

Appendix 13: Microdrainage modelling

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Summary of Critical Results by Maximum Level (Rank 1) for Section 73 North

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	18	Number of Storage Structures	32	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model FEH	C (1km)	-0.022	D2 (1km)	0.409	E (1km)	0.288	Cv (Summer)	0.750
Site Location	D1 (1km)	0.374	D3 (1km)	0.270	F (1km)	2.381	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DTS Status	ON	Inertia Status	ON
Analysis Timestep	Fine	DVD Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	30

PN	Event	Duration (mins)	Depth (m)	Surcharged Volume (m³)	Flooded Velocity (m/s)	Maximum Pipe Flow (l/s)	Status
PH3-N-1.000	30 minute 100 year Winter I+30%	30	-0.054	0.000	0.3	31.7	FLOOD RISK*
PH3-N-1.001	30 minute 100 year Winter I+30%	30	-0.171	0.000	0.2	22.6	FLOOD RISK*

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Summary of Critical Results by Maximum Level (Rank 1) for Section 73 North

							Duration	Surcharged	Flooded	Maximum	Pipe		
							Depth	Volume	Velocity	Flow			
PN	Event						(mins)	(m)	(m³)	(m/s)	(l/s)	Status	
PH3-N-1.002	30 minute	100 year	Winter	I+30%			30	-0.262	0.000	0.3	31.5	FLOOD	RISK*
PH3-N-1.003	60 minute	100 year	Winter	I+30%			60	-0.376	0.000	0.2	30.1		OK
PH3-N-1.004	60 minute	100 year	Winter	I+30%			60	-0.386	0.000	0.3	35.0		OK
PH3-N-1.005	60 minute	100 year	Winter	I+30%			60	-0.174	0.000	0.5	41.2	FLOOD	RISK*
PH3-N-1.006	60 minute	100 year	Winter	I+30%			60	-0.273	0.000	2.4	46.7	FLOOD	RISK*
PH3-N-1.007	60 minute	100 year	Winter	I+30%			60	-0.212	0.000	0.1	51.8	FLOOD	RISK*
PH3-N-1.008	60 minute	100 year	Winter	I+30%			60	0.398	0.000	0.5	33.3	FLOOD	RISK*
PH3-N-1.009	60 minute	100 year	Winter	I+30%			60	-0.283	0.000	0.2	111.4	FLOOD	RISK*
PH3-N-1.010	60 minute	100 year	Winter	I+30%			60	-0.291	0.000	0.2	105.0	FLOOD	RISK*
PH3-N-1.011	60 minute	100 year	Winter	I+30%			60	-0.299	0.000	0.3	107.3	FLOOD	RISK*
PH3-N-1.012	60 minute	100 year	Winter	I+30%			60	-0.307	0.000	0.3	128.7		OK
PH3-N-1.013	60 minute	100 year	Winter	I+30%			60	0.484	0.000	1.1	143.9	FLOOD	RISK*
PH3-N-1.014	60 minute	100 year	Winter	I+30%			60	-0.307	0.000	0.4	159.7		OK
PH3-N-1.015	60 minute	100 year	Winter	I+30%			60	-0.262	0.000	0.5	179.9	FLOOD	RISK*
PH3-N-1.016	60 minute	100 year	Winter	I+30%			60	-0.217	0.000	0.5	187.5	FLOOD	RISK*
PH3-N-1.017	60 minute	100 year	Winter	I+30%			60	-0.124	0.000	0.8	215.0	FLOOD	RISK*
PH3-N-2.000	15 minute	100 year	Winter	I+30%			15	-0.461	0.000	0.5	11.4		OK
PH3-N-2.001	15 minute	100 year	Winter	I+30%			15	-0.427	0.000	0.5	22.4		OK
PH3-N-2.002	15 minute	100 year	Winter	I+30%			15	-0.330	0.000	1.0	118.1		OK
PH3-N-2.003	30 minute	100 year	Winter	I+30%			30	-0.184	0.000	0.6	91.6	FLOOD	RISK*
PH3-N-2.004	30 minute	100 year	Winter	I+30%			30	-0.163	0.000	0.6	119.1	FLOOD	RISK*
PH3-N-2.005	30 minute	100 year	Winter	I+30%			30	-0.153	0.000	0.7	197.3	FLOOD	RISK*
PH3-N-2.006	30 minute	100 year	Winter	I+30%			30	-0.141	0.000	0.7	218.8	FLOOD	RISK*
PH3-N-2.007	30 minute	100 year	Winter	I+30%			30	-0.149	0.000	0.8	271.3	FLOOD	RISK*
PH3-N-2.008	30 minute	100 year	Winter	I+30%			30	-0.121	0.000	0.7	246.7	FLOOD	RISK*

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Summary of Critical Results by Maximum Level (Rank 1) for Section 73 North

							Surcharged	Flooded	Maximum	Pipe		
						Duration	Depth	Volume	Velocity	Flow		
PN		Event				(mins)	(m)	(m³)	(m/s)	(l/s)	Status	
PH3-N-2.009	30 minute	100	year	Winter	I+30%	30	-0.137	0.000	0.7	245.3	FLOOD	RISK*
PH3-N-2.010	30 minute	100	year	Winter	I+30%	30	-0.148	0.000	0.4	202.1	FLOOD	RISK*
PH3-N-2.011	30 minute	100	year	Winter	I+30%	30	-0.162	0.000	1.9	183.8	FLOOD	RISK*
PH3-N-3.000	15 minute	100	year	Winter	I+30%	15	-0.196	0.000	1.1	3.5		OK
PH3-N-3.001	15 minute	100	year	Winter	I+30%	15	-0.152	0.000	1.8	20.0		OK
PH3-N-4.000	15 minute	100	year	Winter	I+30%	15	-0.183	0.000	1.3	6.7		OK
PH3-N-5.000	15 minute	100	year	Winter	I+30%	15	-0.151	0.000	1.3	14.4		OK
PH3-N-5.001	15 minute	100	year	Winter	I+30%	15	0.344	0.000	1.7	53.1	SURCHARGED	
PH3-N-4.001	15 minute	100	year	Winter	I+30%	15	0.690	0.000	3.3	131.2	FLOOD	RISK
PH3-N-6.000	15 minute	100	year	Winter	I+30%	15	-0.193	0.000	1.1	3.7		OK
PH3-N-6.001	15 minute	100	year	Winter	I+30%	15	-0.151	0.000	1.8	20.3		OK
PH3-N-4.002	15 minute	100	year	Winter	I+30%	15	-0.057	0.000	3.2	183.2		OK
PH3-N-3.002	15 minute	100	year	Winter	I+30%	15	0.188	0.000	2.2	240.2	SURCHARGED	
PH3-N-2.012	30 minute	100	year	Winter	I+30%	30	-0.527	0.000	1.4	329.9		OK
PH3-N-7.000	15 minute	100	year	Winter	I+30%	15	-0.195	0.000	1.0	3.2		OK
PH3-N-7.001	15 minute	100	year	Winter	I+30%	15	-0.158	0.000	1.0	9.6		OK
PH3-N-7.002	30 minute	100	year	Winter	I+30%	30	-0.012	0.000	1.2	20.4		OK
PH3-N-7.003	30 minute	100	year	Winter	I+30%	30	0.308	0.000	0.8	32.8	SURCHARGED	
PH3-N-2.013	30 minute	100	year	Winter	I+30%	30	0.178	0.000	2.2	364.5	SURCHARGED*	
PH3-N-2.014	30 minute	100	year	Winter	I+30%	30	-0.528	0.000	1.1	352.8		OK
PH3-N-2.015	30 minute	100	year	Winter	I+30%	30	-0.291	0.000	0.8	336.2	FLOOD	RISK*
PH3-N-2.016	30 minute	100	year	Winter	I+30%	30	-0.065	0.000	2.8	284.8	FLOOD	RISK*
PH3-N-2.017	60 minute	100	year	Winter	I+30%	60	-0.298	0.000	0.6	278.0	FLOOD	RISK*
PH3-N-2.018	60 minute	100	year	Winter	I+30%	60	-0.075	0.000	2.7	272.2	FLOOD	RISK*
PH3-N-2.019	60 minute	100	year	Winter	I+30%	60	-0.194	0.000	0.8	293.9	FLOOD	RISK*

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Summary of Critical Results by Maximum Level (Rank 1) for Section 73 North

PN	Event	Duration (mins)	Surcharged Depth (m)	Flooded Volume (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
PH3-N-1.018	60 minute 100 year Winter I+30%	60	0.492	0.000	2.0	318.5	FLOOD RISK*
PH3-N-8.000	15 minute 100 year Winter I+30%	15	-0.270	0.000	0.1	15.4	FLOOD RISK*
PH3-N-8.001	15 minute 100 year Winter I+30%	15	-0.050	0.000	0.3	33.7	FLOOD RISK*
PH3-N-8.002	15 minute 100 year Winter I+30%	15	-0.012	0.000	0.4	76.2	FLOOD RISK*
PH3-N-8.003	15 minute 100 year Winter I+30%	15	-0.015	0.000	0.3	73.6	FLOOD RISK*
PH3-N-8.004	15 minute 100 year Winter I+30%	15	-0.094	0.000	0.2	68.1	FLOOD RISK*
PH3-N-8.005	15 minute 100 year Winter I+30%	15	-0.146	0.000	0.1	74.1	FLOOD RISK*
PH3-N-8.006	30 minute 100 year Winter I+30%	30	-0.047	0.000	0.2	65.9	FLOOD RISK*
PH3-N-8.007	30 minute 100 year Winter I+30%	30	-0.214	0.000	0.1	73.1	FLOOD RISK*
PH3-N-8.008	30 minute 100 year Winter I+30%	30	-0.175	0.000	0.1	79.6	FLOOD RISK*
PH3-N-8.009	30 minute 100 year Winter I+30%	30	-0.261	0.000	0.1	81.0	FLOOD RISK*
PH3-N-8.010	60 minute 100 year Winter I+30%	60	-0.274	0.000	0.1	84.1	FLOOD RISK*
PH3-N-8.011	60 minute 100 year Winter I+30%	60	-0.267	0.000	0.1	84.5	OK
PH3-N-8.012	60 minute 100 year Winter I+30%	60	-0.139	0.000	0.1	79.7	FLOOD RISK*
PH3-N-8.013	60 minute 100 year Winter I+30%	60	0.006	0.000	0.2	78.0	FLOOD RISK*
PH3-N-8.014	60 minute 100 year Winter I+30%	60	-0.141	0.000	0.2	79.7	FLOOD RISK*
PH3-N-8.015	60 minute 100 year Winter I+30%	60	-0.220	0.000	0.3	83.0	FLOOD RISK*
PH3-N-8.016	120 minute 100 year Winter I+30%	120	-0.216	0.000	0.3	88.2	FLOOD RISK*
PH3-N-8.017	120 minute 100 year Winter I+30%	120	-0.213	0.000	0.4	92.1	FLOOD RISK*
PH3-N-8.018	120 minute 100 year Winter I+30%	120	-0.298	0.000	2.2	96.1	OK*
PH3-N-1.019	60 minute 100 year Winter I+30%	60	0.501	0.000	2.5	391.0	FLOOD RISK
PH3-N-9.000	360 minute 100 year Winter I+30%	360	-0.500	0.000	0.0	0.0	OK
PH3-N-9.001	120 minute 100 year Winter I+30%	120	-0.334	0.000	0.4	9.3	OK
PH3-N-9.002	120 minute 100 year Winter I+30%	120	-0.334	0.000	0.3	13.5	OK
PH3-N-9.003	120 minute 100 year Winter I+30%	120	-0.084	0.000	0.1	15.9	FLOOD RISK*

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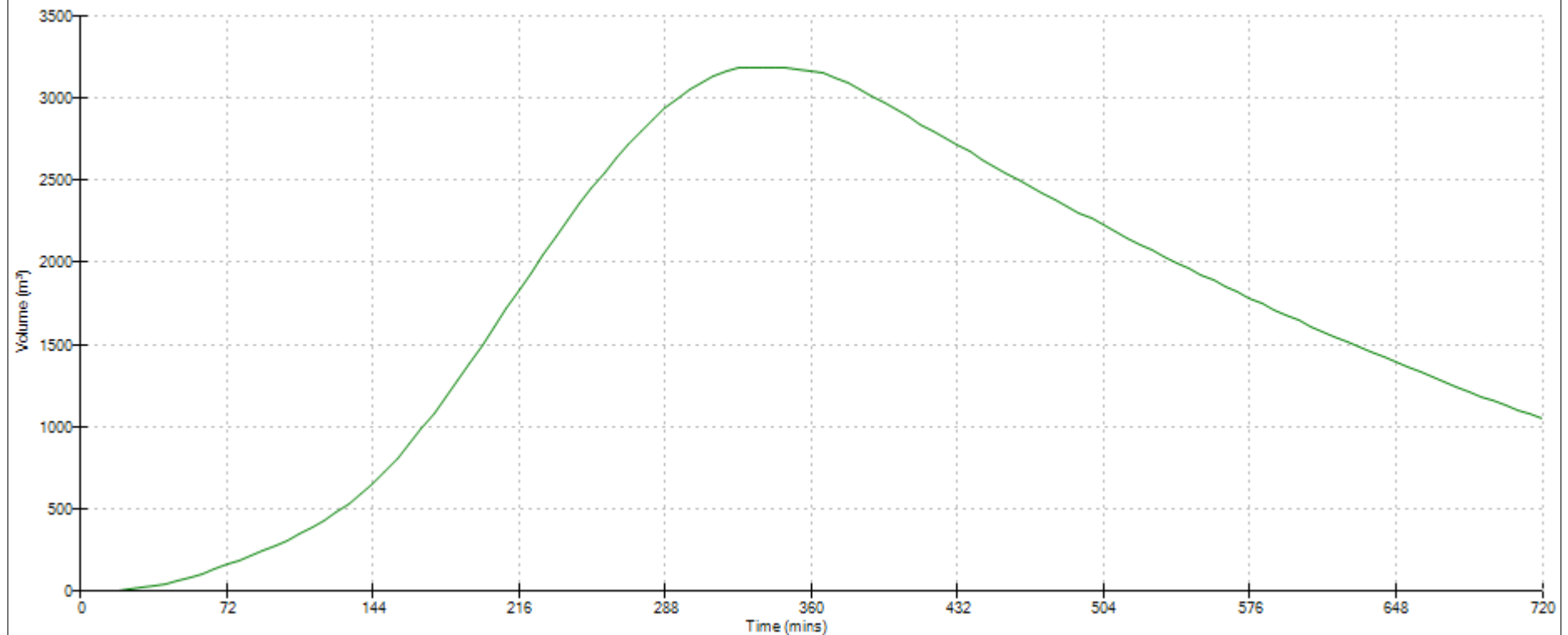
Summary of Critical Results by Maximum Level (Rank 1) for Section 73 North

PN	Event	Duration (mins)	Surcharged Depth (m)	Flooded Volume (m ³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
PH3-N-9.004	120 minute 100 year Winter I+30%	120	-0.087	0.000	0.1	36.5	FLOOD RISK*
PH3-N-9.005	120 minute 100 year Winter I+30%	120	-0.092	0.000	0.1	41.0	FLOOD RISK*
PH3-N-9.006	120 minute 100 year Winter I+30%	120	-0.102	0.000	0.1	49.2	FLOOD RISK*
PH3-N-9.007	120 minute 100 year Winter I+30%	120	-0.469	0.000	0.1	54.0	OK
PH3-N-9.008	120 minute 100 year Winter I+30%	120	-0.328	0.000	0.8	62.8	OK
PH3-N-1.020	120 minute 100 year Winter I+30%	120	0.172	0.000	1.3	416.4	SURCHARGED
PH3-N-1.021	120 minute 100 year Winter I+30%	120	0.092	0.000	2.4	416.3	SURCHARGED
PH3-N-1.022	120 minute 100 year Winter I+30%	120	0.325	0.000	1.9	416.3	SURCHARGED
PH3-N-1.023	120 minute 100 year Winter I+30%	120	-0.179	0.000	2.8	416.3	OK
PH3-N-1.024	120 minute 100 year Winter I+30%	120	-0.304	0.000	4.8	416.4	OK
PH3-N-1.025	120 minute 100 year Winter I+30%	120	-0.176	0.000	2.7	416.4	OK
PH3-N-1.026	120 minute 100 year Winter I+30%	120	-0.220	0.000	3.2	416.3	OK
PH3-N-1.027	120 minute 100 year Winter I+30%	120	-0.242	0.000	3.5	416.3	OK
PH3-N-1.028	120 minute 100 year Winter I+30%	120	-0.191	0.000	4.4	416.3	OK
PH3-N-1.029	360 minute 100 year Winter I+30%	360	0.885	0.000	3.4	130.4	FLOOD RISK
PH3-N-1.030	1440 minute 100 year Winter I+30%	1440	0.809	0.000	2.7	72.3	FLOOD RISK
PH3-N-1.031	2880 minute 100 year Winter I+30%	2880	0.948	0.000	3.6	57.6	FLOOD RISK
PH3-N-1.032	2880 minute 100 year Winter I+30%	2880	-0.237	0.000	0.2	57.9	FLOOD RISK*

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<u>Online Controls for Section 73 North</u> <u>Orifice Manhole: PH3-N-1013, DS/PN: PH3-N-1.029, Volume (m³): 12.9</u> Diameter (m) 0.238 Discharge Coefficient 0.600 Invert Level (m) 184.000 <u>Orifice Manhole: PH3-N-1014, DS/PN: PH3-N-1.030, Volume (m³): 11.6</u> Diameter (m) 0.179 Discharge Coefficient 0.600 Invert Level (m) 181.300 <u>Orifice Manhole: PH3-N-1015, DS/PN: PH3-N-1.031, Volume (m³): 10.3</u> Diameter (m) 0.155 Discharge Coefficient 0.600 Invert Level (m) 178.850		
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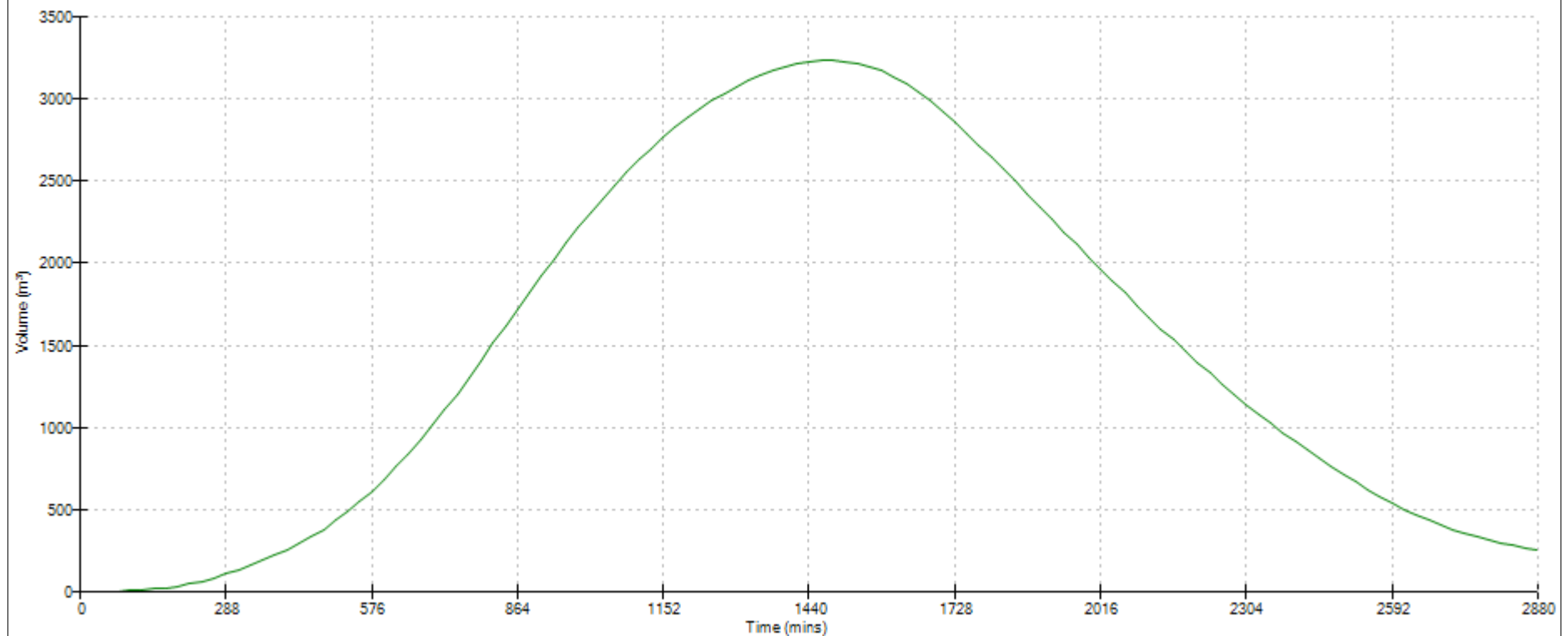
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Graphs for Pipe PH3-N-1.029 US/MH PH3-N-1013 (Section 73 North)
360 minute 100 year Winter I+30%
Status: FLOOD RISK



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Graphs for Pipe PH3-N-1.030 US/MH PH3-N-1014 (Section 73 North)
1440 minute 100 year Winter I+30%
Status: FLOOD RISK



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Graphs for Pipe PH3-N-1.031 US/MH PH3-N-1015 (Section 73 North)
2880 minute 100 year Winter I+30%
Status: FLOOD RISK

