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Our Ref: 450-LT-01-Response to LLFA Comments
Your Ref: ERE/0722/0038

Date: 29 September 2022

FAO James Browne (Flood Risk Management)
Place | Derbyshire County Council
County Hall
Matlock
Derbyshire
DE4 3AG

Dear James Browne (Flood Risk Management)

Re: Response to LLFA Comments dated 12th August 2022

This letter has been drafted to provide additional supporting information for the MAC report ref 450-FRA-01-0-Flood Risk Assessment-Sowbrook Lane, Ilkeston; in response to LLFA email correspondence received from Derbyshire County Council LLFA on 12th August 2022, for application reference ERE/0722/0038. The additional information requested/ comments made by the LLFA are highlighted in bold below, and the MAC responses are provided after each number point.

1. **Are the retention basin's within Flood zone 2 or 3? If so how do you expect they will operate during such flood events?**
   The proposed basins are neither located in Flood Zone 2 or 3, they are in Flood Zone 1. Within the submitted Flood Risk Assessment report, a Stage-Discharge calculation was carried out using flood level information provided by the Environment Agency for the adjacent Nutbrook Canal. Based on the information provided, the full extent of the application's red line is situated at a higher elevation than the 1 in 1,000-year equivalent flood level predicted within the immediate vicinity (46.150mODN). See **Appendix A** for a copy of the Stage-Discharge calculation and the associated drawings which highlight the extents for each Flood Zone based on the Environment Agency data.

2. **Can the developer confirm that a minimum 8m easement is to be adhered either side of the brook, water courses, lakes, ponds and canals?**
   Yes, I can confirm on behalf of Wulff Asset Management Limited, that an 8m easement will be adhered to either side of the brook, water course, lakes, ponds and canals. Based on the Proposed Drainage Strategy drawing already submitted as part of the MAC Flood Risk Assessment report, an 8m easement can already be incorporated without making any changes to the proposed site layout.

3. **Can you confirm the condition of the outfall location and its suitability to accept the point discharge of the entire site? Currently more than half the site would not drain to this point. Additionally, the LLFA hold no modelling data for the ordinary watercourse to the West of the site, and the FRA has not adequately accessed the risk that these water course may pose to the site.**

   Yes, we believe the outfall location is suitable. A 3D model of the site has been created based on topographic survey information. Directional fall arrows and associated gradients have been superimposed onto the 3D model. See the drawing included as **Appendix B** for further details. Based on the directional fall arrows shown in **Appendix B**, it is reasonable to conclude the that the ultimate outfall for the site is Nutbrook Canal.

   Notwithstanding this, it is acknowledged that approximately 45% of the site which falls within the extent of the developable area currently discharges runoff within the immediate vicinity of the proposed outfall point i.e. 45.3% of the calculated Q_{Bar} discharge rate = 45.3% x 16.5 l/s = 7.5 l/s. As such, to ensure the proposed outfall position does not receive runoff at a higher rate than the existing Q_{Bar}, the flow control device has been amended to have a 7.5 l/s restriction. Detention Basin 1 has been upsized slightly to accommodate the additional storage requirement. See **Appendix C** for a copy of the updated calculations and drainage strategy drawing (450-FRA03B).

4. **There is an outfall marked to East of the site on Ilkeston road which also feeds a fish pond, is it possible that this pond also relies on water from the site the feed the pond? The topo and surface water maps also indicated water from the site would head in that direction.**

   Based on the drawing included as **Appendix B**, only a small proportion of the site directs runoff to the east. Given that the eastern site boundary is located directly adjacent to Ilkeston Road, it is likely that any runoff currently directed in an eastern direction, would be intercepted by the road gullies within the main carriageway. The ultimate outfall for these road gullies is present unknown; however, it is more likely that the outfall point will connect to Nutbrook Canal, as opposed to the fishing pond.

5. **The LLFA also requires the development to consider the use of further SuDS such as: bio retention strips, rainwater gardens, rainwater harvesting, permeable paving & swales. This is to capture as much of the first 5mm of rainfall as possible and prevent the mobilisation of pollutants in line with CIRIA C753 guidance. Currently there is very little in the way of the above shown on the plans other than retention ponds. Considering the size of the site it is considered that there is room to place such features. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate (as per National Planning Policy Framework 165).**

   Other forms of SuDS, such as those mentioned above will be incorporated into the site layout at a more detailed design stage. The development proposal is being submitted for outline permission, therefore; the site layout has not been progressed to a stage which would show the more detailed arrangement for where further SuDS features could go. Nonetheless, it should be noted that as a minimum, tanked permeable paving has already been included as a committed SuDS feature within the submitted FRA. In addition to this, the location and shape of the basins currently proposed, were determined by the existing topography, and a site layout was produced thereafter.

6. **The LLFA are pleased to see the use of retention basins, will a low flow channel be used to improve the ecological benefits of having a retention basin?**
   Yes, low flow channels will be provided within the basins proposed. However, considering the planning application is seeking an outline planning consent, this level of detail will be provided at a later stage of the planning process.

7. **Can you confirm that the EA have been consulted on the application as part of the site lies with in FZ2 and can you forward on their response to me please?**
   We understand the LPA have consulted the EA, we would note that the a review of EA flood data shows the site to be in FZ1.

8. **The FRA does not indicate how the current risk of surface water flooding will be mitigated on the East of the site which has been modelled for both the 1 in 30 and 1 in 100 year event.**
   The form the current site layout takes, ensures that the developable extent of the residential proposal is not shown within any location being at risk of surface water flooding. Therefore, there is no need to mitigate the risk of surface water flooding to the east.

9. **Has a 10% allowance for urban creep been allowed for?**
   Yes, a 10% allowance for urban creep has been allowed for. Table 3.1 of the submitted MAC Flood Risk Assessment states that the proposed impermeable area is 3.587ha; whereas Table 3.3 confirms that the modelled impermeable area within the drainage calculations is 3.946ha i.e. a 10% increase.

I trust the above and attached are considered to have provide a sufficient level of detail to acquire a recommendation for approval from Derbyshire County Council LLFA, with regards to surface water and flood risk matters for application ref ERE/0722/0038.

Yours faithfully

Alexander Nelson BEng (Hons)
Principal Engineer for Martin Andrews Consulting Ltd

Enc
Appendix A – Stage-Discharge Calculations and Flood Zone Extent Drawings
Appendix B – MAC drawing no. 450-FRA08-Existing Overland Flow Path
Appendix C – Proposed Drainage Strategy and Drainage Calculations.

Appendix A

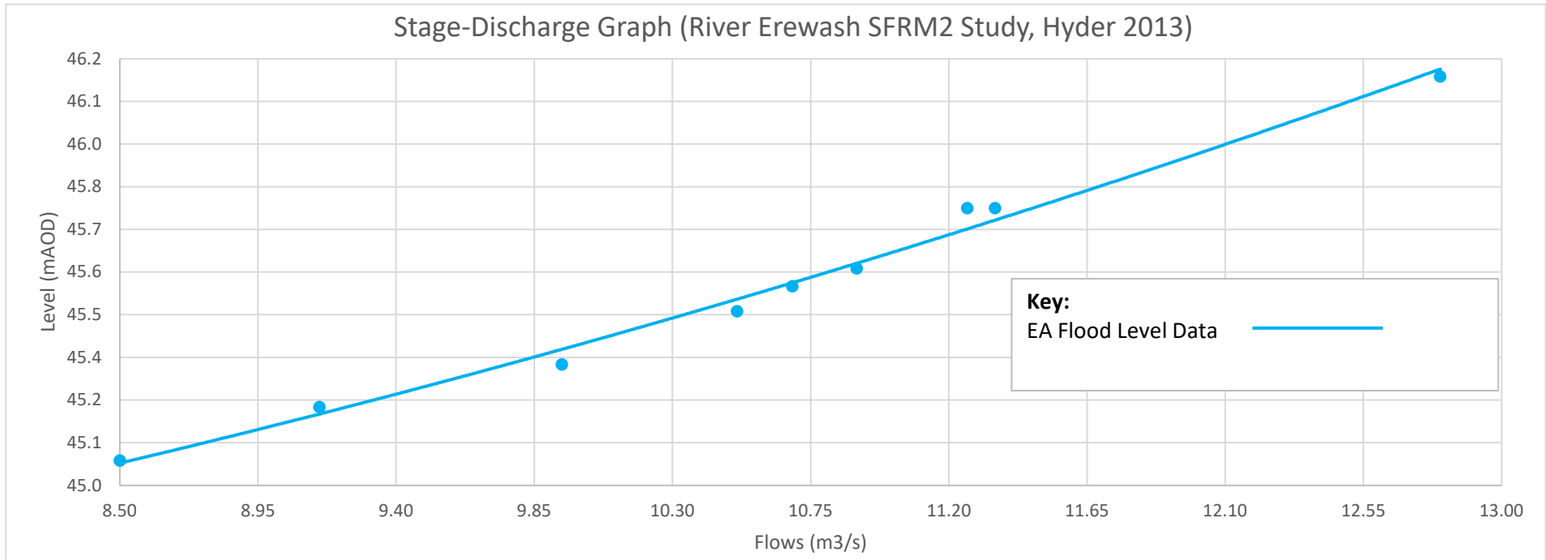
Stage-Discharge Calculations and Flood Zone Extent Drawings

Existing Stage Discharge Graph

Data model - River Erewash SFRM2 Study, Hyder 2013

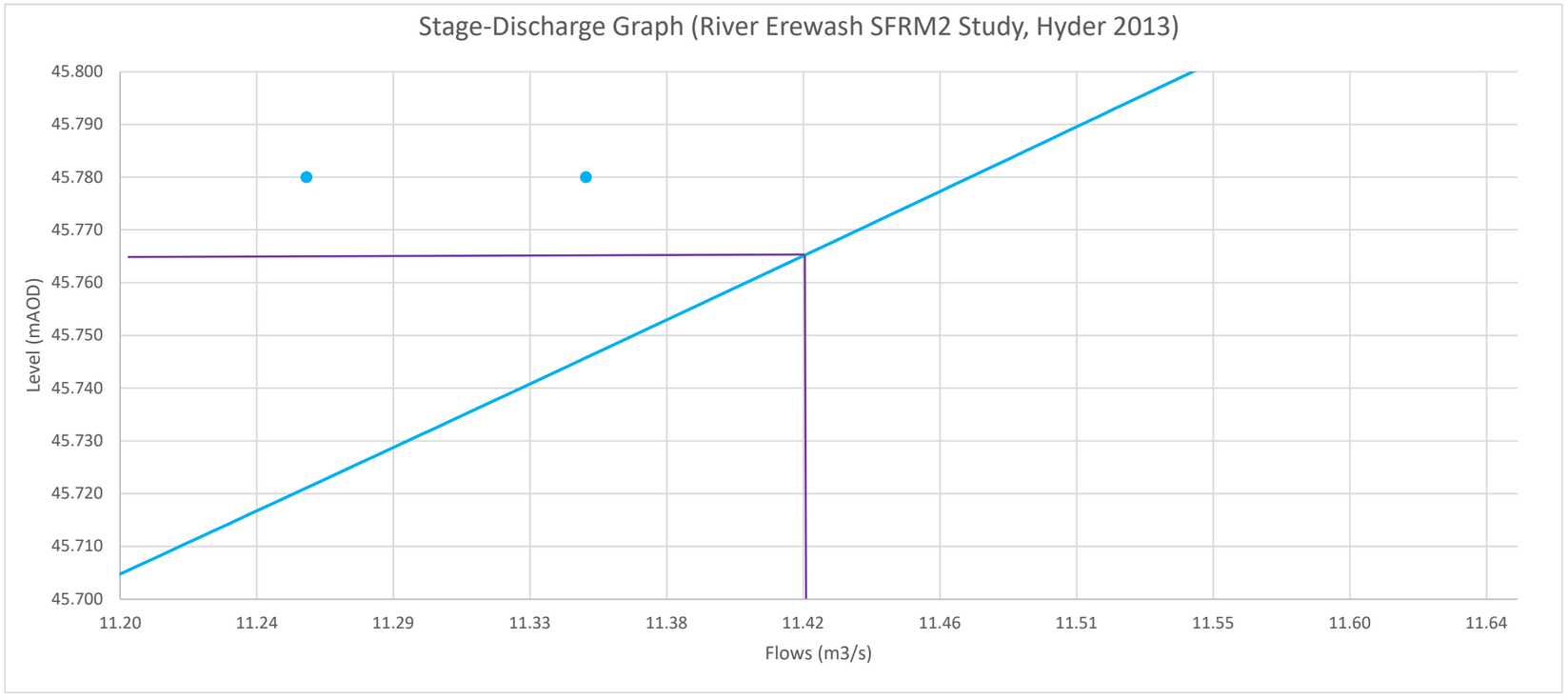
Node Nut_2181

AEP		Flow (m3/s)	Level (mODN)
50.0%	1 in 2	n/a	n/a
20.0%	1 in 5	8.50	45.07
10.0%	1 in 10	9.15	45.22
5.0%	1 in 20	9.94	45.34
2.0%	1 in 50	10.51	45.49
1.33%	1 in 75	10.69	45.56
1.0%	1 in 100	10.90	45.61
0.5%	1 in 200	11.35	45.78
1%+20CC	1 in 100 + CC	11.26	45.78
0.1%	1 in 1000	12.80	46.15
0.1%+20CC	1 in 1000 + CC	n/a	n/a



Interpolation for New Climate Change Allowances

AEP		Flow (m3/s)	Level (mODN)
1% + 29% CC	1 in 100 + CC	11.42	**45.77**



Notes:

1. Based on Topographical Survey by JPP, drawing number 23775Y - 01 dated Sept 2021.
2. Based on Indicative Masterplan by RDC development Consultants, drawing number RDC1146/002 dated February 2022.
3. Based on Ordnance Survey mapping. Ordnance Survey (c) Crown Copyright 2020. All rights reserved. Licence number 100022432

Key:

- Site Boundary
- Flood Zone 2 Extent = 45.77 (1 in 100 + 29% Climate Change year event)
- Flood Zone 3 Extent = 46.15 (1 in 1000 year event)

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- Transport Assessments
- Flood Risk Assessments
- Highway Advice
- Access Design
- Drainage Strategies
- Vehicle tracking

Client: Wulff Asset Management Limited		Project: Sowbrook Lane Ilkeston	
Title: Flood Zone Extent Existing Site Layout			Date: 29.04.22
			Drw: LT
			Chk: AN
Drawing No: 450-FRA06	Revision: -		Scale: 1:1000
			Size: A1

NORTH

Notes:

1. Based on Topographical Survey by JPP, drawing number 23775Y - 01 dated Sept 2021.
2. Based on Indicative Masterplan by RDC development Consultants, drawing number RDC1146/002 dated February 2022.
3. Based on Ordanance Survey mapping. Ordnance Survey (c) Crown Copyright 2020. All rights reserved. Licence number 100022432

Key

- Site Boundary
- Flood Zone 2 Extent = 45.77 (1 in 100 + 29% Climate Change year event)
- Flood Zone 3 Extent = 46.15 (1 in 1000 year event)

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Client: Wulff Asset Management Limited		Project: Sowbrook Lane Ilkeston	
Title: Flood Zone Extent Proposed Site Layout			Date: 29.04.22
			Drw: LT
			Chk: AN
Drawing No: 450-FRA07	Revision: -		Scale: 1:1000
			Size: A1

Appendix B

Existing Overland Flow Path
MAC drawing no. 450-FRA08

NORTH

Notes:

1. Based on Topographical Survey by JPP, drawing number 23775Y - 01 dated Sept 2021.
2. Based on Indicative Masterplan by RDC development Consultants, drawing number RDC1146/002 dated February 2022.
3. Based on Ordanance Survey mapping. Ordnance Survey (c) Crown Copyright 2020. All rights reserved. Licence number 100022432

Key

- Site Boundary
- Existing Site Draining East (Ilkeston Road) 21.5% of developable extent
- Existing Site Draining to Proposed Outfall 45.3% of developable extent
- Existing Site Draining to Nutbrook Canal 33.2% of developable extent
- Fall Arrows and Gradients

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Client: Wulff Asset Management Limited		Project: Sowbrook Lane Ilkeston	
Title: Existing Overland Flow Path			Date: 29.09.22
			Drw: AN
			Chk: AN
Drawing No: 450-FRA08	Revision: -		Scale: 1:1000
			Size: A1

Appendix C

Proposed Drainage Strategy and Drainage Calculations

NORTH

Notes:

1. Based on Topographical Survey by JPP, drawing number 23775Y - 01 dated Sept 2021.
2. Based on Indicative Masterplan by RDC development Consultants, drawing number RDC1146/002 dated February 2022.
3. Based on Ordanance Survey mapping. Ordnance Survey (c) Crown Copyright 2020. All rights reserved. Licence number 100022432

Key

- Site Boundary
- Proposed Surface Water Drainage
- Proposed Surface Water Attenuation
- Proposed Earthworks for Detention Basins
- Gas Main Easement

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- Flood Risk Assessments
- Highway Advice
- Access Design
- Drainage Strategies
- Vehicle tracking

Client: Wulff Asset Management Limited		Project: Sowbrook Lane Ilkeston	
Title: Proposed Drainage Strategy			Date: 29.09.22
			Drw: LT
			Chk: AN
Drawing No: 450-FRA03	Revision: A		Scale: 1:1000
			Size: A1

Design Settings

Rainfall Methodology	FEH-13	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	0.750	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Detention Basin 2	1.973	5.00	48.250	1200	446446.351	339459.274	0.980
SMH2			49.000	1200	446411.179	339448.520	1.880
SMH3			49.000	1200	446368.269	339453.136	2.055
SMH4			49.500	1200	446311.060	339431.248	2.810
SMH5			48.250	1200	446276.193	339415.457	1.720
Detention Basin 1	1.973	5.00	48.250	1200	446247.487	339398.353	1.765
SMH1-Hydrobrake			49.625	1500	446251.172	339414.056	3.200
Outfall 1			47.000	1200	446230.675	339436.350	0.700

Links (Results)

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)
S2.000	0.999	70.6	267.4	0.680	1.580	1.973	0.0	300	1.012
S2.001	0.996	70.4	267.4	1.580	1.755	1.973	0.0	300	1.009
S2.002	1.010	71.4	267.4	1.755	2.510	1.973	0.0	300	1.023
S2.003	1.012	71.5	267.4	2.510	1.420	1.973	0.0	300	1.025
S2.004	1.013	71.6	267.4	1.420	2.900	1.973	0.0	300	1.026
S1.000	0.954	67.4	267.4	1.465	2.900	1.973	0.0	300	0.966
S1.001	1.005	71.1	534.8	2.900	0.400	3.946	0.0	300	1.018

Simulation Settings

Rainfall Methodology	FSR	Winter CV	0.840	Check Discharge Rate(s)	✓
FSR Region	England and Wales	Analysis Speed	Normal	1 year (l/s)	14.1
M5-60 (mm)	17.000	Skip Steady State	x	30 year (l/s)	32.3
Ratio-R	0.400	Drain Down Time (mins)	240	100 year (l/s)	41.0
Summer CV	0.750	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x

Storm Durations

15	30

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Soil Index	4	Growth Factor 30 year	1.95	Q 1 year (l/s)	14.1
Greenfield Method	IH124	SPR	0.47	Growth Factor 100 year	2.48	Q 30 year (l/s)	32.3
Positively Drained Area (ha)	3.587	Region	4	Betterment (%)	0	Q 100 year (l/s)	41.0
SAAR (mm)	673	Growth Factor 1 year	0.85	QBar	16.5		

Node SMH1-Hydrobrake Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	46.425	Product Number	CTL-SHE-0119-7500-1582-7500
Design Depth (m)	1.582	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	7.5	Min Node Diameter (mm)	1200

Node Detention Basin 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	46.485
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	852.0	0.0	1.765	1912.0	0.0	1.766	0.0	0.0

Node Detention Basin 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	47.270
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1956.6	0.0	0.980	2525.7	0.0	0.981	0.0	0.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	Detention Basin 2	33	47.547	0.277	805.6	575.5965	0.0000	OK
30 minute winter	SMH2	34	47.476	0.356	66.1	0.4022	0.0000	SURCHARGED
30 minute winter	SMH3	54	47.390	0.445	59.6	0.5031	0.0000	SURCHARGED
30 minute winter	SMH4	270	47.340	0.650	49.3	0.7354	0.0000	SURCHARGED
30 minute winter	SMH5	270	47.336	0.806	50.1	0.9111	0.0000	SURCHARGED
30 minute winter	Detention Basin 1	270	47.332	0.847	805.6	956.9898	0.0000	SURCHARGED
30 minute winter	SMH1-Hydrobrake	270	47.332	0.907	51.4	1.6033	0.0000	SURCHARGED
15 minute winter	Outfall 1	16	46.365	0.065	7.5	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)
30 minute winter	Detention Basin 2	S2.000	SMH2	66.1	1.079	0.935	2.5449	
30 minute winter	SMH2	S2.001	SMH3	59.6	1.092	0.846	3.0392	
30 minute winter	SMH3	S2.002	SMH4	49.3	0.879	0.691	4.3134	
30 minute winter	SMH4	S2.003	SMH5	50.1	0.712	0.701	2.6954	
30 minute winter	SMH5	S2.004	SMH1-Hydrobrake	51.4	0.730	0.718	1.7647	
30 minute winter	Detention Basin 1	S1.000	SMH1-Hydrobrake	-44.9	-0.638	-0.666	1.1359	
30 minute winter	SMH1-Hydrobrake	S1.001	Outfall 1	7.5	0.657	0.106	0.3456	109.8

Design Settings

Rainfall Methodology	FEH-13	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	0.750	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Detention Basin 2	1.973	5.00	48.250	1200	446446.351	339459.274	0.980
SMH2			49.000	1200	446411.179	339448.520	1.880
SMH3			49.000	1200	446368.269	339453.136	2.055
SMH4			49.500	1200	446311.060	339431.248	2.810
SMH5			48.250	1200	446276.193	339415.457	1.720
Detention Basin 1	1.973	5.00	48.250	1200	446247.487	339398.353	1.765
SMH1-Hydrobrake			49.625	1500	446251.172	339414.056	3.200
Outfall 1			47.000	1200	446230.675	339436.350	0.700

Links (Results)

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)
S2.000	0.999	70.6	267.4	0.680	1.580	1.973	0.0	300	1.012
S2.001	0.996	70.4	267.4	1.580	1.755	1.973	0.0	300	1.009
S2.002	1.010	71.4	267.4	1.755	2.510	1.973	0.0	300	1.023
S2.003	1.012	71.5	267.4	2.510	1.420	1.973	0.0	300	1.025
S2.004	1.013	71.6	267.4	1.420	2.900	1.973	0.0	300	1.026
S1.000	0.954	67.4	267.4	1.465	2.900	1.973	0.0	300	0.966
S1.001	1.005	71.1	534.8	2.900	0.400	3.946	0.0	300	1.018

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0	30 year (l/s)	32.3
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	✓	100 year (l/s)	41.0
Winter CV	0.840	Drain Down Time (mins)	240	1 year (l/s)	14.1	Check Discharge Volume	x

Storm Durations

60	120	180	240	360	480	600	720	960	1440	2160	2880	4320	5760	7200	8640	10080

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

Pre-development Discharge Rate

Site Makeup	Greenfield	Soil Index	4	Growth Factor 30 year	1.95	Q 1 year (l/s)	14.1
Greenfield Method	IH124	SPR	0.47	Growth Factor 100 year	2.48	Q 30 year (l/s)	32.3
Positively Drained Area (ha)	3.587	Region	4	Betterment (%)	0	Q 100 year (l/s)	41.0
SAAR (mm)	673	Growth Factor 1 year	0.85	QBar	16.5		

Node SMH1-Hydrobrake Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	46.425	Product Number	CTL-SHE-0119-7500-1582-7500
Design Depth (m)	1.582	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	7.5	Min Node Diameter (mm)	1200

Node Detention Basin 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	46.485
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	852.0	0.0	1.765	1912.0	0.0	1.766	0.0	0.0

Node Detention Basin 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	47.270
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1956.6	0.0	0.980	2525.7	0.0	0.981	0.0	0.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	Detention Basin 2	960	47.956	0.686	83.3	1506.6400	0.0000	FLOOD RISK
960 minute winter	SMH2	960	47.955	0.835	40.3	0.9448	0.0000	SURCHARGED
960 minute winter	SMH3	960	47.955	1.010	38.0	1.1422	0.0000	SURCHARGED
960 minute winter	SMH4	960	47.954	1.264	37.5	1.4300	0.0000	SURCHARGED
960 minute winter	SMH5	960	47.954	1.424	37.4	1.6105	0.0000	FLOOD RISK
960 minute winter	Detention Basin 1	945	47.954	1.469	99.4	1934.2110	0.0000	FLOOD RISK
960 minute winter	SMH1-Hydrobrake	960	47.954	1.529	37.2	2.7012	0.0000	SURCHARGED
360 minute summer	Outfall 1	160	46.365	0.065	7.5	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)
960 minute winter	Detention Basin 2	S2.000	SMH2	40.3	0.981	0.570	2.5900	
960 minute winter	SMH2	S2.001	SMH3	38.0	0.927	0.539	3.0392	
960 minute winter	SMH3	S2.002	SMH4	37.5	0.786	0.526	4.3134	
960 minute winter	SMH4	S2.003	SMH5	37.4	0.531	0.522	2.6954	
960 minute winter	SMH5	S2.004	SMH1-Hydrobrake	37.2	0.529	0.520	1.7647	
960 minute winter	Detention Basin 1	S1.000	SMH1-Hydrobrake	-29.7	-0.422	-0.441	1.1359	
960 minute winter	SMH1-Hydrobrake	S1.001	Outfall 1	7.5	0.657	0.106	0.3456	451.8