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

28th November 2024

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 21st November 2024. The LLFAs rejection was regarding the following reasons:

- Point 1. FEH Rainfall data should be used for surface water simulation calculations submitted, FSR data is not acceptable and a Cv value of 1 should be used for all the calculations. The current parameters used underestimates the volume of water that impacts the site and therefore the volume storage required.*
- Point 2. Only 780m² has been included within the hydraulic model where the FRA states 1500m² of impermeable area will be included within the proposed development and discharged at 1l/s. It appears the new car parking areas separate from the main site, have been excluded from the drainage design. These areas need to be incorporated and the proposed discharge rate of 1l/s for the whole development site not exceeded. The model should include the full network of the proposed drainage scheme.*
- Point 3. It is not clear from the report or the design why multi-beneficial source control SuDS features have been excluded such as raingardens and enhanced tree pits. To meet the four pillars of SuDS multi-beneficial features should be included unless there is substantive evidence as to why they are inappropriate.*

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

Point 1 – Response

Following on from the first submission of the Flood Risk Assessment, the comment was raised to include FEH data rather than FSR. The hydraulic calculations have now been updated to include FEH data for both simulation and design settings, which ultimately reflects a more realistic rainfall scenario.

It is noted the greenfield calculation is still shown as the IH124 method, but this is due to similar FEH greenfield results (IH124=0.3l/s, FEH=0.2 l/s) for a 1 in 1 and 1 in 2 year storm. Attached in Appendix A are the updated hydraulic calculations to suit along with the below image to show the greenfield rate.



Pre-development discharge		
Site Makeup	Greenfield	
Greenfield Method	FEH	
Positively Drained Area (ha)	0.150	
SAAR (mm)	593	
BFIHost	0.640	
Region	6	
QBar/QMed conversion factor	1.136	
Betterment (%)	0	
	Calc	
QMed (l/s)	0.2	
QBar (l/s)	0.2	
Return Period (years)	Growth Factor	Q (l/s)
2	0.88	0.2
30	2.40	0.5
100	3.19	0.6

Point 2 – Response

As previously shown in the Flood Risk Assessment (section 4.3) it states the post- development impermeable area is 1,090m² but once the proposed S278 highways area is removed, as this will be on a separate system to the private drainage, the remainder impermeable area is to be 783m².

We cannot at this stage include the proposed S278 area in the private drainage as the highway authority are unlikely to adopt a solution involving SuDS into a private network, therefore this has been excluded.

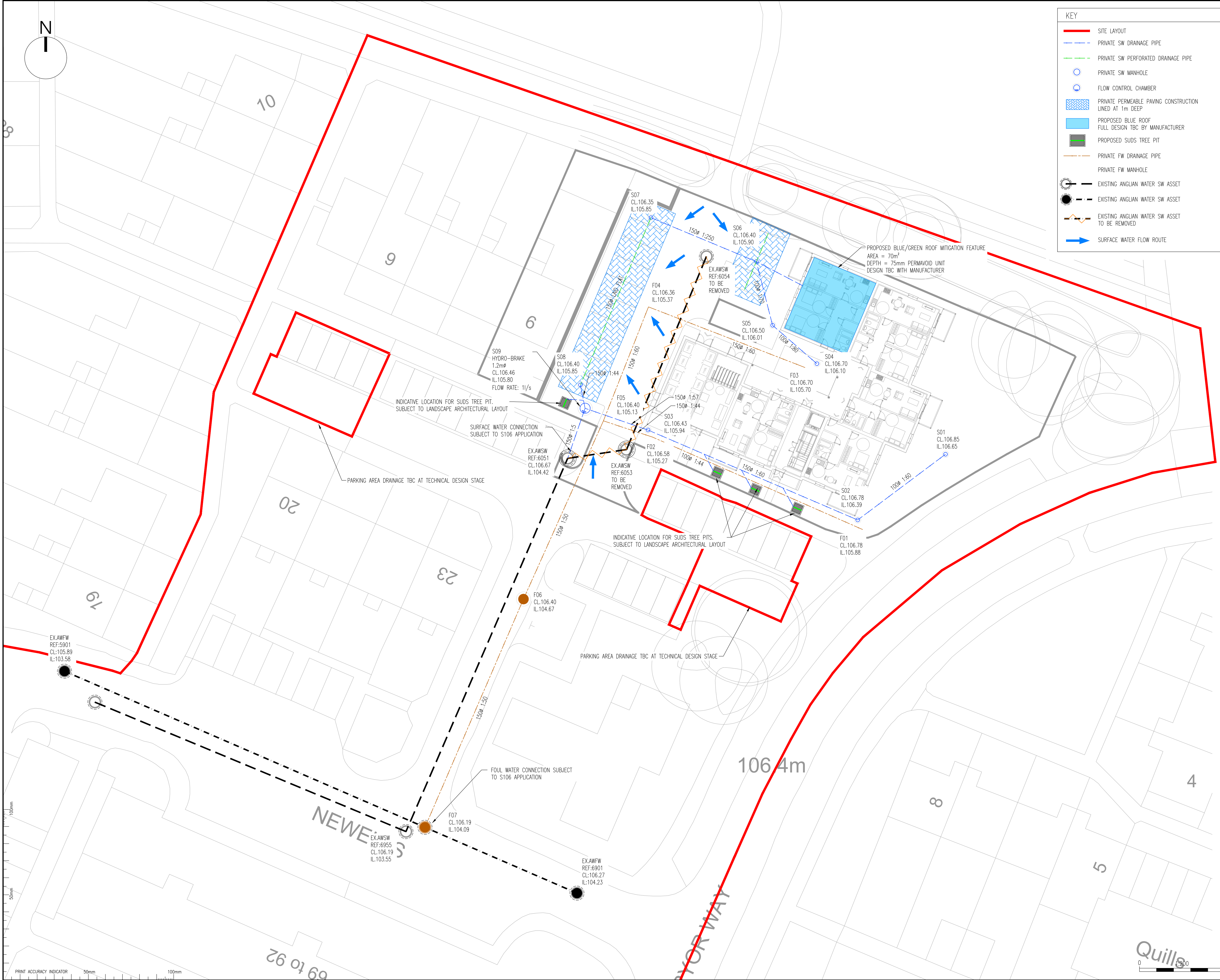
Point 3 – Response

Noted, the drainage strategy has now been updated to show provision for SuDS tree pits. These will be placed with green landscaping areas and connect into the main private surface water drainage system. This will assist in providing the four pillars of SuDS requirement for multi-beneficial use.

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



Appendix A – Hydraulic Calculations



KEY

SITE LAYOUT

PRIVATE SW DRAINAGE PIPE

PRIVATE SW PERFORATED DRAINAGE PIPE

PRIVATE SW MANHOLE

FLOW CONTROL CHAMBER

PRIVATE PERMEABLE PAVING CONSTRUCTION
LINED AT 1m DEEP

PROPOSED BLUE ROOF
FULL DESIGN TBC BY MANUFACTURER

PROPOSED SUDS TREE PIT

PRIVATE FW DRAINAGE PIPE

PRIVATE FW MANHOLE

EXISTING ANGLIAN WATER SW ASSET

EXISTING ANGLIAN WATER SW ASSET
TO BE REMOVED

SURFACE WATER FLOW ROUTE

- GENERAL NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATION AND ALL OTHER RELATED DRAWINGS ISSUED BY THE ENGINEER.

2. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.

3. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES, UNLESS OTHERWISE STATED.

4. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PRIOR PERMISSION FROM THE ENGINEER.

5. 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.

6. 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.

7. THE CONTRACTOR SHALL UNDERTAKE SUCH MATERIALS TESTING AS INDICATED IN THE SPECIFICATIONS AND SHALL INCLUDE THE COST OF TESTING IN THE TENDER.

8. 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:

1. 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.

2. 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.

3. 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.

4. 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.

5. THE CONTRACTOR MUST ENSURE ALL WORKING AREAS ARE FULLY SECURE.

- DRAINAGE STRATEGY NOTES
1. 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.

2. TOPOGRAPHICAL SURVEY UNDERTAKEN BY XXXXXX, DRAWING REF. XXXXXX DATED MONTH YYYY.

3. THIS DRAWING IS BASED ON THE GROUND FLOOR SITE PLAN UNDERTAKEN BY XXXXXX, DRAWING REF. XXXXXX DATED MONTH YYYY.

4. RAIN WATER PIPE & SOIL AND VENT PIPE LOCATIONS ARE TO BE CONFIRMED AT THE DETAILED DESIGN STAGE.

5. ALL INVERT AND COVER LEVELS ARE TO BE CONFIRMED AT THE DETAILED DESIGN STAGE.

6. PROPOSED FOUL WATER DRAINAGE CONNECTION TO ADAPTABLE SEWERS IS SUBJECT TO THE AGREEMENT OF ---INSERT SEWER AUTHORITY---

7. PROPOSED SURFACE WATER DRAINAGE CONNECTION TO THE EXISTING DITCH/WATERCOURSE IS SUBJECT TO THE AGREEMENT OF THE LEAD LOCAL FLOOD AUTHORITY UNDER S23 OF THE LAND DRAINAGE ACT 1991.

8. THIS LAYOUT INDICATES THE MAIN ADAPTABLE DRAINAGE RUNS FOR THE DEVELOPMENT. PRIVATE, BELOW GROUND DRAINAGE TO BE CONSIDERED AT DETAILED DESIGN STAGE.

9. EXACT POSITION, TYPE AND NUMBER OF ABOVE GROUND DRAINAGE POINTS TO BE CONFIRMED BY ARCHITECT DURING THE DETAILED DESIGN STAGE. THEREFORE ALLOWANCES SHOULD BE MADE FOR INDIVIDUAL DRAINAGE CONNECTIONS.

10. EXTERNAL LEVELS AT LEVEL THRESHOLDS TO BE DESIGNED TO HAVE SUFFICIENT FALL AWAY FROM STRUCTURE TO OMIT THE NEED FOR THRESHOLD DRAINS.

11. FOOTWAYS AND PATIO AREAS TO BE LAID TO FALL TO SOFT LANDSCAPED AREAS. LANDSCAPED AREAS TO BE NO HIGHER THAN ADJACENT HARD STANDING AREAS.

12. FINISHED FLOOR LEVELS TO BE TYPICALLY 150mm ABOVE EXISTING SITE LEVELS.
- DRAINAGE STRATEGY DESIGN CRITERIA:

1. PRELIMINARY SURFACE WATER ATTENUATION SIMULATIONS HAVE IDENTIFIED A POTENTIAL STORAGE REQUIREMENT OF 310-402m³ TO ACCOMMODATE A 1:100 YEAR RAINFALL EVENT (INCLUDING AN ADDITIONAL 40% FOR ANY POTENTIAL CLIMATE CHANGE IMPACT) BASED ON THE FOLLOWING DESIGN PARAMETERS:

M5-60mm = 21,000mm

RATIO, R = 0.431

IMPERMEABLE AREA = 0.428 HECTARES

1:100yr (+40%) DISCHARGE RATE = 1.3 l/s

2. THE SURFACE WATER DETAILS ILLUSTRATED ON THIS PLAN ARE SUBJECT TO HYDRAULIC MODELING DURING THE DETAILED DESIGN STAGE TO ESTABLISH THE PEAK WATER LEVEL ASSOCIATED WITH A 1:100 YEAR RAINFALL EVENT (INCLUDING CLIMATE CHANGE).

WORK IN
PROGRESS

REV	DESCRIPTION	DRAWN	APPRVD	DATE
P03	UPDATE TO SUIT PROPOSED SUDS TREE PITS	GW	GW	27.11.24
P02	UPDATED SITE LAYOUT	GW	GW	06.09.24
P01	FIRST ISSUE	LRL	GW	JNR

SPDSTUDIO

SUSTAINABLE PLANNING DESIGN

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CLIENT

SETTLE GROUP

PROJECT TITLE

3-5 NEWELLS,
LETCWORTH GARDEN CITY
SG6 2PH

DRAWING TITLE

DRAINAGE STRATEGY

SCALE	DRAWING STATUS
1:200 @ A1	PRELIMINARY
DRAWN BY	CHECKED BY
LRL	GW
APPROVED BY	DATE
JNR	APR/2024
DRAWING NO.	REV
MB018-E-300	P03



Appendix B – Drainage Strategy Plan

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

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

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

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	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

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/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

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)	472	Depth (m)	1.000
Safety Factor	2.0	Width (m)	16.000	Inf Depth (m)	
Porosity	0.35	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: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	1	168	105.146	0.410	5.6	0.1159	0.0000	SURCHARGED
240 minute summer	Carpark 1	172	105.141	0.141	6.9	7.6308	0.0000	OK
240 minute summer	3	172	105.142	0.872	3.3	0.9857	0.0000	SURCHARGED
15 minute summer	4	1	103.400	0.000	0.7	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	3.3	0.225	0.010	0.3981	
240 minute summer	Carpark 1	1.000	1	5.6	0.965	0.187	0.0694	
240 minute summer	3	Hydro-Brake®	4	0.8				17.4

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	176	105.426	0.690	3.8	0.1953	0.0000	SURCHARGED
240 minute winter	Carpark 1	232	105.423	0.423	6.3	23.3858	0.0000	SURCHARGED
240 minute winter	3	220	105.421	1.151	2.8	1.3012	0.0000	SURCHARGED
15 minute summer	4	1	103.400	0.000	0.8	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)
180 minute winter	1	1.001	3	2.2	0.256	0.007	0.3981	
240 minute winter	Carpark 1	1.000	1	5.3	0.876	0.174	0.0702	
240 minute winter	3	Hydro-Brake®	4	0.9				36.1

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	232	105.613	0.877	2.7	0.2483	0.0000	SURCHARGED
240 minute winter	Carpark 1	236	105.608	0.608	8.3	33.7911	0.0000	SURCHARGED
240 minute winter	3	236	105.609	1.339	2.2	1.5140	0.0000	SURCHARGED
15 minute summer	4	1	103.400	0.000	0.8	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	2.2	0.248	0.007	0.3981	
240 minute winter	Carpark 1	1.000	1	-3.4	0.877	-0.114	0.0702	
240 minute winter	3	Hydro-Brake®	4	0.9				47.7

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	336	105.926	1.190	3.0	0.3367	0.0000	FLOOD RISK
360 minute winter	Carpark 1	352	105.924	0.924	8.5	51.4621	0.0000	FLOOD RISK
360 minute winter	3	344	105.922	1.652	1.9	1.8686	0.0000	FLOOD RISK
15 minute summer	4	1	103.400	0.000	0.9	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)
360 minute winter	1	1.001	3	1.9	0.221	0.006	0.3981	
360 minute winter	Carpark 1	1.000	1	3.0	0.872	0.099	0.0702	
360 minute winter	3	Hydro-Brake®	4	1.0				72.7