Weste	ern Parc	el					
HP5 1	HR				Greer	1 Lane,	Chesterto	n	N.	licco		
Date	10/11	/2022			Desid	aned by	AS			liciu		
Filo	C8635	54 - TND	-XX-XX-CA	_	Chook	rod by M	710			rainage		
Tunnar		JI UNF	AA AA CA		Nature							
INNOV	vyze				Netwo	Drk 2020	.1.3					
2 100	2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)											
<u>z yee</u>	ar net		erroù suin	mary or	for	Storm	ditts by P		IIII DEVET	(Rank I)		
					101							
		Water	Surcharged	Flooded			Half Drain	Pipe				
	US/MH	Level	Depth	Volume	Flow /	Overflow	Time	Flow		Level		
PN	Name	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(1/s)	Status	Exceeded		
1.000	1	73.494	0.019	0.000	0.07			6.6	SURCHARGE	D		
1.001	2	73.494	0.144	0.000	0.02			0.6	SURCHARGE	D		
2.000	3	73.435	-0.040	0.000	0.08			7.1	0	K		
2.001	4	73.435	0.085	0.000	0.05			0.8	SURCHARGE	D		
1.002	5	72.734	-0.156	0.000	0.45			33.2	0	к 1		
1.003	6	72.451	-0.219	0.000	0.36			45.9	0	K		
3.000	/	12.114	-0.001	0.000	0.10			9.3	CIIDCUADCE	K D		
3.001	8	72.113	-0.112	0.000	0.07			10 1	SURCHARGE	D V		
4.000	10	72.900	0.112	0.000	0.00			1 3	SUBCHARGE			
1 004	11	72.306	-0 114	0.000	0.07			11 1	DORCHARGE	r K		
1.005	12	72.303	-0.077	0.000	0.05			12.2	0	ĸ		
1.006	14	72.303	0.098	0.000	0.06			19.9	SURCHARGE	D		
1.007	15	72.303	-1.047	0.000	0.00			5.1	0	K		
5.000	15	72.139	-0.286	0.000	0.42			149.3	0	K		

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JNP Group		Page 9										
Link House, St Mary's Way	У	C86354-JNP-	P01									
Chesham, Buckinghamshire		Western Par										
HP5 1HR		Green Lane		Micro								
Date 10/11/2022		Designed by		Dcainago								
File C86354-JNP-XX-XX-CA	-	Checked by	MAH			Diamage						
Innovyze	Innovyze Network 2020.1.3											
2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) <u>for Storm</u>												
US/MH Retu PN Name Storm Per	urn Climat iod Chang	te First (X) e Surcharge	First (Y) Flood	First (Z) Overflow	Overf Act	Water low Level . (m)						
1.008 18 4320 Winter	2 +0)%)%				71.474						

		Surcharged	Flooded			Half Drain	Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Time	Flow		Level
PN	Name	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	Status	Exceeded
5.001	16	0.136	0.000	0.06			1.1	SURCHARGED	
1.008	18	-0.426	0.000	0.01			6.2	OK	

JNP Gr	oup										Page	10
Link H	iouse,	St	Mary's	s Way	(286354-	-JNP-X	X-XX-CA-	C-1004	P01		
Chesha	.m, Bu	uckir	nghamsl	nire	V	Vesteri	n Parc	el			Ч.,	
HP5 1H	IR					Green 1	Lane,	Chestert	on		Mic	
Date 1	0/11/	2022	2		I	Designe	ed by	AS				U
File C	86354	-JNE	-xx-x	X-CA-		Checked	l by M	AH			Uldi	nage
Innovy	ze				1	Jetwor]	c 2020	.1.3				
<u>30 y</u> e	ear Re	eturr Are	n Perio eal Redu Hot	od Sum action F Start (1	mary of <u>1</u> Simu actor 1. mins)	f Crit:) for : ulation 000 A 0	ical R Storm Criteri ddition MADD	esults b a al Flow - Factor *	y Maxi % of To 10m³/ha	.mum Le tal Flow Storage	vel 0.00 2.00	(<u>Rank</u> 0
		H	lot Star	t Level	(mm)	0		Inl	et Coef:	fiecient	0.80	0
M	Ianhole	Head	lloss Co	eff (Gl	(1/s) 0.	500 Flo	w per P	erson per	Day (1/j	per/day)	0.00	0
	Foul Sewage per hectare (1/s) 0.000 Number of Input Hydrographs 0 Number of Storage Structures 6 Number of Online Controls 6 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0											
					Synthet	ic Rainf	all Det	aila				
				Rainfa	ll Model		JALL Del		FEH	I		
			FEH R	ainfall	Version	~			2013	3		
				Site I Da	Location ata Type	GB 455	/36 2209	987 SP 5573	36 20987 Point			
				Cv	(Summer)				1.000)		
				Cv	(Winter)				1.000)		
		Ma	argin fo	r Flood	Risk Wa Analysi	rning (1 s Times† DTS Stat	nm) 300 tep Fin tus (.0 DVD ne Inertia ON	Status Status	OFF OFF		
		ית	Iration	Profile(s)	15 30	60 12	0 180 24	Summer a	and Wint	er 0	
		DI	ITACION	(UIII) (S)	720,	960, 1	440, 12	0, 180, 24 60, 2880,	4320, 5'	480, 80 760, 720	0, 0,	
									8	640, 100	80	
	Ret	curn I	Period(s	s) (year Thange (S) 2)				:	2, 30, 1	00 40	
		C.		liange (~o)					0, 0,	10	
	US/MH			Return	Climate	First	t (X)	First	(Y)	First (Z) Ov	erflow
PN	Name	St	torm	Period	Change	Surcl	harge	Floc	d	Overflo	w	Act.
1,000	1	720	Winter	30	+0%	2/240	Summer					
1.001	2	720	Winter	30	+0%	2/15	Summer					
2.000	3	600	Winter	30	+0%	30/15	Summer					
2.001	4	600 1 F	Winter	30	+0% +0%	2/15	Summer	100/15	Summor			
1.002	5 6	15 15	Summer	30	+0% +0%	30/15	Summer	100/15	Summer			
3.000	7	360	Winter	30	+0%	30/15	Summer					
3.001	8	360	Winter	30	+0%	2/15	Summer					
4.000	9 10	360 360	Winter Winter	30 30	+0% +0%	100/15 2/15	Summer					
1.004	11	1440	Winter	30	+0%	30/15	Summer	100/10080	Summer			
1.005	12	1440	Winter	30	+0%	30/15	Summer					
1.006	14	960	Winter	30	+0%	2/120	Summer					
1.007 5.000	15 15	960 15	Winter Summer	30 30	+0% +0%	100/15	Summer					
5.000	10		Saunct	50		100/10	_					
					©1982	-2020	Tnnovy	/7.e				

JNP G	Group								Pag	re 11
Link	House	e, St N	Mary's Way	7	C8635	4-JNP-X	P01			
Chesł	nam, E	Bucking	ghamshire		Weste	ern Parc				
HP5 1	HR				Green	Lane,	Chesterto	on	Mi	
Date	10/11	/2022			Desig	ned by	AS		Dc	
File	C8635	4-JNP-	-XX-XX-CA-	-	Check	ed by M	IAH			anaye
Innov	vyze				Netwo	ork 2020	0.1.3		I	
	_									
30 3	vear F	leturn	Period Su	ummary	of Cri	tical F	Results by	/ Maxi	.mum Level	(Rank
				- 1	1) for	Storm				
		Water	Surcharged	Flooded			Half Drain	Pipe		
	TIS/MH	Loval	Donth	Volumo	Flow /	Overflow	Time	12		T 1
		пелет	Depcii	vorume	F10w /	OVELLIOW	í L 🔪	FIOW	.	Level
PN	Name	(m)	(m)	(m ³)	Cap.	(1/s)	(mins)	(1/s)	Status	Exceeded
PN	Name	(m)	(m) 0.158	(m ³)	Cap.	(1/s)	(mins)	(1/s)	Status SURCHARGED	Exceeded
PN 1.000 1.001	Name 1 2	(m) 73.633 73.632	(m) 0.158 0.282	(m ³) 0.000 0.000	Cap. 0.11 0.03	(1/s)	(mins)	(1/s) 10.5 0.8	Status SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000	Name 1 2 3	(m) 73.633 73.632 73.572	(m) 0.158 0.282 0.097	(m ³) 0.000 0.000 0.000	Cap. 0.11 0.03 0.12	(1/s)	(mins)	(1/s) (1/s) 10.5 0.8 11.1	Status SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001	Name 1 2 3 4	(m) 73.633 73.632 73.572 73.572	(m) 0.158 0.282 0.097 0.222	(m ³) 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06	(1/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001 1.002	Name 1 2 3 4 5	(m) 73.633 73.632 73.572 73.572 73.071	(m) 0.158 0.282 0.097 0.222 0.181	(m ³) 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31	(1/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Evel Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003	Name 1 2 3 4 5 6	(m) 73.633 73.632 73.572 73.572 73.071 72.673	(m) 0.158 0.282 0.097 0.222 0.181 0.003	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94	(1/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000	Name 1 2 3 4 5 6 7	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19	(1/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000 3.001	Name 1 2 3 4 5 6 7 8	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865 72.865	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090 0.215	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19 0.08	(1/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9 1.7	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000 3.001 4.000	Name 1 2 3 4 5 6 7 8 9	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865 72.865 73.088	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090 0.215 -0.012	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19 0.08 0.11	(l/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9 1.7 19.5	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000 3.001 4.000 4.001	Name 1 2 3 4 5 6 7 8 9 10	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865 72.865 73.088 73.088	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090 0.215 -0.012 0.188	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19 0.08 0.11 0.08	(l/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9 1.7 19.5 1.6	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK	Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000 3.001 4.000 4.001 1.004	Name 1 2 3 4 5 6 7 8 9 10 11	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865 72.865 73.088 73.088 73.088 72.528	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090 0.215 -0.012 0.188 0.108	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19 0.08 0.11 0.08 0.06	(l/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9 1.7 19.5 1.6 13.6	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000 3.001 4.000 4.001 1.004 1.005	Name 1 2 3 4 5 6 7 8 9 10 11 12	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865 72.865 73.088 73.088 73.088 73.088 72.528	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090 0.215 -0.012 0.188 0.108 0.149	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19 0.08 0.11 0.08 0.11 0.08 0.06 0.06	(l/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9 1.7 19.5 1.6 13.6 15.0	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000 3.001 4.000 4.001 1.004 1.005 1.006	Name 1 1 2 3 4 5 6 7 8 9 10 11 12 14	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865 72.865 73.088 73.088 73.088 73.088 72.528 72.529 72.523	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090 0.215 -0.012 0.188 0.108 0.149 0.318	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19 0.08 0.11 0.08 0.11 0.08 0.11	(l/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9 1.7 19.5 1.6 13.6 15.0 34.1	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded 1
PN 1.000 1.001 2.000 2.001 1.002 1.003 3.000 3.001 4.000 4.000 1.004 1.005 1.006 1.007	Name 1 2 3 4 5 6 7 8 9 10 11 12 14 15	(m) 73.633 73.632 73.572 73.572 73.071 72.673 72.865 72.865 73.088 73.088 73.088 73.088 72.528 72.523 72.523	(m) 0.158 0.282 0.097 0.222 0.181 0.003 0.090 0.215 -0.012 0.188 0.108 0.108 0.149 0.318 -0.827	(m ³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Cap. 0.11 0.03 0.12 0.06 1.31 0.94 0.19 0.08 0.11 0.08 0.11 0.08 0.06 0.06 0.10 0.00	(l/s)	(mins)	(1/s) 10.5 0.8 11.1 1.0 96.6 121.6 17.9 1.7 19.5 1.6 13.6 15.0 34.1 5.1	Status SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded 1

JNP Group		Page 12
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1004 P01	
Chesham, Buckinghamshire	Western Parcel	
HP5 1HR	Green Lane, Chesterton	Micro
Date 10/11/2022	Designed by AS	Drainago
File C86354-JNP-XX-XX-CA-	Checked by MAH	Diamage
Innovyze	Network 2020.1.3	
30 year Return Period Summary	of Critical Results by Maximum L 1) for Storm	evel (Rank

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
5.001	16	960 Winter	30	+0%	2/15 Summer				72.177
1.008	18	1440 Summer	30	+0%					71.474

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.001 1.008	16 18	0.227 -0.426	0.000 0.000	0.06 0.01			1.1 6.2	SURCHARGED OK	

JNP Group	P	age 13
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1004 P01	
Chesham, Buckinghamshire	Western Parcel	
HP5 1HR	Green Lane, Chesterton	Aicco
Date 10/11/2022	Designed by AS	
File C86354-JNP-XX-XX-CA-	Checked by MAH	lallaye
Innovyze	Network 2020.1.3	
100 year Return Period Summary Sin Areal Reduction Factor	of Critical Results by Maximum Lev 1) for Storm mulation Criteria 1.000 Additional Flow - % of Total Flow	<u>vel (Rank</u>
Hot Start (mins)	0 MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0 Inlet Coefficient	0.800
Foul Sewage per hectare (l/s)	0.000 Flow per Person per Day (l/per/day) 0.000	J.000
Number of Input Hydrogr Number of Online Cont Number of Offline Cont	aphs 0 Number of Storage Structures 6 rols 6 Number of Time/Area Diagrams 0 rols 0 Number of Real Time Controls 0	
Synthe	etic Rainfall Details	
Rainfall Mode	el Feh	
FEH Rainfall Versio	2013	
Data Typ	on GB 455/36 22098/ SP 55/36 2098/ De Point	
Cv (Summer	1.000	
Cv (Winter	1.000	
Margin for Flood Risk W Analys	Warning (mm) 300.0 DVD Status OFF sis Timestep Fine Inertia Status OFF DTS Status ON	
Profile(s)	Summer and Winter	<u>c</u>
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600	1
12	0, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 1008(,)
Return Period(s) (years) Climate Change (%)	2, 30, 100 0, 0, 40))
US/MH Return Climat	e First (X) First (Y) First (Z)) Overflow
PN Name Storm Period Change	e Surcharge Flood Overflow	Act.
1.000 1 15 Summer 100 +40	0% 2/240 Summer	
1.001 2 960 Winter 100 +40	0% 2/15 Summer	
2.000 3 720 Winter 100 +40 2.001 4 720 Winter 100 +40	18 30/15 Summer)8 2/15 Summer	
1.002 5 15 Summer 100 +40	0% 30/15 Summer 100/15 Summer	
1.003 6 15 Summer 100 +40	8 30/15 Summer	
3.000 7 15 Summer 100 +40	0% 30/15 Summer	
4.000 9 600 Winter 100 +40	0% 2/15 Summer 0% 100/15 Summer	
4.001 10 600 Winter 100 +40	0% 2/15 Summer	
1.004 11 15 Summer 100 +40	0% 30/15 Summer 100/10080 Summer	
1.005 12 15 Summer 100 +40	0% 30/15 Summer	
1.007 15 2880 Winter 100 +40)\$ 10 Z\IZO DUUMET	
5,000 15 15 Summer 100 +40		
51000 15 15 50mmol 100 11	1% 100/15 Summer	

JNP G	roup									Pag	e 14
Link	House	e, St I	Mary's Way	/	C8635	54-JNP-X	X-XX-CA-C	-1004	P01		
Chest	nam. F	Bucking	ahamshire		Weste	ern Parc	el				
HP5 1	HR		91104		Green Lane, Chesterton						
Date	10/11	/2022			Desid	ned by	AS				
File	C8635	4-JNP	-XX-XX-CA-	-	Check	ed by M	IAH			Die	iinage
Innov	ryze				Netwo	ork 2020	.1.3				
	-										
100	year :	Return	n Period S	ummary	of Cr	itical 1	Results by	/ Max	imum L	evel	(Rank
					1) for	s Storm					
		Water	Surcharged	Flooded			Half Drain	Pipe			
	US/MH	Level	Depth	Volume	Flow /	Overflow	Time	Flow			Level
PN	Name	(m)	(m)	(m ³)	Cap.	(1/s)	(mins)	(l/s)	Statu	15	Exceeded
1.000	1	73.847	0.372	0.000	2.72			257.4	SURCHAI	RGED	
1.001	2	73.837	0.487	0.000	0.04			1.0	SURCHAR	RGED	
2.000	3	73.780	0.305	0.000	0.18			16.9	SURCHAI	RGED	
2.001	4	73.779	0.429	0.000	0.08			1.3	SURCHAI	RGED	
1.002	5	74.503	1.613	2.566	1.82			133.8	FI	LOOD	1
1.003	6	73.858	1.188	0.000	1.45			187.0	FLOOD H	RISK	
3.000	7	73.126	0.351	0.000	2.61			246.4	FLOOD I	RISK	
3.001	8	73.003	0.353	0.000	0.08			1.7	FLOOD H	RISK	
4.000	9	73.235	0.135	0.000	0.12			22.6	SURCHAI	RGED	
4.001	10	73.235	0.335	0.000	0.10			2.0	SURCHAI	RGED	
1.004	11	73.327	0.907	0.000	1.74			367.8	FLOOD I	RISK	
1.005	12	/3.194	0.814	0.000	1.38			368.4	FLOOD I	RISK	
1.006	14	72.849	0.644	0.000	0.07			25.2	SURCHAI	KGED	
1.007	15	72.849	-0.501	0.000	1 74			5.1			
5.000	15	/2.613	0.188	0.000	1./4			622.5	F.TOOD 1	RISK	
1											

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JNP Group		Page 15
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1004 P01	
Chesham, Buckinghamshire	Western Parcel	
HP5 1HR	Green Lane, Chesterton	Mirro
Date 10/11/2022	Designed by AS	Dcainago
File C86354-JNP-XX-XX-CA-	Checked by MAH	Dialitage
Innovyze	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
5.001	16	1440 Winter	100	+40%	2/15 Summer				72.325
1.008	18	2880 Winter	100	+40%					71.474

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.001 1.008	16 18	0.375 -0.426	0.000 0.000	0.06 0.01			1.1 6.2	SURCHARGED OK	

JNP Group		Page 1
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1005 P01	
Chesham, Buckinghamshire	Eastern Parcel	
HP5 1HR	Green Lane, Chesterton	Micro
Date 10/11/2022	Designed by AS	
File C86354-JNP-XX-XX-CA-	Checked by MAH	Diamaye
Innovyze	Network 2020.1.3	
STORM SEWER DESIGN	by the Modified Rational Method	<u>l</u>
Design	Criteria for Storm	
Pipe Sizes STA	NDARD Manhole Sizes STANDARD	
FI	EH Rainfall Model	
Return Peri	od (years)	100
FEH Rainfa	ll Version 2	2013
Sit	e Location GB 455736 220987 SP 55736 20)987
	Data Type Po	oint
Maximum Rainfa	ll (mm/hr)	50
Maximum Time of Concentrat	ion (mins)	30
Foul Sewag	e (l/s/ha) 0	.000
Volumetric Run	off Coeff. 1	.000
	PIMP (%)	100
Add Flow / Climate	Change (%)	0
Minimum Backdrop	Height (m) 0	.200
Maximum Backdrop	Height (m) 1	.500
Min Design Depth for Optimi	sation (m) 1	.200
Min Vel for Auto Design	only (m/s)	1.00
Min Slope for Optimisa	tion (1:X)	500
Design	ed with Level Soffits	
Network D	esign Table for Storm	
« - Indica	ates pipe capacity < flow	

PN	Length	Fall	Slope	I.Area	T.E.	Ва	lse	k	HYD	DIA	Section Type	Auto
	(m)	(m)	(1:X)	(ha)	(mins)	Flow	(l/s)	(mm)	SECT	(mm)		Design
1 0 0 0			105 0								- 1 (7 7 7 1)	
1.000	35.091	0.180	195.0	0.182	5.00		0.0	0.600	0	300	Pipe/Conduit	Ē.
1.001	10.000	0.300	33.3	0.173	0.00		0.0	0.600	0	300	Pipe/Conduit	<u>_</u>
1.002	6.769	0.100	67.7	0.000	0.00		0.0	0.600	0	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (1/s)	Add Flow (1/s)	Vel (m/s)	Cap (1/s)	Flow (l/s)
1.000	50.00	5.52	72.830	0.182	0.0	0.0	0.0	1.12	79.3	32.9
1.001	50.00	5.58	72.650	0.355	0.0	0.0	0.0	2.73	193.2	64.1
1.002	50.00	5.70	72.350	0.355	0.0	0.0	0.0	0.94	7.4«	64.1

JNP Group		Page 2
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1005 P01	1
Chesham, Buckinghamshire	Eastern Parcel	
HP5 1HR	Green Lane, Chesterton	Micco
Date 10/11/2022	Designed by AS	
File C86354-JNP-XX-XX-CA-	Checked by MAH	Drainage
Innovyze	Network 2020.1.3	
Free Flowir	ng Outfall Details for Storm	
	C Level T Level Min D.L. W	
Pipe Number Name	(m) (m) I. Level (mm) (mm)	
	(m)	
1.002	73.300 72.250 72.250 100 0	
Simula	tion Criteria for Storm	
		-1
Volumetric Runoff Coe	tf 1.000 Additional Flow - % of Total F	'IOW 0.000
Hot Start (min	s) 0 MADD Factor " Tom"/Ha Stor	ent 0.800
Hot Start Level (m	m) 0 Flow per Person per Day (1/per/d	lay) 0.000
Manhole Headloss Coeff (Globa	1) 0.500 Run Time (mi	.ns) 60
Foul Sewage per hectare (1/	s) 0.000 Output Interval (mi	.ns) 1
Number of Input Hydr Number of Online C Number of Offline C Synth	ographs 0 Number of Storage Structures 1 Controls 1 Number of Time/Area Diagrams 0 Controls 0 Number of Real Time Controls 0	
<u>Dynci</u>		
Rainfall	Model FEH	
Return Period (y	ears) 100	
FEH Rainfall Ve	rsion 2013	
Site Loc	ation GB 455736 220987 SP 55736 20987	
Data Summer S	Type Point	
Winter S	torms No	
Cv (Su	mmer) 1.000	
Cv (Wi	nter) 0.840	
Storm Duration (mins) 30	

JNP Group		Page 3
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1005 P01	
Chesham, Buckinghamshire	Eastern Parcel	
HP5 1HR	Green Lane, Chesterton	Mirro
Date 10/11/2022	Designed by AS	Dcainago
File C86354-JNP-XX-XX-CA-	Checked by MAH	Dialitage
Innovyze	Network 2020.1.3	

Online Controls for Storm

Orifice Manhole: 3, DS/PN: 1.002, Volume (m³): 1.6

Diameter (m) 0.021 Discharge Coefficient 0.600 Invert Level (m) 72.350

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JNP Group		Page 4
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1005 P01	
Chesham, Buckinghamshire	Eastern Parcel	
HP5 1HR	Green Lane, Chesterton	Mirro
Date 10/11/2022	Designed by AS	Dcainago
File C86354-JNP-XX-XX-CA-	Checked by MAH	Dialitage
Innovyze	Network 2020.1.3	

Storage Structures for Storm

Tank or Pond Manhole: 3, DS/PN: 1.002

Invert Level (m) 72.600

Depth (m) Area (m^2) Depth (m) Area (m^2)

0.000 995.0 0.500 1197.0

JNP Group		Page 5	
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1005 P01		
Chesham, Buckinghamshire	Eastern Parcel		
HP5 1HR	Green Lane, Chesterton	Micco	
Date 10/11/2022	Designed by AS		
File C86354-INP-XX-XX-CA-	Checked by MAH	Drainage	
	Network 2020 1 3		
111100 920	Network 2020.1.5		
2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm			
Simulation Criteria Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Inlet Coefficcient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per hectare (1/s) 0.000 Number of Input Hydrographs 0 Number of Storage Structures 1 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0 Synthetic Rainfall Details Rainfall Model FEH FEH Rainfall Version 2013 Site Location GB 455736 220987 SP 55736 20987 Data Type Point Cv (Summer) 1.000 Cv (Winter) 1.000			
Analysis Timestep Fine Inertia Status OFF DTS Status OFF Profile(s) Summer and Winter			
Duration(s) (mins) 13, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080 Return Period(s) (years) 2, 30, 100			
	0, 0,	10	
US/MH Return Climate PN Name Storm Period Change	First (X) First (Y) First (Z) Ove Surcharge Flood Overflow A	Water erflow Level Act. (m)	
1.000 1 15 Summer 2 +0% 3	30/15 Summer 100/15 Summer	72.983	
1.001 2 15 Summer 2 +0% 3	30/15 Summer 100/15 Summer	72.799	
1.002 5 /20 WINCEL 2 +0%		12.091	
Surcharged Flooded	Half Drain Pipe		
US/MH Depth Volume Flow PN Name (m) (m ³) Car	/ UVERILOW TIME Flow	Level	
1.000 1 -0.147 0.000 0.	50 36.8 OK	4	
1.001 2 -0.151 0.000 0.	48 66.3 OK	1	
1.002 5 0.211 0.000 0.	U.S SORCHARGED		
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JNP Group	Раде б		
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1005 P01		
Chesham, Buckinghamshire	Eastern Parcel		
HP5 1HR	Green Lane, Chesterton		
Date 10/11/2022	Designed by AS		
File C86354 - INP - XX - CA -	Checked by MAH		
	Network 2020 1 2		
111100926	Network 2020.1.5		
30 year Return Period Summary of Critical Results by Maximum Level (Rank <u>1) for Storm</u>			
Simulation Criteria Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m ³ /ha Storage 0.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per hectare (1/s) 0.000 Number of Input Hydrographs 0 Number of Storage Structures 1 Number of Online Controls 1 Number of Time/Area Diagrams 0			
Number of Offline Cont	rols 0 Number of Real Time Controls 0		
Synthetic Rainfall DetailsRainfall ModelFEHFEH Rainfall Version2013Site Location GB 455736 220987 SP 55736 20987Data TypePointCv (Summer)1.000Cv (Winter)1.000Margin for Flood Risk Warning (mm) 300.0DVD Status OFFAnalysis TimestepFine Inertia Status OFF			
Profile(s) Summer and Winter Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080 Return Period(s) (years) 2, 30, 100 Climate Change (%) 0, 0, 40			
US/MH Return Climate PN Name Storm Period Change	Water First (X) First (Y) First (Z) Overflow Level Surcharge Flood Overflow Act. (m)		
1.000 1 15 Summer 30 +0% 1.001 2 15 Summer 30 +0% 1.002 3 960 Winter 30 +0%	30/15 Summer 100/15 Summer 73.380 30/15 Summer 100/15 Summer 73.130 2/15 Summer 72.782		
Surcharged Flooded US/MH Depth Volume Flow PN Name (m) (m³) Cap	Half Drain Pipe w / Overflow Time Flow Level p. (l/s) (mins) (l/s) Status Exceeded		
1.000 1 0.250 0.000 1 1.001 2 0.180 0.000 1 1.002 3 0.332 0.000 0	.17 85.3 SURCHARGED 4 .22 166.8 SURCHARGED 1 .09 0.6 SURCHARGED		
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JNP Group	Page 7		
Link House, St Mary's Way	C86354-JNP-XX-XX-CA-C-1005 P01		
Chesham, Buckinghamshire	Eastern Parcel		
HP5 1HR	Green Lane, Chesterton		
Date 10/11/2022	Designed by AS		
File C86354 - INP - XX - XX - CA -	Checked by MAH		
	Notwork 2020 1 2		
IIIIOVyze	NELWOIK 2020.1.3		
100 year Return Period Summary	of Critical Results by Maximum Level (Rank 1) for Storm		
Simulation Criteria Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m ³ /ha Storage 0.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000 Foul Sewage per hectare (l/s) 0.000 Number of Input Hydrographs 0 Number of Storage Structures 1			
Number of Offline Cont	rols 0 Number of Real Time Controls 0		
Synthetic Rainfall DetailsRainfall ModelFEHFEH Rainfall Version2013Site Location GB 455736 220987 SP 55736 20987Data TypeData TypePointCv (Summer)1.000Cv (Winter)1.000			
Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status OFF			
Profile(s) Summer and Winter Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080 Return Period(s) (years) Climate Change (%)			
US/MH Return Climate PN Name Storm Period Change	Water First (X) First (Y) First (Z) Overflow Level Surcharge Flood Overflow Act. (m)		
1.000 1 15 Summer 100 +40% 1.001 2 15 Summer 100 +40% 1.002 3 1440 Winter 100 +40%	30/15 Summer 100/15 Summer 73.842 30/15 Summer 100/15 Summer 73.650 2/15 Summer 72.932		
Surcharged Flooded US/MH Depth Volume Floo	Half Drain Pipe w / Overflow Time Flow Level		
PN Name (m) (m ³) Caj	p. (l/s) (mins) (l/s) Status Exceeded		
1.000 1 0.712 12.631 1 1.001 2 0.700 0.144 1 1.002 3 0.482 0.000 0	.88 137.0 FLOOD 4 .81 247.8 FLOOD 1 .10 0.7 FLOOD RISK		
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