



Sustainable Planning Design Studio Ltd.
Unit 1-2 Tollgate Business Park
Colchester, Essex
CO3 8AB

Raima Prasad
SuDS and Watercourse Support Officer
North Herts Council
Borehamwood
Hertfordshire
WD6 1WA

06th January 2025

REF: MB018 – Newells, Letchworth

RE: 24/01496/FP - 3-5 Newells, Letchworth Garden City, Hertfordshire, SG6 2PH

The Lead Local Flood Authority (LLFA) responded to the development proposal at Newells on the 24th December 2024. The LLFA's objection covered the following points:

Point 1. All altered drainage and new impermeable areas must be included within the drainage strategy. We advise that the applicant approach the Highway Authority for early discussion on what SuDS may be adopted. We require all designs of the highway area to be submitted.

Point 2. Whilst the supporting drainage calculations indicate that all surface water runoff will be contained within the drainage scheme at 1% AEP plus 40% climate change. We do request that the appropriate allowance for climate change be added to the 3.33% AEP rainfall scenario.

The below is in response to the above points received from the LLFA.

Point 1 – Response

As previously stated, the design regarding areas within highways-maintained land will be subject to further technical design under a S278 agreement. At the technical design stage, it is likely these areas will require a separate drainage arrangement which would adhere to the local highway authorities requirements. For the purpose of this application, the parking areas are shown as permeable paving draining into the private drainage system serving itself only.

An update to the drainage strategy can be seen in Appendix A



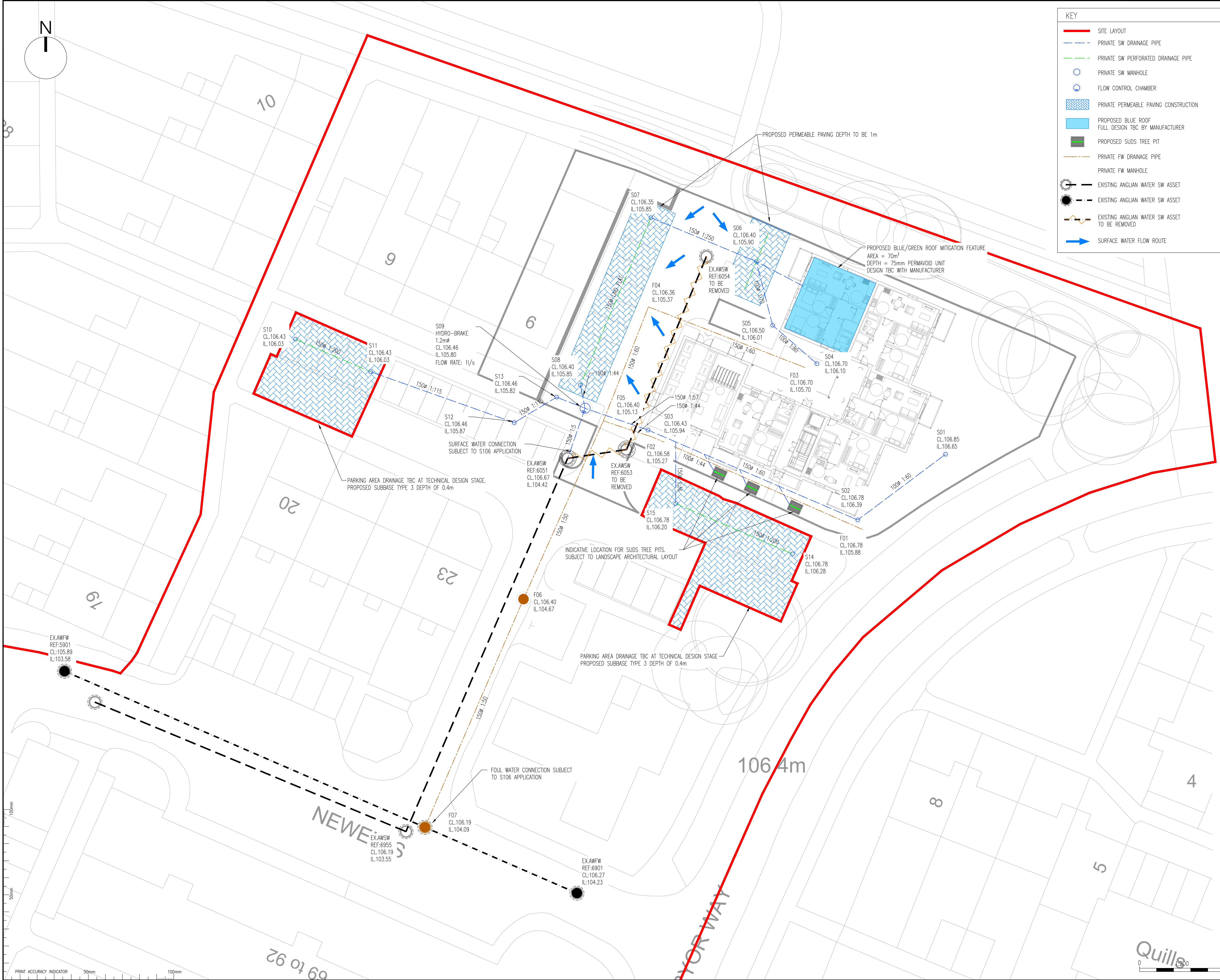
Point 2 – Response

This point is noted and the calculations have now been updated to include climate change in the 1:30 year storm (3.33% AEP) as requested. Along with this, the calculations also include the addition of permeable paving for the highway parking areas, although as mentioned previously, this will be subject to the local highways authority technical team once a S278 application proceeds.

An update to the drainage hydraulic calculations can be seen in Appendix B.



Appendix A – Drainage Strategy Plan



GENERAL NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATION AND ALL OTHER RELATED DRAWINGS ISSUED BY THE ENGINEER.
- DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
- ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES, UNLESS OTHERWISE STATED.
- NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PRIOR PERMISSION FROM THE ENGINEER.
- ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
- THE CONTRACTOR SHALL, BEFORE COMMENCING THE WORKS, VERIFY ALL SITE AND SETTING OUT DIMENSIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRUE AND PROPER SETTING OUT OF THE WORKS AND FOR THE CORRECTNESS OF THE POSITION, LEVELS, DIMENSIONS, AND ALIGNMENT OF ALL PARTS OF THE WORKS.
- THE CONTRACTOR SHALL UNDERTAKE SUCH MATERIALS TESTING AS INDICATED IN THE SPECIFICATIONS AND SHALL INCLUDE THE COST OF TESTING IN THE TENDER.
- ALL EXCAVATED MATERIAL WHERE NOT SUITABLE FOR REUSE SHALL BE DISPOSED OF AT AN APPROVED TIP OFF-SITE.

CDM NOTES

- THE ATTENTION OF THE CLIENT, PRINCIPAL DESIGNER, PRINCIPAL CONTRACTOR, DESIGNERS AND CONTRACTORS IS DRAWN TO THE FOLLOWING POTENTIAL RISKS IN CONJUNCTION WITH THE PROPOSED ON-SITE AND OFF-SITE WORKS AS DESIGNED FOR THIS PROJECT:
- WORKS IN THE VICINITY OF LIVE SERVICES INCLUDING GAS, ELECTRICITY AND BT WILL BE NECESSARY AND THE ADVICE OF ALL STATUTORY SERVICE COMPANIES MUST BE SOUGHT BEFORE ANY WORKS COMMENCE.
 - WORKS WITHIN AND ADJUTING THE EXISTING HIGHWAY WILL ENTAIL TRAFFIC HAZARDS AND ALL APPROPRIATE SAFETY MEASURES INCLUDING BARRIERS, SIGNS AND LIGHTING MUST BE UNDERTAKEN TO THE APPROVAL OF THE LOCAL AUTHORITY, THE HIGHWAY AUTHORITY AND THE POLICE DEPARTMENT.
 - HAZARDOUS MATERIALS INCLUDING CEMENT AND BITUMINOUS MATERIALS ARE SPECIFIED AND THE MANUFACTURERS ADVICE ON SAFE HANDLING PROCEDURES MUST BE OBTAINED AND MADE CLEAR TO ALL OPERATIVES.
 - THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING ALL EXISTING SERVICES WITHIN THE VICINITY OF THE WORKS HAND DIG AND ENSURE THESE ARE PROTECTED THROUGHOUT THE DURATION OF THE WORKS. ALL UTILITY PLANT SHOULD BE CLEARLY MARKED ON THE GROUND PRIOR TO COMMENCEMENT OF THE WORKS.
 - THE CONTRACTOR MUST ENSURE ALL WORKING AREAS ARE FULLY SECURE.

DRAINAGE STRATEGY NOTES

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELATED ENGINEERS, ARCHITECTS & SUB-CONTRACTORS DRAWINGS. IN THE CASE OF DISCREPANCIES BETWEEN DRAWINGS REFER TO SPD STUDIO FOR CLARIFICATION.
- TOPOGRAPHICAL SURVEY UNDERTAKEN BY TERRAIN SURVEYS, DRAWING REF. TS21-040-1 DATED JANUARY 2021.
- RAIN WATER PIPE & SOIL AND VENT PIPE LOCATIONS ARE TO BE CONFIRMED AT THE DETAILED DESIGN STAGE.
- ALL INVERT AND COVER LEVELS ARE TO BE CONFIRMED AT THE DETAILED DESIGN STAGE.
- PROPOSED FOUL WATER DRAINAGE CONNECTION TO ADAPTABLE SEWERS IS SUBJECT TO THE AGREEMENT OF ANGLIAN WATER.
- EXACT POSITION, TYPE AND NUMBER OF ABOVE GROUND DRAINAGE POINTS TO BE CONFIRMED BY ARCHITECT DURING THE DETAILED DESIGN STAGE. THEREFORE ALLOWANCE SHOULD BE MADE FOR INDIVIDUAL DRAINAGE CONNECTIONS ACCORDINGLY.
- EXTERNAL LEVELS AT LEVEL THRESHOLDS TO BE DESIGNED TO HAVE SUFFICIENT FALL AWAY FROM STRUCTURE TO OMIT THE NEED FOR THRESHOLD DRAINS.
- FOOTWAYS AND PATIO AREAS TO BE LAID TO FALL TO SOFT LANDSCAPED AREAS. LANDSCAPED AREAS TO BE NO HIGHER THAN ADJACENT HARD STANDING AREAS.
- FINISHED FLOOR LEVELS TO BE TYPICALLY 150mm ABOVE EXISTING SITE LEVELS.

WORK IN PROGRESS

R04	UPDATED TO INCLUDE HIGHWAYS DRAINAGE	GW	GW	06/09/24
R03	UPDATED TO SUIT PROPOSED SUDS TREE PITS	GW	GW	27.11.24
R02	UPDATED SITE LAYOUT	GW	GW	06/09/24
R01	FIRST ISSUE	LRL	GW	JNR
REV	DESCRIPTION	DRAWN	APPRVD	DATE

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Unit 1.2 Tollgate Business Park, Colchester, CO3 8AB
T. 01206 265 224 | E. info@spd-studio.co.uk | W. www.spd-studio.co.uk

CLIENT
SETTLE GROUP

PROJECT TITLE
**3-5 NEWELLS,
LETCWORTH GARDEN CITY
SG6 2PH**

DRAWING TITLE
DRAINAGE STRATEGY

SCALE 1:200 @ A1	DRAWING STATUS PRELIMINARY
DRAWN BY LRL	CHECKED BY GW
APPROVED BY JNR	DATE APR/2024
DRAWING NO. MB018-E-300	REV P04



Appendix B – Hydraulic Calculations

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	40	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1			106.000	600	523662.788	232045.555	1.264
Carpark 1	0.078	5.00	106.000		523665.284	232048.663	1.000
3			106.000	1200	523661.840	232039.982	1.730
4			106.000	1200	523660.809	232036.567	2.600
Carpark 3		5.00	106.430		523656.531	232040.568	0.400
Carpark 2		5.00	106.678		523665.386	232039.758	0.398

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Carpark 1	1	3.986	0.600	105.000	104.886	0.114	35.0	150	5.04	50.0
1.001	1	3	5.653	0.600	104.736	104.270	0.466	12.1	300	5.06	50.0
1.002	3	4	3.567	0.600	104.270	103.400	0.870	4.1	300	5.07	50.0
2.000	Carpark 3	3	5.341	0.600	106.030	105.496	0.534	10.0	100	5.04	50.0
3.000	Carpark 2	3	3.553	0.600	106.280	105.569	0.711	5.0	100	5.02	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.707	30.2	19.7	0.850	0.964	0.078	0.0	89	1.819
1.001	4.537	320.7	19.7	0.964	1.430	0.078	0.0	50	2.555
1.002	7.814	552.4	19.7	1.430	2.300	0.078	0.0	38	3.748
2.000	2.458	19.3	0.0	0.300	0.404	0.000	0.0	0	0.000
3.000	3.482	27.3	0.0	0.298	0.331	0.000	0.0	0	0.000

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	523662.788	232045.555	106.000	1.264	600		1	1.000	104.886	150
							0	1.001	104.736	300
Carpark 1	523665.284	232048.663	106.000	1.000			0	1.000	105.000	150
3	523661.840	232039.982	106.000	1.730	1200		1	3.000	105.569	100
							2	2.000	105.496	100
							3	1.001	104.270	300
							0	1.002	104.270	300
4	523660.809	232036.567	106.000	2.600	1200		1	1.002	103.400	300
Carpark 3	523656.531	232040.568	106.430	0.400			0	2.000	106.030	100
Carpark 2	523665.386	232039.758	106.678	0.398			0	3.000	106.280	100

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m ³ /ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1140	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	0	0	0
30	0	0	0	100	40	0	0
30	40	0	0				

Node 3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.002	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0042-1000-1580-1000
Invert Level (m)	104.270	Min Outlet Diameter (m)	0.075
Design Depth (m)	1.580	Min Node Diameter (mm)	1200
Design Flow (l/s)	1.0		

Node Carpark 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	105.000	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	480	Depth (m)	1.000
Safety Factor	2.0	Width (m)	16.000	Inf Depth (m)	
Porosity	0.35	Length (m)	10.000		

Node Carpark 3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	106.030	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.400
Safety Factor	2.0	Width (m)	13.100	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node Carpark 2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	106.280	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.400
Safety Factor	2.0	Width (m)	17.577	Inf Depth (m)	
Porosity	1.00	Length (m)	10.000		

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	180	105.146	0.410	5.7	0.1160	0.0000	SURCHARGED
240 minute summer	Carpark 1	172	105.141	0.141	6.9	7.6344	0.0000	OK
240 minute summer	3	184	105.141	0.871	3.4	0.9849	0.0000	SURCHARGED
15 minute summer	4	1	103.400	0.000	0.7	0.0000	0.0000	OK
15 minute summer	Carpark 3	1	106.030	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Carpark 2	1	106.280	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	1	1.001	3	3.4	0.225	0.011	0.3981	
240 minute summer	Carpark 1	1.000	1	5.7	0.965	0.189	0.0694	
240 minute summer	3	Hydro-Brake®	4	0.8				17.4
15 minute summer	Carpark 3	2.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	Carpark 2	3.000	3	0.0	0.000	0.000	0.0000	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	220	105.426	0.690	3.6	0.1953	0.0000	SURCHARGED
180 minute winter	Carpark 1	176	105.423	0.423	7.8	23.3853	0.0000	SURCHARGED
240 minute winter	3	224	105.422	1.152	2.3	1.3024	0.0000	SURCHARGED
15 minute summer	4	1	103.400	0.000	0.8	0.0000	0.0000	OK
15 minute summer	Carpark 3	1	106.030	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Carpark 2	1	106.280	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.001	3	2.3	0.288	0.007	0.3981	
180 minute winter	Carpark 1	1.000	1	4.5	0.923	0.149	0.0702	
240 minute winter	3	Hydro-Brake®	4	0.9				36.1
15 minute summer	Carpark 3	2.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	Carpark 2	3.000	3	0.0	0.000	0.000	0.0000	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	236	105.656	0.920	4.7	0.2604	0.0000	SURCHARGED
240 minute winter	Carpark 1	236	105.656	0.656	8.9	36.4672	0.0000	SURCHARGED
240 minute winter	3	236	105.657	1.387	3.1	1.5685	0.0000	SURCHARGED
15 minute summer	4	1	103.400	0.000	0.8	0.0000	0.0000	OK
15 minute summer	Carpark 3	1	106.030	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Carpark 2	1	106.280	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.001	3	3.1	0.252	0.010	0.3981	
240 minute winter	Carpark 1	1.000	1	4.7	0.888	0.157	0.0702	
240 minute winter	3	Hydro-Brake®	4	0.9				50.7
15 minute summer	Carpark 3	2.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	Carpark 2	3.000	3	0.0	0.000	0.000	0.0000	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	244	105.610	0.873	3.3	0.2472	0.0000	SURCHARGED
240 minute winter	Carpark 1	236	105.608	0.608	8.3	33.7717	0.0000	SURCHARGED
240 minute winter	3	236	105.606	1.336	2.4	1.5106	0.0000	SURCHARGED
15 minute summer	4	1	103.400	0.000	0.8	0.0000	0.0000	OK
15 minute summer	Carpark 3	1	106.030	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Carpark 2	1	106.280	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.001	3	2.4	0.248	0.007	0.3981	
240 minute winter	Carpark 1	1.000	1	-3.4	0.877	-0.111	0.0702	
240 minute winter	3	Hydro-Brake®	4	0.9				47.7
15 minute summer	Carpark 3	2.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	Carpark 2	3.000	3	0.0	0.000	0.000	0.0000	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	240	105.925	1.189	5.1	0.3364	0.0000	FLOOD RISK
360 minute winter	Carpark 1	352	105.922	0.922	8.5	51.3650	0.0000	FLOOD RISK
360 minute winter	3	352	105.922	1.652	2.9	1.8684	0.0000	FLOOD RISK
15 minute summer	4	1	103.400	0.000	0.9	0.0000	0.0000	OK
15 minute summer	Carpark 3	1	106.030	0.000	0.0	0.0000	0.0000	OK
15 minute summer	Carpark 2	1	106.280	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.001	3	3.0	0.239	0.009	0.3981	
360 minute winter	Carpark 1	1.000	1	2.7	0.872	0.091	0.0702	
360 minute winter	3	Hydro-Brake®	4	1.0				72.8
15 minute summer	Carpark 3	2.000	3	0.0	0.000	0.000	0.0000	
15 minute summer	Carpark 2	3.000	3	0.0	0.000	0.000	0.0000	