

KIDMORE END ROAD, EMMER GREEN, READING, RG4 8SQ

Surface Water Drainage Statement

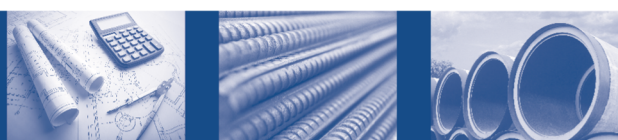
AMc/22/0185/6452: Rev -
1st June 2022

MJA Consulting have been appointed by Vistry Thames Valley to undertake the Reserved Matters engineering design for the proposed residential development South of Kidmore End Road, Emmer Green, Reading. The site consists of 223 residential units with associated infrastructure and landscaping. The following statement provides the surface water drainage proposals for the development.

Approved Drainage Strategy:

Development surface water designs follow the principles outlined in the Water Resource and Flood Risk document prepared by Temple Group submitted as part of the approved Outline planning application reference 210018. A summary of points from the report are highlighted below:

- The site lies within Flood Zone 1 and is not at risk of fluvial or surface water flooding. All potential sources of flood risk were considered, the site was assessed as a low risk.
- Ground conditions were described as Black Park Gravel overlying the Lambeth Clay Group with Seaford Chalk formation at depths from 1.80m BGL. Known solution features are present in the North Western half of the site.
- Infiltration testing the underlying geology had moderate permeability; conservative rates of 3.2×10^{-5} were found at depth in the vicinity of the northern swale. Shallow soakage to the east indicates variable soakage rates of between 6.7×10^{-5} and 2.0×10^{-6}
- Due to the known solution features in part of the site the proposed development surface water system will use a combination of SUDs features including permeable type paving and sub-base together with attenuation basins and swales



Development Surface Water Design:

The development surface water design follows the principles set at outline planning stage, utilising several SUDs features throughout the system. These include:

- Permeable paving
- Attenuation Basin
- Linear swales/ditches
- Vortex Separator
- Swale

The development surface water drainage strategy for the development is described below:

Roof Runoff:-

Roof runoff will typically be collected by a conventional system of guttering, downpipes and private storm drainage discharged to the main piped network. Where possible downpipes fronting the drive will discharge to the driveway sub base.

Water Butts are to be provided per plot where feasible on a rainwater downpipe to collect roof runoff for re-use.

Private Drives & Parking Bays:-

All private drives and parking bays will typically drain via either permeable block paving or yard gullies / ACO drains discharging to permeable sub-base. Links to the main pipe drainage network will ensure the shallow systems will outfall during higher storm events.

Development Roads & Private Drives:-

The development roads will typically drain via deep trapped road gullies connecting directly to the main piped storm drain, flows discharge directly via the piped network.

Attenuation & Outfall:-

Due to the available area and gradient of the existing ground the development attenuation is provided by both an open above ground basin and swale connected by a ditch/swale. Storm runoff discharges to the central attenuation basin which is to be lined to avoid issues with solution features, flows are then controlled via an orifice to maximise storage before outfalling to a lower swale. The final development flows are then discharged to ground in the northern swale. The Eastern part of the development is to drain to ground via permeable paving and shallow crate soakaways as no known solution features are present in this part of the development. The combined storage has been designed to accommodate the necessary storage volumes to manage the 1:100 year storm event, plus an extra allowance of 40% for the predicted potential increase in peak rainfall up to 2115.

To ensure the water quality to the downstream watercourse network is maintained further pollution prevention has been included on the final outfall in the form of a vortex separator/interceptor to remove any oil, silts, and debris.

The development micro drainage network calculations also include a 10% increase in impermeable areas to allow for urban creep from the housing areas.

Total Area:	15,021m ²
Development Road	4,995m ²
Housing, driveways & parking courts	9,115m ²
10%	911m ²

The surface water system has been tested for the designed extreme storm event of 100 year + 40% climate change. Any limited flooding during storms in excess of these or in the event of overloading the drainage network due to failure or blockage the flood water will follow the development road alignments with any exceedance discharging to the lower POS or attenuation basin

Water Quality Risk Management:-

The SUDs features and water quality elements follow the recommendations of the CIRIA Guide “The SUDs Manual” and incorporate the requirements of adoption, construction and the need to install utilities and drainage to the site. A water quality assessment has been undertaken using Chapter 26 of the CIRIA Guide “The SUDs Manual” C753. As the development site is residential the most appropriate method of assessment is the Simple Index Approach.

The SUDs treatment type varies depending on location within the development, SUDs elements throughout the development are:

- Sealed permeable driveway
- Deep Trapped Gullies
- Attenuation Basin
- Vortex Separator
- Outfall Swale

Typically, driveways and parking areas drain via the permeable paving system, main pipe system and the attenuation basin and vortex separator. Road areas will drain via deep trapped gullies, attenuation basin and vortex separator.

The following tables 26.2 & 26.3 from the CIRIA SuDS Manual C753 for the Simple Index Approach and highlight the Pollution hazard indices & SUDs Mitigation Indices for the development.

Pollution hazard indices (Table 26.2):

Land Use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Individual driveways, low traffic roads and non-residential car parking.	Low	0.5	0.4	0.4

SUDs Mitigation Indices (Table 26.3):

Type of SUDs component (Within development)	Mitigation indices		
	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Attenuation Basin/Pond	0.7	0.7	0.5
Vortex Separator (SDS Type)	0.8	0.5	0.7

Where the mitigation index of an individual component is insufficient, two components (or more) in series will be required.

Total SUDs mitigation index = mitigation index + 0.5 (mitigation index)

A factor of 0.5 is used to account for the reduced performance of a secondary or tertiary component associated with already reduced inflow concentrations.

As noted, runoff from the site is from a mix of areas, the roof areas would be considered a very low hazard rating, the majority of the roads & driveways within the development parcel would be considered low.

The tables below provides an assessment and comparison of pollution hazards for the two storm outfalls and the available SUDs mitigation.

		Total suspended solids (TSS)	Metals	Hydrocarbons
Land Use	Residential Areas	0.7	0.6	0.45
SUDs Mitigation	Permeable paving, Attenuation Basin & Vortex Separator	$0.7 + (0.5 \times 0.8) + (0.5 \times 0.5)$ 1.35	$0.6 + (0.5 \times 0.5) + (0.5 \times 0.5)$ 1.10	$0.7 + (0.5 \times 0.7) + (0.5 \times 0.6)$ 1.35
		Acceptable	Acceptable	Acceptable

		Total suspended solids (TSS)	Metals	Hydrocarbons
Land Use	Residential Areas (Roads only)	0.5	0.4	0.4
SUDs Mitigation	Attenuation Basin & Vortex Separator	$0.5 + (0.5 \times 0.8)$ 0.9	$0.5 + (0.5 \times 0.5)$ 0.75	$0.6 + (0.5 \times 0.7)$ 0.95
		Acceptable	Acceptable	Acceptable

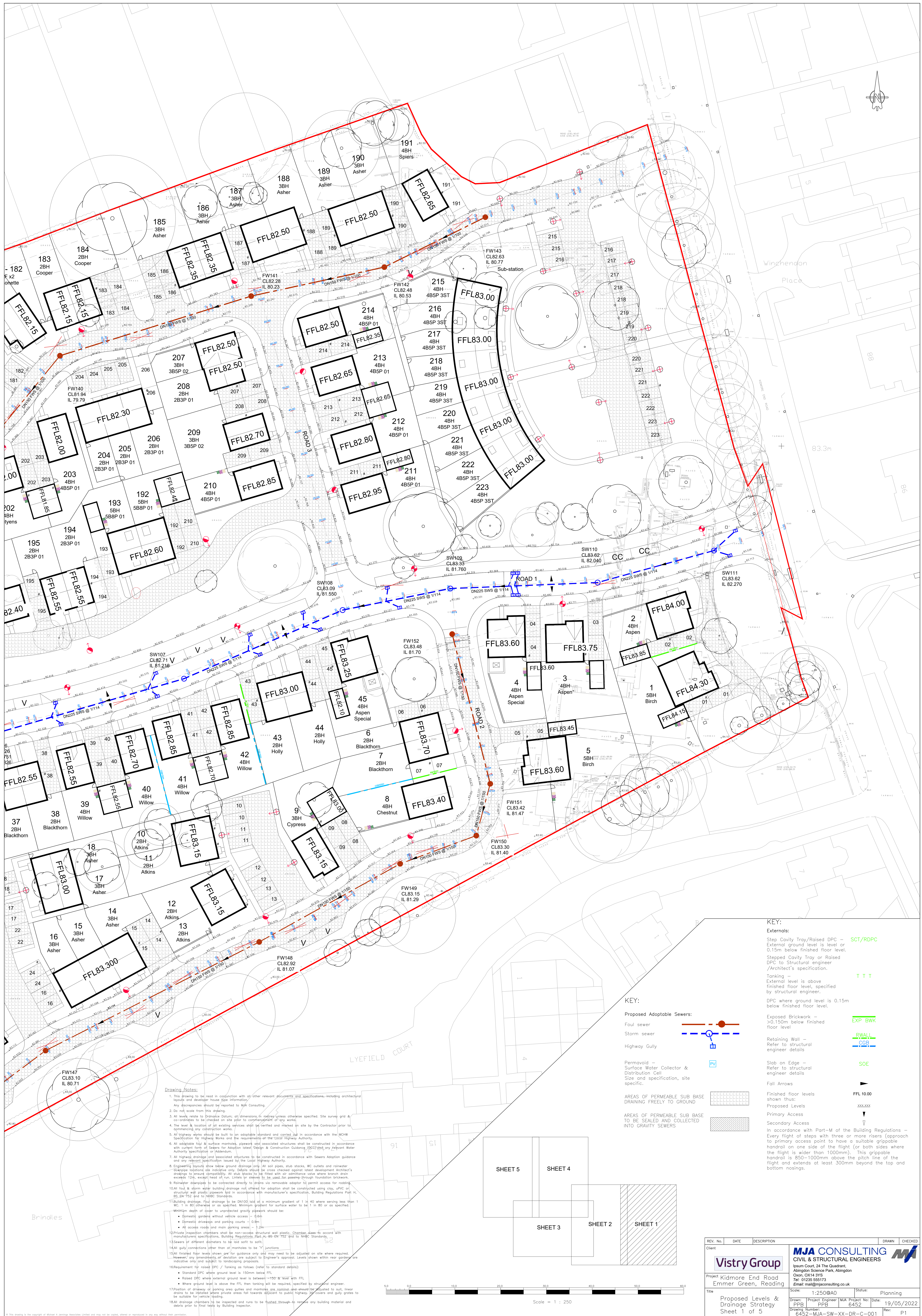
The water quality assessment has been carried out in accordance with Chapter 26 of The SUDs Manual based on the available site SUDs elements and has been shown to comply.

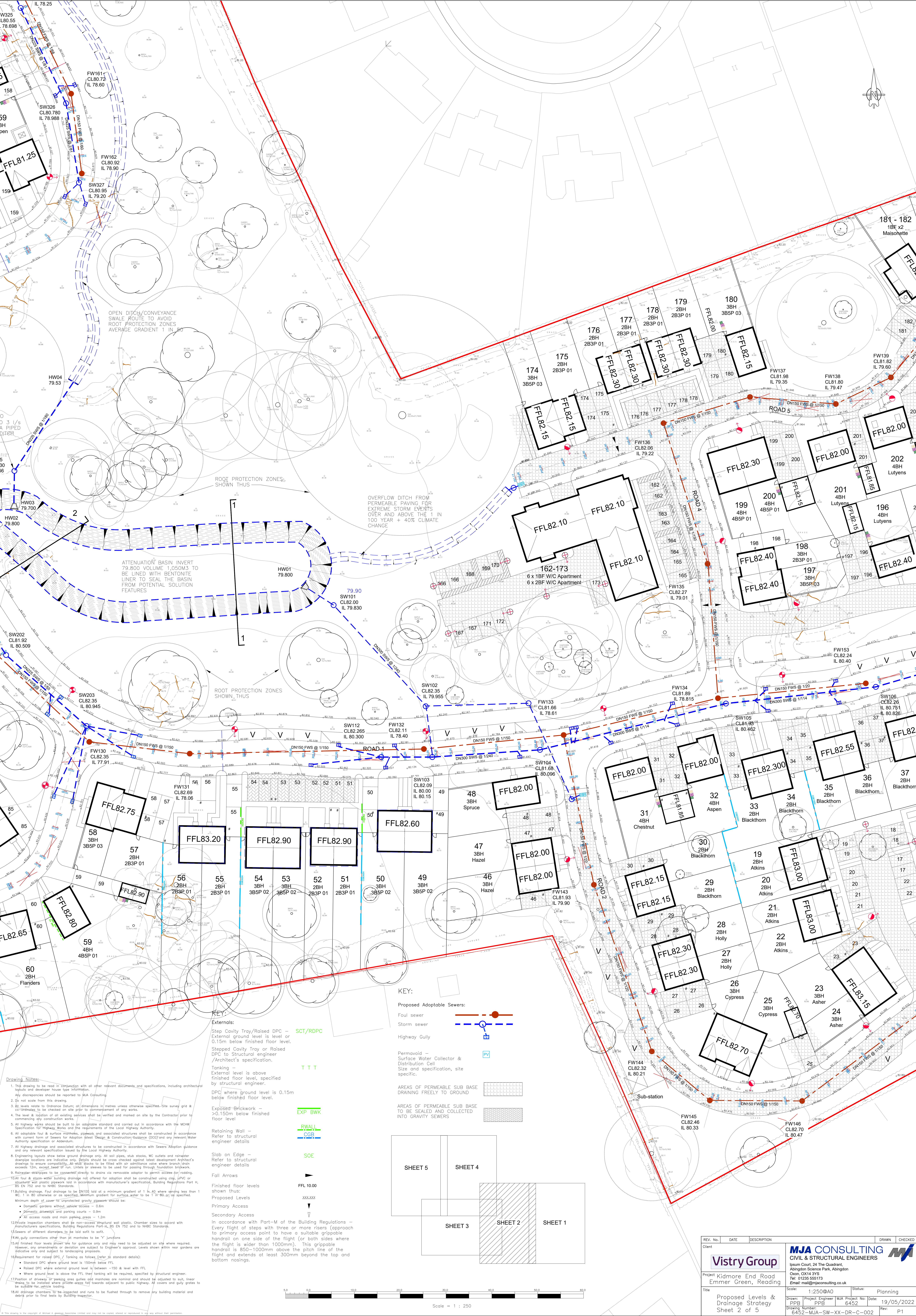
Alistair McShane
MJA Consulting

Appendices:
Engineering Layouts & Sections
Surface Water Micro Drainage Calculations
SUDs Maintenance Plan

APPENDIX A

Engineering Layouts

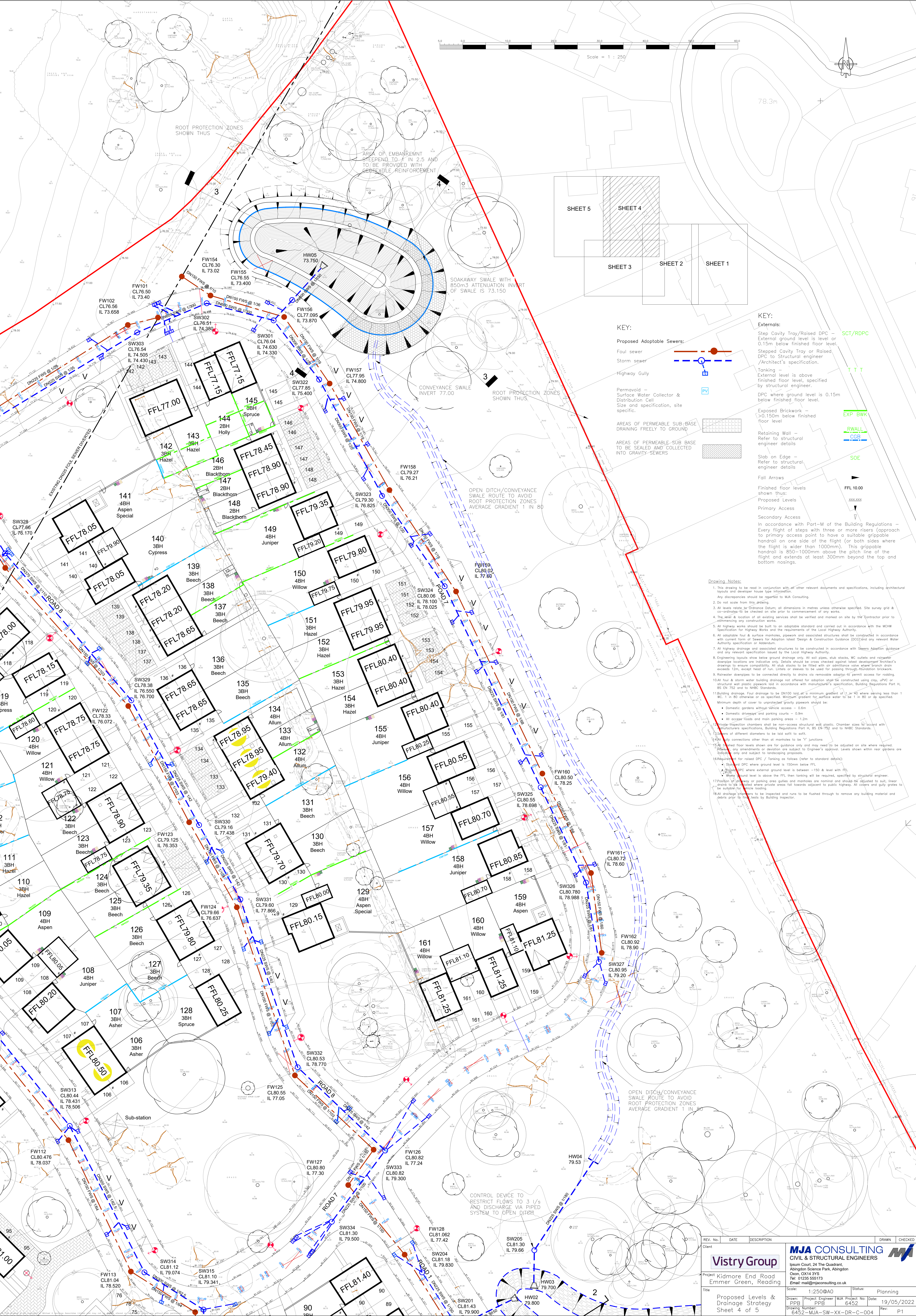




REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED
Client				
Project	Kidmore End Road Emmer Green, Reading			
Title	Proposed Levels & Drainage Strategy Sheet 2 of 5			
Scale:	1:250@A0	Status:	Planning	
Drawn:	Project Engineer	MJA Project No:	6452	Date: 19/05/2022
Drawing Number:	6452-MJA-SW-XX-DR-C-002	Rev:	P1	

MJA CONSULTING
CIVIL & STRUCTURAL ENGINEERS
Ipsium Court, 24 The Quadrant,
Abingdon Science Park, Abingdon
Oxon, OX14 3YS
Tel: 01235 555173
Email: mail@mjaconsulting.co.uk

Vistry Group



KEY:

Proposed Adoptable Sewers:

- Foul sewer
- Storm sewer
- Highway Gully

AREAS OF PERMEABLE SUB-BASE DRAINING FREELY TO GROUND

AREAS OF PERMEABLE SUB-BASE TO BE SEALED AND COLLECTED INTO GRAVITY SEWERS

KEY:

Externals:

- Step Cavity Tray/Raised DPC – External ground level is level or 0.15m below finished floor level.
- Stepped Cavity Tray or Raised DPC to Structural engineer/Architect's specification.
- Tanking – External level is above finished floor level, specified by structural engineer.
- DPC where ground level is 0.15m below finished floor level.
- Exposed Brickwork – 30.150m below finished floor level.
- Retaining Wall – Refer to structural engineer details.
- Slab on Edge – Refer to structural engineer details.
- Fall Arrows
- Finished floor levels shown thus: Proposed Levels
- Primary Access
- Secondary Access

In accordance with Part-M of the Building Regulations – Every flight of steps with three or more risers (approach to primary access point to have a suitable grippable handrail on one side of the flight (or both sides where the flight is wider than 1000mm). This grippable handrail is 850–1000mm above the pitch line of the flight and extends at least 300mm beyond the top and bottom nosings.

- Drawing Notes:**
- This drawing is to be read in conjunction with all other relevant documents and specifications, including architectural layouts and developer house type interpretation.
 - Any discrepancies should be reported to MJA Consulting.
 - Do not scale from this drawing.
 - All levels relate to Ordnance Datum; all dimensions in metres unless otherwise specified. Site survey grid & coordinates to be checked on site prior to commencement of any work.
 - The level & location of all existing services shall be verified and marked on site by the Contractor prior to commencing any construction work.
 - All highway works should be built to an adoptable standard and carried out in accordance with the MCHW Specification for Highway Works and the requirements of the Local Highway Authority.
 - All adoptable foul & surface manholes, sewers and associated structures shall be constructed in accordance with current form of Sewers for Adoption latest Design & Construction Guidance (DCG) and any relevant Water Authority specification or Addendum.
 - All highway drainage and associated structures to be constructed in accordance with Sewers Adoption guidance and any relevant specification issued by the Local Highway Authority.
 - Engineering layouts show below ground drainage only. All soil pipes, sub stacks, WC outlets and rainwater downpipe locations are indicative only. Details should be cross checked against latest development Architect's drawings to ensure compatibility. All sub stacks to be fitted with air admittance valve where branch area exceeds 12m, except head of run. Lintels or sleeves to be used for passing through foundation brickwork.
 - Rainwater downpipes to be connected directly to drains via removable adaptor to permit access for rodding.
 - 100% foul & storm water building drainage not offset for adoption shall be constructed using clay, uPVC or structural wall plastic pipework laid in accordance with manufacturer's specification, Building Regulations Part H, BS EN 752 and to INHC Standards. Minimum depth of cover to unperforated gravity pipe shall be:
 - Domestic gardens without vehicle access – 0.5m
 - Domestic driveways and parking courts – 0.3m
 - All access roads and main parking areas – 1.2m
 12. All connections other than to manholes to be 15° junctions.
 13. Finished floor levels shown are for guidance only and may need to be adjusted on site where required. However, any amendments or deviation are subject to Engineer's approval. Levels shown within rear gardens are indicative only and subject to landscaping proposals.
 14. Requirements for raised DPC / Tanking as follows (refer to standard details):
 - Standard DPC where ground level is 150mm below FFL
 - Raised DPC where external ground level is between -150 & level with FFL
 - Where ground level is above the FFL then tanking will be required, specified by structural engineer.
 15. Position of driveway or parking area gullies and manholes are nominal and should be adjusted to suit, linear drains to be installed where private areas fall towards adjacent to public highway. All covers and gully grates to be suitable for vehicle loading.
 16. All drainage channels to be inspected and runs to be flushed through to remove any building material and debris prior to final tests by Building Inspector.

REV.	NO.	DATE	DESCRIPTION	DRAWN	CHECKED
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Client: **Vistry Group**

Project: **Kidmore End Road, Emmer Green, Reading**

Title: **Proposed Levels & Drainage Strategy Sheet 4 of 5**

Scale: **1:250@A0**

Status: **Planning**

Drawn: **PPB**

Project Engineer: **MJA**

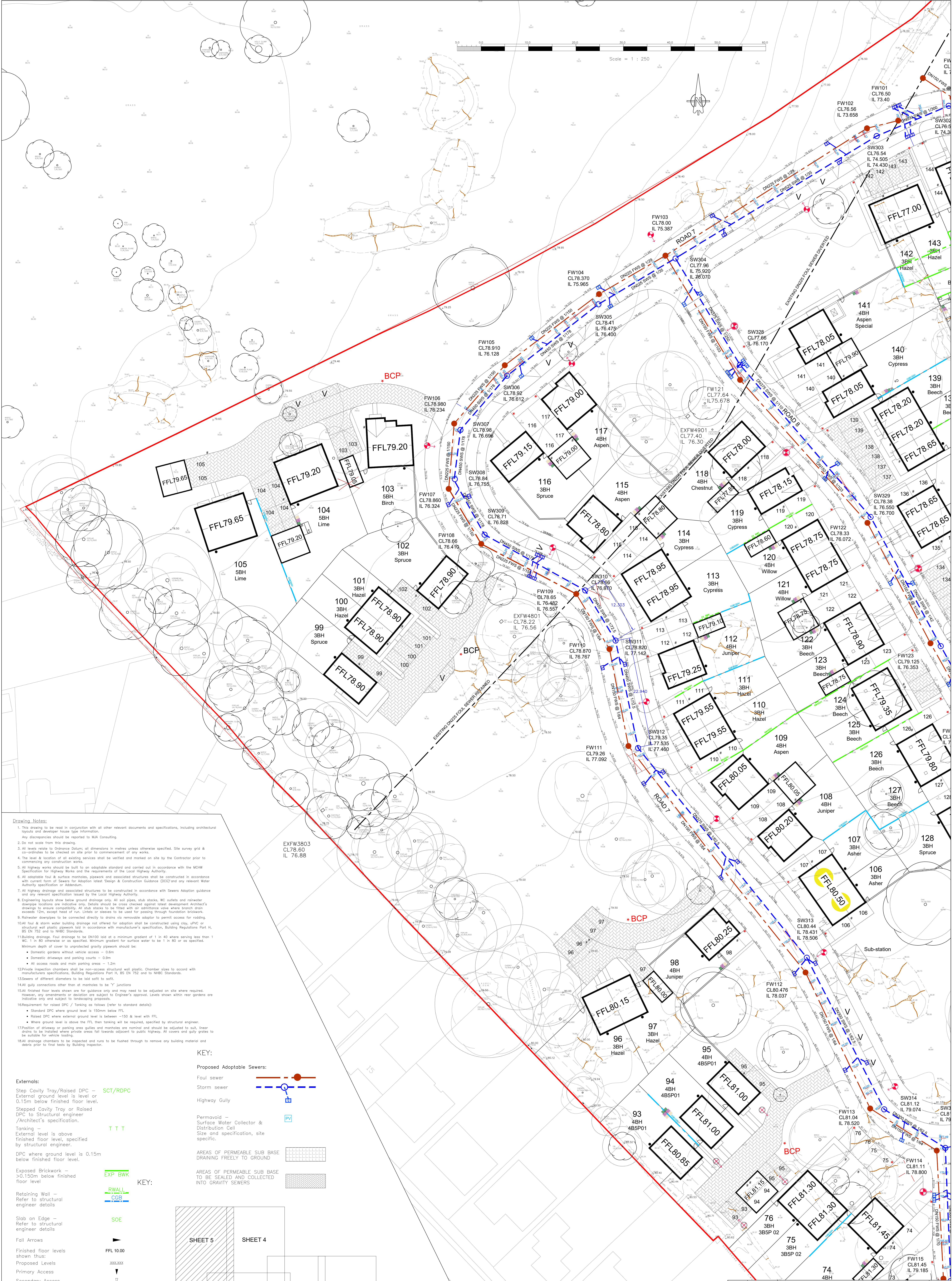
Project No: **6452**

Date: **19/05/2022**

Drawing Number: **6452-MJA-SW-XX-DR-C-004**

Rev: **P1**

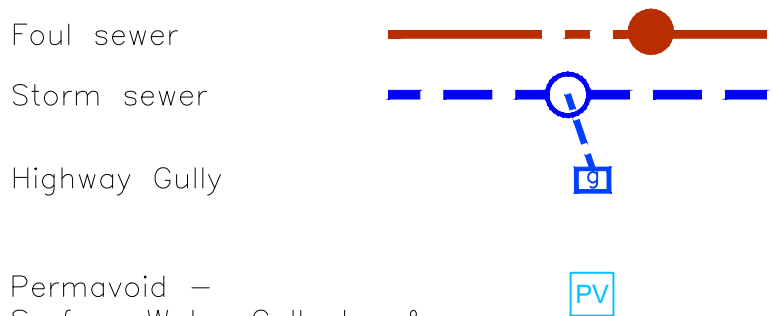
MJA CONSULTING
CIVIL & STRUCTURAL ENGINEERS
Ipsium Court, 24 The Quadrant,
Abingdon Science Park, Abingdon
Oxon, OX14 3YS
Tel: 01235 555173
Email: mail@mjaconsulting.co.uk



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 - Do not scale from this drawing.
 - All levels relate to Ordnance Datum; all dimensions in metres unless otherwise specified. Site survey grid & co-ordinates to be checked on site prior to commencement of any works.
 - The level & location of all existing services shall be verified and marked on site by the Contractor prior to commencing any construction works.
 - All highway drainage and associated structures to be constructed in accordance with the MCHW Specification for Highway Works and the requirements of the Local Highway Authority.
 - All adoptable foul & surface manholes, pipework and associated structures shall be constructed in accordance with current form of Sewers for Adoption latest 'Design & Construction Guidance (DCG)' and any relevant Water Authority specification or Addendum.
 - All highway drainage and associated structures to be constructed in accordance with Sewers Adoption guidance and any relevant specification issued by the Local Highway Authority.
 - Engineering layouts show below ground drainage only. All soil pipes, stub stacks, WC outlets and rainwater downpipe locations are indicative only. Details should be cross checked against latest development Architect's drawings to ensure compatibility. All stub stacks to be fitted with air admittance valve where branch drain exceeds 12m, except head of run. Lintels or sleeves to be used for passing through foundation brickwork.
 - Rainwater downpipes to be connected directly to drains via removable adaptor to permit access for rodding.
 - All foul & storm water building drainage not offered for adoption shall be constructed using clay, uPVC or structural wall plastic pipework laid in accordance with manufacturer's specification, Building Regulations Part H, BS EN 752 and to NHBC Standards.
 - Building drainage, foul drainage to be DN100 laid at a minimum gradient of 1 in 40 where serving less than 1 WC, 1 in 80 otherwise or as specified. Minimum gradient for surface water to be 1 in 80 or as specified. Minimum depth of cover to unprotected gravity pipework should be:
 - Domestic gardens without vehicle access - 0.6m
 - Domestic driveways and parking courts - 0.8m
 - All access roads and main parking areas - 1.2m
 - Private inspection chambers shall be non-access structural wall plastic. Chamber sizes to accord with manufacturers specifications, Building Regulations Part H, BS EN 752 and to NHBC Standards.
 - Sewers of different diameters to be laid soft to soft.
 - All gully connections other than at manholes to be 'Y' junctions.
 - All finished floor levels shown are for guidance only and may need to be adjusted on site where required. However, any amendments are subject to Engineer's approval. Levels shown within rear gardens are indicative only and subject to landscaping proposals.
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 - All drainage chambers to be inspected and runs to be flushed through to remove any building material and debris prior to final tests by Building Inspector.

KEY:

Proposed Adoptable Sewers:



Externals:

Step Cavity Tray/Raised DPC - SGT/RDPC
External ground level is level or 0.15m below finished floor level.
Stepped Cavity Tray or Raised DPC to Structural engineer /Architect's specification.
Tanking -
External level is above finished floor level, specified by structural engineer.

DPC where ground level is 0.15m below finished floor level.

Exposed Brickwork -
>0.15m below finished floor level.

Retaining Wall -
Refer to structural engineer details

Slab on Edge -
Refer to structural engineer details

Fall Arrows

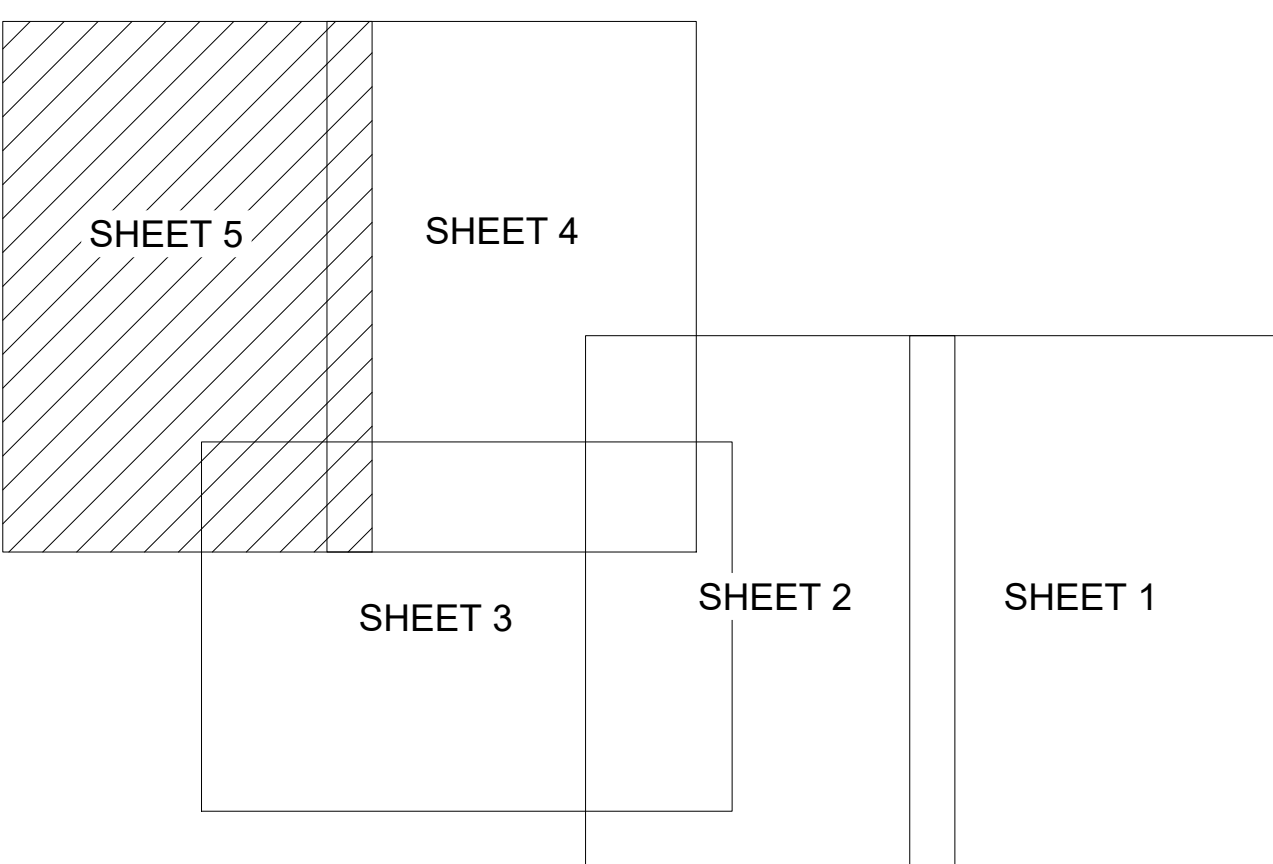
Finished floor levels shown thus:
Proposed Levels

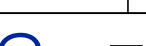
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In accordance with Part-M of the Building Regulations - Every flight of steps with three or more risers (approach to primary access point to have a suitable grippable handrail on one side of the flight (or both sides where the flight is wider than 1000mm)). This grippable handrail is 850-1000mm above the pitch line of the flight and extends at least 300mm beyond the top and bottom nosings.

KEY:



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			Planning		
Drawn:			Project Engineer	MJA Project No:	Date:
PPB			PPB	6452	19/05/2022
Drawing Number:			6452-MJA-SW-XX-DR-C-005		
Rev:			P1		



APENDIX B

Development Surface Water Calculations

MJA Consulting				Page 1	
Monarch House Barton Lane OX14 3NB		Reading Golf Club Central Basin Vistry TV			
Date 19/05/2022 11:29 File RGC.CASX		Designed by mcshane Checked by			
Innovyze		Source Control 2020.1.3			
<u>Cascade Summary of Results for Central Basin 19.05.22.SRCX</u>					
Upstream Structures		Outflow To		Overflow To	
(None)		Northern Basin May22.SRCX		(None)	
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	80.710	0.460	1.7	217.6	O K
30 min Summer	80.832	0.582	1.7	285.1	O K
60 min Summer	80.950	0.700	1.8	354.3	O K
120 min Summer	81.047	0.797	1.8	413.4	O K
180 min Summer	81.109	0.859	1.9	452.6	O K
240 min Summer	81.151	0.901	1.9	479.9	O K
360 min Summer	81.201	0.951	2.0	512.4	O K
480 min Summer	81.228	0.978	2.0	529.9	O K
600 min Summer	81.242	0.992	2.0	539.8	O K
720 min Summer	81.250	1.000	2.0	545.0	O K
960 min Summer	81.252	1.002	2.0	546.7	O K
1440 min Summer	81.233	0.983	2.0	533.3	O K
2160 min Summer	81.178	0.928	1.9	497.1	O K
2880 min Summer	81.131	0.881	1.9	466.4	O K
4320 min Summer	81.077	0.827	1.9	432.3	O K
5760 min Summer	81.044	0.794	1.8	411.5	O K
7200 min Summer	81.019	0.769	1.8	396.2	O K
8640 min Summer	80.999	0.749	1.8	384.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	139.299	0.0	129.7	19	
30 min Summer	91.544	0.0	133.8	34	
60 min Summer	57.252	0.0	273.2	64	
120 min Summer	33.814	0.0	282.7	124	
180 min Summer	24.955	0.0	293.0	184	
240 min Summer	20.058	0.0	299.9	244	
360 min Summer	14.577	0.0	308.1	364	
480 min Summer	11.540	0.0	312.7	482	
600 min Summer	9.595	0.0	315.5	602	
720 min Summer	8.236	0.0	317.3	722	
960 min Summer	6.452	0.0	318.9	962	
1440 min Summer	4.554	0.0	318.4	1440	
2160 min Summer	3.212	0.0	594.6	2052	
2880 min Summer	2.516	0.0	594.4	2364	
4320 min Summer	1.807	0.0	574.0	3112	
5760 min Summer	1.444	0.0	873.3	3928	
7200 min Summer	1.223	0.0	924.2	4760	
8640 min Summer	1.075	0.0	975.0	5616	
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Monarch House Barton Lane OX14 3NB	Reading Golf Club Central Basin Vistry TV	
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Innovyze	Source Control 2020.1.3	

Cascade Model Details for Central Basin 19.05.22.SRCX

Storage is Online Cover Level (m) 82.000

Tank or Pond Structure

Invert Level (m) 80.250

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	410.2	1.000	673.8	1.750	2343.8
0.500	550.8	1.500	878.9		

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0064-2000-1250-2000
Design Head (m)	1.250
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	64
Invert Level (m)	80.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.250	2.0
Flush-Flo™	0.279	1.7
Kick-Flo®	0.567	1.4
Mean Flow over Head Range	-	1.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.5	1.200	2.0	3.000	3.0	7.000	4.4
0.200	1.7	1.400	2.1	3.500	3.2	7.500	4.6
0.300	1.7	1.600	2.2	4.000	3.4	8.000	4.7
0.400	1.7	1.800	2.4	4.500	3.6	8.500	4.9
0.500	1.6	2.000	2.5	5.000	3.8	9.000	5.0
0.600	1.4	2.200	2.6	5.500	4.0	9.500	5.1
0.800	1.6	2.400	2.7	6.000	4.1		
1.000	1.8	2.600	2.8	6.500	4.3		

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Monarch House Barton Lane OX14 3NB	Reading Golf Club Northern Inf. Basin Vistry TV				
Date 19/05/2022 11:30 File RGC.CASX	Designed by mcshane Checked by				
Innovyze	Source Control 2020.1.3				
<u>Cascade Summary of Results for Northern Basin May22.SRCX</u>					
Upstream Structures Outflow To Overflow To					
Central Basin 19.05.22.SRCX (None) (None)					
Half Drain Time : 1068 minutes.					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	76.278	2.028	8.4	633.3	O K
30 min Summer	76.518	2.268	9.5	829.2	O K
60 min Summer	76.731	2.481	12.0	1028.5	O K
120 min Summer	76.875	2.625	13.1	1193.4	O K
180 min Summer	76.963	2.713	13.5	1300.2	O K
240 min Summer	77.021	2.771	13.9	1372.1	O K
360 min Summer	77.083	2.833	14.2	1450.8	O K
480 min Summer	77.109	2.859	14.4	1485.6	O K
600 min Summer	77.119	2.869	14.4	1497.9	O K
720 min Summer	77.118	2.868	14.4	1496.8	O K
960 min Summer	77.102	2.852	14.3	1476.3	O K
1440 min Summer	77.070	2.820	14.1	1435.2	O K
2160 min Summer	77.024	2.774	13.9	1375.5	O K
2880 min Summer	76.979	2.729	13.6	1319.4	O K
4320 min Summer	76.900	2.650	13.2	1224.1	O K
5760 min Summer	76.836	2.586	12.9	1147.4	O K
7200 min Summer	76.784	2.534	12.6	1088.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
15 min Summer	139.299	0.0	19		
30 min Summer	91.544	0.0	34		
60 min Summer	57.252	0.0	64		
120 min Summer	33.814	0.0	124		
180 min Summer	24.955	0.0	182		
240 min Summer	20.058	0.0	242		
360 min Summer	14.577	0.0	362		
480 min Summer	11.540	0.0	482		
600 min Summer	9.595	0.0	600		
720 min Summer	8.236	0.0	720		
960 min Summer	6.452	0.0	856		
1440 min Summer	4.554	0.0	1082		
2160 min Summer	3.212	0.0	1472		
2880 min Summer	2.516	0.0	1876		
4320 min Summer	1.807	0.0	2684		
5760 min Summer	1.444	0.0	3512		
7200 min Summer	1.223	0.0	4256		
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Innovyze		Source Control 2020.1.3				
<u>Cascade Summary of Results for Northern Basin May22.SRCX</u>						
	Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
	8640 min Summer	76.746	2.496	12.3	1045.2	O K
	10080 min Summer	76.719	2.469	11.7	1015.3	O K
	15 min Winter	76.278	2.028	8.4	633.3	O K
	30 min Winter	76.518	2.268	9.5	829.1	O K
	60 min Winter	76.731	2.481	12.0	1028.3	O K
	120 min Winter	76.876	2.626	13.1	1194.4	O K
	180 min Winter	76.964	2.714	13.5	1301.8	O K
	240 min Winter	77.022	2.772	13.9	1373.9	O K
	360 min Winter	77.085	2.835	14.2	1453.7	O K
	480 min Winter	77.113	2.863	14.4	1490.0	O K
	600 min Winter	77.124	2.874	14.4	1504.2	O K
	720 min Winter	77.125	2.875	14.4	1505.6	O K
	960 min Winter	77.110	2.860	14.4	1486.4	O K
	1440 min Winter	77.067	2.817	14.1	1431.1	O K
	2160 min Winter	77.006	2.756	13.8	1353.3	O K
	2880 min Winter	76.945	2.695	13.4	1278.1	O K
	4320 min Winter	76.839	2.589	12.9	1150.9	O K
	5760 min Winter	76.756	2.506	12.4	1055.9	O K
	7200 min Winter	76.700	2.450	11.3	995.4	O K
	8640 min Winter	76.643	2.393	10.1	940.6	O K
	10080 min Winter	76.579	2.329	9.8	882.1	O K
	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
	8640 min Summer	1.075	0.0	5016		
	10080 min Summer	0.968	0.0	5848		
	15 min Winter	139.299	0.0	19		
	30 min Winter	91.544	0.0	34		
	60 min Winter	57.252	0.0	62		
	120 min Winter	33.814	0.0	122		
	180 min Winter	24.955	0.0	180		
	240 min Winter	20.058	0.0	238		
	360 min Winter	14.577	0.0	354		
	480 min Winter	11.540	0.0	470		
	600 min Winter	9.595	0.0	584		
	720 min Winter	8.236	0.0	694		
	960 min Winter	6.452	0.0	904		
	1440 min Winter	4.554	0.0	1124		
	2160 min Winter	3.212	0.0	1580		
	2880 min Winter	2.516	0.0	2020		
	4320 min Winter	1.807	0.0	2892		
	5760 min Winter	1.444	0.0	3688		
	7200 min Winter	1.223	0.0	4544		
	8640 min Winter	1.075	0.0	5448		
	10080 min Winter	0.968	0.0	6248		
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<u>Cascade Model Details for Northern Basin May22.SRCX</u> Storage is Online Cover Level (m) 77.750 <u>Infiltration Basin Structure</u> Invert Level (m) 74.250 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.07200 Porosity 1.00 Infiltration Coefficient Side (m/hr) 0.00720 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr><tr><td>0.000</td><td>12.5</td><td>0.900</td><td>230.0</td><td>1.800</td><td>666.3</td><td>2.700</td><td>1223.8</td></tr><tr><td>0.100</td><td>20.0</td><td>1.000</td><td>257.5</td><td>1.900</td><td>707.5</td><td>2.800</td><td>1273.8</td></tr><tr><td>0.200</td><td>30.0</td><td>1.100</td><td>285.0</td><td>2.000</td><td>750.0</td><td>2.900</td><td>1325.0</td></tr><tr><td>0.300</td><td>41.3</td><td>1.200</td><td>313.8</td><td>2.100</td><td>792.5</td><td>3.000</td><td>1376.3</td></tr><tr><td>0.400</td><td>52.5</td><td>1.300</td><td>343.8</td><td>2.200</td><td>835.0</td><td>3.100</td><td>1427.5</td></tr><tr><td>0.500</td><td>132.5</td><td>1.400</td><td>373.8</td><td>2.300</td><td>880.0</td><td>3.200</td><td>1480.0</td></tr><tr><td>0.600</td><td>155.0</td><td>1.500</td><td>547.5</td><td>2.400</td><td>923.8</td><td>3.300</td><td>1533.8</td></tr><tr><td>0.700</td><td>178.8</td><td>1.600</td><td>586.3</td><td>2.500</td><td>1126.3</td><td>3.400</td><td>1588.8</td></tr><tr><td>0.800</td><td>203.8</td><td>1.700</td><td>626.3</td><td>2.600</td><td>1175.0</td><td>3.500</td><td>1642.5</td></tr></table>			Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	12.5	0.900	230.0	1.800	666.3	2.700	1223.8	0.100	20.0	1.000	257.5	1.900	707.5	2.800	1273.8	0.200	30.0	1.100	285.0	2.000	750.0	2.900	1325.0	0.300	41.3	1.200	313.8	2.100	792.5	3.000	1376.3	0.400	52.5	1.300	343.8	2.200	835.0	3.100	1427.5	0.500	132.5	1.400	373.8	2.300	880.0	3.200	1480.0	0.600	155.0	1.500	547.5	2.400	923.8	3.300	1533.8	0.700	178.8	1.600	586.3	2.500	1126.3	3.400	1588.8	0.800	203.8	1.700	626.3	2.600	1175.0	3.500	1642.5
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<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 887 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>84.181</td><td>0.181</td><td>0.1</td><td>3.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>84.231</td><td>0.231</td><td>0.1</td><td>4.4</td><td>O K</td></tr><tr><td>60 min Summer</td><td>84.281</td><td>0.281</td><td>0.1</td><td>5.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>84.321</td><td>0.321</td><td>0.1</td><td>6.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>84.346</td><td>0.346</td><td>0.1</td><td>7.0</td><td>O K</td></tr><tr><td>240 min Summer</td><td>84.362</td><td>0.362</td><td>0.1</td><td>7.4</td><td>O K</td></tr><tr><td>360 min Summer</td><td>84.376</td><td>0.376</td><td>0.1</td><td>7.7</td><td>O K</td></tr><tr><td>480 min Summer</td><td>84.379</td><td>0.379</td><td>0.1</td><td>7.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>84.376</td><td>0.376</td><td>0.1</td><td>7.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>84.370</td><td>0.370</td><td>0.1</td><td>7.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>84.355</td><td>0.355</td><td>0.1</td><td>7.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>84.327</td><td>0.327</td><td>0.1</td><td>6.6</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>84.292</td><td>0.292</td><td>0.1</td><td>5.8</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>84.262</td><td>0.262</td><td>0.1</td><td>5.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>84.216</td><td>0.216</td><td>0.1</td><td>4.1</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>84.180</td><td>0.180</td><td>0.1</td><td>3.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>84.151</td><td>0.151</td><td>0.1</td><td>2.6</td><td>O K</td></tr><tr><td>8640 min 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Summer	84.231	0.231	0.1	4.4	O K	60 min Summer	84.281	0.281	0.1	5.6	O K	120 min Summer	84.321	0.321	0.1	6.5	O K	180 min Summer	84.346	0.346	0.1	7.0	O K	240 min Summer	84.362	0.362	0.1	7.4	O K	360 min Summer	84.376	0.376	0.1	7.7	O K	480 min Summer	84.379	0.379	0.1	7.8	O K	600 min Summer	84.376	0.376	0.1	7.7	O K	720 min Summer	84.370	0.370	0.1	7.6	O K	960 min Summer	84.355	0.355	0.1	7.2	O K	1440 min Summer	84.327	0.327	0.1	6.6	O K	2160 min Summer	84.292	0.292	0.1	5.8	O K	2880 min Summer	84.262	0.262	0.1	5.2	O K	4320 min Summer	84.216	0.216	0.1	4.1	O K	5760 min Summer	84.180	0.180	0.1	3.3	O K	7200 min Summer	84.151	0.151	0.1	2.6	O K	8640 min Summer	84.128	0.128	0.1	2.1	O K	10080 min Summer	84.110	0.110	0.1	1.7	O K	15 min Winter	84.181	0.181	0.1	3.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.299	0.0	23	30 min Summer	91.544	0.0	37	60 min Summer	57.252	0.0	66	120 min Summer	33.814	0.0	126	180 min Summer	24.955	0.0	186	240 min Summer	20.058	0.0	244	360 min Summer	14.577	0.0	364	480 min Summer	11.540	0.0	482	600 min Summer	9.595	0.0	602	720 min Summer	8.236	0.0	720	960 min Summer	6.452	0.0	824	1440 min Summer	4.554	0.0	1056	2160 min Summer	3.212	0.0	1452	2880 min Summer	2.516	0.0	1848	4320 min Summer	1.807	0.0	2640	5760 min Summer	1.444	0.0	3400	7200 min Summer	1.223	0.0	4112	8640 min Summer	1.075	0.0	4840	10080 min Summer	0.968	0.0	5544	15 min Winter	139.299	0.0	22
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Date 19/05/2022 12:10 File Perm Road.SRCX		Designed by mcshane Checked by			
Innovyze		Source Control 2020.1.3			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	84.231	0.231	0.1	4.4	O K
60 min Winter	84.281	0.281	0.1	5.6	O K
120 min Winter	84.322	0.322	0.1	6.5	O K
180 min Winter	84.347	0.347	0.1	7.0	O K
240 min Winter	84.362	0.362	0.1	7.4	O K
360 min Winter	84.377	0.377	0.1	7.7	O K
480 min Winter	84.381	0.381	0.1	7.8	O K
600 min Winter	84.378	0.378	0.1	7.8	O K
720 min Winter	84.373	0.373	0.1	7.6	O K
960 min Winter	84.356	0.356	0.1	7.3	O K
1440 min Winter	84.323	0.323	0.1	6.5	O K
2160 min Winter	84.277	0.277	0.1	5.5	O K
2880 min Winter	84.237	0.237	0.1	4.6	O K
4320 min Winter	84.171	0.171	0.1	3.1	O K
5760 min Winter	84.122	0.122	0.1	2.0	O K
7200 min Winter	84.087	0.087	0.1	1.2	O K
8640 min Winter	84.067	0.067	0.1	0.8	O K
10080 min Winter	84.061	0.061	0.1	0.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.544	0.0	37		
60 min Winter	57.252	0.0	66		
120 min Winter	33.814	0.0	124		
180 min Winter	24.955	0.0	182		
240 min Winter	20.058	0.0	240		
360 min Winter	14.577	0.0	356		
480 min Winter	11.540	0.0	470		
600 min Winter	9.595	0.0	584		
720 min Winter	8.236	0.0	692		
960 min Winter	6.452	0.0	898		
1440 min Winter	4.554	0.0	1104		
2160 min Winter	3.212	0.0	1556		
2880 min Winter	2.516	0.0	1984		
4320 min Winter	1.807	0.0	2768		
5760 min Winter	1.444	0.0	3464		
7200 min Winter	1.223	0.0	4104		
8640 min Winter	1.075	0.0	4584		
10080 min Winter	0.968	0.0	5248		
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Model Details Storage is Online Cover Level (m) 85.000 Porous Car Park Structure <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00720</td><td>Width (m)</td><td>7.5</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>10.0</td></tr><tr><td>Max Percolation (l/s)</td><td>20.8</td><td>Slope (1:X)</td><td>150.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>84.000</td><td>Membrane Depth (m)</td><td>0</td></tr></table>			Infiltration Coefficient Base (m/hr)	0.00720	Width (m)	7.5	Membrane Percolation (mm/hr)	1000	Length (m)	10.0	Max Percolation (l/s)	20.8	Slope (1:X)	150.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	84.000	Membrane Depth (m)	0
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Safety Factor	2.0	Depression Storage (mm)	5																							
Porosity	0.30	Evaporation (mm/day)	3																							
Invert Level (m)	84.000	Membrane Depth (m)	0																							
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Summer</td><td>84.523</td><td>0.523</td><td>0.5</td><td>58.5</td><td>O K</td></tr><tr><td>600 min Summer</td><td>84.524</td><td>0.524</td><td>0.5</td><td>58.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>84.521</td><td>0.521</td><td>0.5</td><td>58.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>84.508</td><td>0.508</td><td>0.5</td><td>56.5</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>84.482</td><td>0.482</td><td>0.5</td><td>52.8</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>84.447</td><td>0.447</td><td>0.5</td><td>47.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>84.417</td><td>0.417</td><td>0.5</td><td>43.8</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>84.371</td><td>0.371</td><td>0.5</td><td>37.3</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>84.334</td><td>0.334</td><td>0.5</td><td>32.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>84.305</td><td>0.305</td><td>0.5</td><td>28.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>84.281</td><td>0.281</td><td>0.5</td><td>24.8</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>84.262</td><td>0.262</td><td>0.5</td><td>22.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>84.277</td><td>0.277</td><td>0.5</td><td>24.2</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>139.299</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>91.544</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>57.252</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>33.814</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>24.955</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>20.058</td><td>0.0</td><td>246</td></tr><tr><td>360 min Summer</td><td>14.577</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>11.540</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>9.595</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>8.236</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>6.452</td><td>0.0</td><td>914</td></tr><tr><td>1440 min Summer</td><td>4.554</td><td>0.0</td><td>1116</td></tr><tr><td>2160 min Summer</td><td>3.212</td><td>0.0</td><td>1496</td></tr><tr><td>2880 min Summer</td><td>2.516</td><td>0.0</td><td>1904</td></tr><tr><td>4320 min Summer</td><td>1.807</td><td>0.0</td><td>2688</td></tr><tr><td>5760 min Summer</td><td>1.444</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>1.223</td><td>0.0</td><td>4248</td></tr><tr><td>8640 min Summer</td><td>1.075</td><td>0.0</td><td>4936</td></tr><tr><td>10080 min Summer</td><td>0.968</td><td>0.0</td><td>5656</td></tr><tr><td>15 min Winter</td><td>139.299</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	84.277	0.277	0.5	24.2	O K	30 min Summer	84.336	0.336	0.5	32.4	O K	60 min Summer	84.395	0.395	0.5	40.6	O K	120 min Summer	84.443	0.443	0.5	47.4	O K	180 min Summer	84.474	0.474	0.5	51.7	O K	240 min Summer	84.494	0.494	0.5	54.5	O K	360 min Summer	84.515	0.515	0.5	57.4	O K	480 min Summer	84.523	0.523	0.5	58.5	O K	600 min Summer	84.524	0.524	0.5	58.7	O K	720 min Summer	84.521	0.521	0.5	58.2	O K	960 min Summer	84.508	0.508	0.5	56.5	O K	1440 min Summer	84.482	0.482	0.5	52.8	O K	2160 min Summer	84.447	0.447	0.5	47.9	O K	2880 min Summer	84.417	0.417	0.5	43.8	O K	4320 min Summer	84.371	0.371	0.5	37.3	O K	5760 min Summer	84.334	0.334	0.5	32.2	O K	7200 min Summer	84.305	0.305	0.5	28.1	O K	8640 min Summer	84.281	0.281	0.5	24.8	O K	10080 min Summer	84.262	0.262	0.5	22.1	O K	15 min Winter	84.277	0.277	0.5	24.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.299	0.0	23	30 min Summer	91.544	0.0	37	60 min Summer	57.252	0.0	66	120 min Summer	33.814	0.0	126	180 min Summer	24.955	0.0	186	240 min Summer	20.058	0.0	246	360 min Summer	14.577	0.0	364	480 min Summer	11.540	0.0	482	600 min Summer	9.595	0.0	602	720 min Summer	8.236	0.0	722	960 min Summer	6.452	0.0	914	1440 min Summer	4.554	0.0	1116	2160 min Summer	3.212	0.0	1496	2880 min Summer	2.516	0.0	1904	4320 min Summer	1.807	0.0	2688	5760 min Summer	1.444	0.0	3464	7200 min Summer	1.223	0.0	4248	8640 min Summer	1.075	0.0	4936	10080 min Summer	0.968	0.0	5656	15 min Winter	139.299	0.0	22
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Innovyze		Source Control 2020.1.3			
<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	84.336	0.336	0.5	32.4	O K
60 min Winter	84.395	0.395	0.5	40.7	O K
120 min Winter	84.443	0.443	0.5	47.4	O K
180 min Winter	84.474	0.474	0.5	51.7	O K
240 min Winter	84.494	0.494	0.5	54.5	O K
360 min Winter	84.515	0.515	0.5	57.5	O K
480 min Winter	84.523	0.523	0.5	58.6	O K
600 min Winter	84.525	0.525	0.5	58.8	O K
720 min Winter	84.522	0.522	0.5	58.4	O K
960 min Winter	84.510	0.510	0.5	56.7	O K
1440 min Winter	84.478	0.478	0.5	52.3	O K
2160 min Winter	84.436	0.436	0.5	46.3	O K
2880 min Winter	84.396	0.396	0.5	40.8	O K
4320 min Winter	84.331	0.331	0.5	31.8	O K
5760 min Winter	84.280	0.280	0.5	24.6	O K
7200 min Winter	84.241	0.241	0.5	19.2	O K
8640 min Winter	84.213	0.213	0.5	15.3	O K
10080 min Winter	84.198	0.198	0.4	13.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.544	0.0	37		
60 min Winter	57.252	0.0	66		
120 min Winter	33.814	0.0	124		
180 min Winter	24.955	0.0	182		
240 min Winter	20.058	0.0	240		
360 min Winter	14.577	0.0	358		
480 min Winter	11.540	0.0	472		
600 min Winter	9.595	0.0	586		
720 min Winter	8.236	0.0	698		
960 min Winter	6.452	0.0	914		
1440 min Winter	4.554	0.0	1144		
2160 min Winter	3.212	0.0	1596		
2880 min Winter	2.516	0.0	2024		
4320 min Winter	1.807	0.0	2856		
5760 min Winter	1.444	0.0	3632		
7200 min Winter	1.223	0.0	4320		
8640 min Winter	1.075	0.0	4936		
10080 min Winter	0.968	0.0	5648		
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Model Details Storage is Online Cover Level (m) 85.000 Porous Car Park Structure <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00720</td><td>Width (m)</td><td>15.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>31.0</td></tr><tr><td>Max Percolation (l/s)</td><td>129.2</td><td>Slope (1:X)</td><td>150.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>84.000</td><td>Membrane Depth (m)</td><td>0</td></tr></table>			Infiltration Coefficient Base (m/hr)	0.00720	Width (m)	15.0	Membrane Percolation (mm/hr)	1000	Length (m)	31.0	Max Percolation (l/s)	129.2	Slope (1:X)	150.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	84.000	Membrane Depth (m)	0
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4320 min Winter	84.516	0.516	0.5	42.0	O K																																																																																																																																																																																														
5760 min Winter	84.480	0.480	0.5	36.3	O K																																																																																																																																																																																														
7200 min Winter	84.450	0.450	0.5	31.8	O K																																																																																																																																																																																														
8640 min Winter	84.424	0.424	0.4	28.4	O K																																																																																																																																																																																														
10080 min Winter	84.403	0.403	0.4	25.6	O K																																																																																																																																																																																														
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																
30 min Winter	91.544	0.0	37																																																																																																																																																																																																
60 min Winter	57.252	0.0	66																																																																																																																																																																																																
120 min Winter	33.814	0.0	124																																																																																																																																																																																																
180 min Winter	24.955	0.0	182																																																																																																																																																																																																
240 min Winter	20.058	0.0	240																																																																																																																																																																																																
360 min Winter	14.577	0.0	356																																																																																																																																																																																																
480 min Winter	11.540	0.0	468																																																																																																																																																																																																
600 min Winter	9.595	0.0	580																																																																																																																																																																																																
720 min Winter	8.236	0.0	686																																																																																																																																																																																																
960 min Winter	6.452	0.0	870																																																																																																																																																																																																
1440 min Winter	4.554	0.0	1088																																																																																																																																																																																																
2160 min Winter	3.212	0.0	1540																																																																																																																																																																																																
2880 min Winter	2.516	0.0	1988																																																																																																																																																																																																
4320 min Winter	1.807	0.0	2816																																																																																																																																																																																																
5760 min Winter	1.444	0.0	3632																																																																																																																																																																																																
7200 min Winter	1.223	0.0	4400																																																																																																																																																																																																
8640 min Winter	1.075	0.0	5192																																																																																																																																																																																																
10080 min Winter	0.968	0.0	5952																																																																																																																																																																																																
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MJA Consulting		Page 4																								
Monarch House Barton Lane OX14 3NB	Reading Golf Club Typical Perm Road Vistry TV																									
Date 19/05/2022 11:34 File Perm Road.SRCX	Designed by mcshane Checked by																									
Innovyze	Source Control 2020.1.3																									
Model Details Storage is Online Cover Level (m) 85.000 Porous Car Park Structure <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00720</td><td>Width (m)</td><td>7.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>140.0</td></tr><tr><td>Max Percolation (l/s)</td><td>272.2</td><td>Slope (1:X)</td><td>150.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>84.000</td><td>Membrane Depth (m)</td><td>0</td></tr></table>			Infiltration Coefficient Base (m/hr)	0.00720	Width (m)	7.0	Membrane Percolation (mm/hr)	1000	Length (m)	140.0	Max Percolation (l/s)	272.2	Slope (1:X)	150.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	84.000	Membrane Depth (m)	0
Infiltration Coefficient Base (m/hr)	0.00720	Width (m)	7.0																							
Membrane Percolation (mm/hr)	1000	Length (m)	140.0																							
Max Percolation (l/s)	272.2	Slope (1:X)	150.0																							
Safety Factor	2.0	Depression Storage (mm)	5																							
Porosity	0.30	Evaporation (mm/day)	3																							
Invert Level (m)	84.000	Membrane Depth (m)	0																							
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APPENDIX C

SUDs Maintenance Plan