

Lynas Engineers		Page 1
Wilton Centre	Top Park, Bury	
Redcar	Surface Water	
TS10 4RF	Drainage Design Rev-P02	
Date 16/10/2023	Designed by MR	
File 23061-LE-ZZ-05-CA-D-0001-SURFAC...	Checked by WF	
XP Solutions	Network 2018.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales			
Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	40
Ratio R	0.250	Minimum Backdrop Height (m)	20.000
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	20.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500
Designed with Level Soffits			

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
SW1.000	2.600	0.006	433.3	0.000	5.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.001	10.000	0.020	500.0	0.071	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.002	10.000	0.020	500.0	0.063	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.003	10.000	0.020	500.0	0.062	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.004	10.000	0.020	500.0	0.061	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.005	10.000	0.020	500.0	0.063	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.006	10.000	0.020	500.0	0.063	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.007	10.000	0.020	500.0	0.063	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.008	10.000	0.020	500.0	0.069	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.009	10.000	0.020	500.0	0.061	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.010	5.200	0.010	520.0	0.063	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.011	91.125	0.228	400.0	0.000	0.00	0.0	0.600	o	160	Pipe/Conduit	
SW1.012	50.202	0.126	400.0	0.040	0.00	0.0	0.600	o	160	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
SW1.000	50.00	5.09	162.646	0.000	0.0	0.0	0.0	0.50	10.0	0.0
SW1.001	50.00	5.45	162.640	0.071	0.0	0.0	3.9	0.46	9.3«	13.5
SW1.002	50.00	5.81	162.620	0.134	0.0	0.0	7.3	0.46	9.3«	25.5
SW1.003	50.00	6.17	162.600	0.197	0.0	0.0	10.6	0.46	9.3«	37.3
SW1.004	50.00	6.53	162.580	0.258	0.0	0.0	14.0	0.46	9.3«	48.9
SW1.005	50.00	6.89	162.560	0.321	0.0	0.0	17.4	0.46	9.3«	60.9
SW1.006	50.00	7.25	162.540	0.385	0.0	0.0	20.8	0.46	9.3«	72.9
SW1.007	50.00	7.61	162.520	0.448	0.0	0.0	24.3	0.46	9.3«	84.9
SW1.008	50.00	7.97	162.500	0.517	0.0	0.0	28.0	0.46	9.3«	98.0
SW1.009	50.00	8.33	162.480	0.578	0.0	0.0	31.3	0.46	9.3«	109.7
SW1.010	50.00	8.52	162.470	0.641	0.0	0.0	34.7	0.45	9.1«	121.6
SW1.011	50.00	11.46	162.460	0.641	0.0	0.0	34.7	0.52	10.4«	121.6
SW1.012	50.00	13.07	162.232	0.681	0.0	0.0	36.9	0.52	10.4«	129.2

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SWS1.01	163.187	0.541	Open Manhole	1200	SW1.000	162.646	160				
SWS1.02	163.165	0.525	Junction		SW1.001	162.640	160	SW1.000	162.640	160	
SWS1.03	163.165	0.545	Junction		SW1.002	162.620	160	SW1.001	162.620	160	
SWS1.04	163.165	0.565	Junction		SW1.003	162.600	160	SW1.002	162.600	160	
SWS1.05	163.165	0.585	Junction		SW1.004	162.580	160	SW1.003	162.580	160	
SWS1.06	163.165	0.605	Junction		SW1.005	162.560	160	SW1.004	162.560	160	
SWS1.07	163.165	0.625	Junction		SW1.006	162.540	160	SW1.005	162.540	160	
SWS1.08	163.165	0.645	Junction		SW1.007	162.520	160	SW1.006	162.520	160	
SWS1.09	163.165	0.665	Junction		SW1.008	162.500	160	SW1.007	162.500	160	
SWS1.10	163.165	0.685	Junction		SW1.009	162.480	160	SW1.008	162.480	160	
SWS1.11	163.165	0.705	Junction		SW1.010	162.470	160	SW1.009	162.460	160	
SWS1.12	163.215	0.755	Open Manhole	1200	SW1.011	162.460	160	SW1.010	162.460	160	
SWS1.13	164.865	2.633	Open Manhole	1200	SW1.012	162.232	160	SW1.011	162.232	160	
SW	166.100	3.994	Open Manhole	0		OUTFALL		SW1.012	162.106	160	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
SW1.000	o	160	SWS1.01	163.187	162.646	0.381	Open Manhole	1200
SW1.001	o	160	SWS1.02	163.165	162.640	0.365	Junction	
SW1.002	o	160	SWS1.03	163.165	162.620	0.385	Junction	
SW1.003	o	160	SWS1.04	163.165	162.600	0.405	Junction	
SW1.004	o	160	SWS1.05	163.165	162.580	0.425	Junction	
SW1.005	o	160	SWS1.06	163.165	162.560	0.445	Junction	
SW1.006	o	160	SWS1.07	163.165	162.540	0.465	Junction	
SW1.007	o	160	SWS1.08	163.165	162.520	0.485	Junction	
SW1.008	o	160	SWS1.09	163.165	162.500	0.505	Junction	
SW1.009	o	160	SWS1.10	163.165	162.480	0.525	Junction	
SW1.010	o	160	SWS1.11	163.165	162.470	0.535	Junction	
SW1.011	o	160	SWS1.12	163.215	162.460	0.595	Open Manhole	1200
SW1.012	o	160	SWS1.13	164.865	162.232	2.473	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
SW1.000	2.600	433.3	SWS1.02	163.165	162.640	0.365	Junction	
SW1.001	10.000	500.0	SWS1.03	163.165	162.620	0.385	Junction	
SW1.002	10.000	500.0	SWS1.04	163.165	162.600	0.405	Junction	
SW1.003	10.000	500.0	SWS1.05	163.165	162.580	0.425	Junction	
SW1.004	10.000	500.0	SWS1.06	163.165	162.560	0.445	Junction	
SW1.005	10.000	500.0	SWS1.07	163.165	162.540	0.465	Junction	
SW1.006	10.000	500.0	SWS1.08	163.165	162.520	0.485	Junction	
SW1.007	10.000	500.0	SWS1.09	163.165	162.500	0.505	Junction	
SW1.008	10.000	500.0	SWS1.10	163.165	162.480	0.525	Junction	
SW1.009	10.000	500.0	SWS1.11	163.165	162.460	0.545	Junction	
SW1.010	5.200	520.0	SWS1.12	163.215	162.460	0.595	Open Manhole	1200
SW1.011	91.125	400.0	SWS1.13	164.865	162.232	2.473	Open Manhole	1200
SW1.012	50.202	400.0	SW	166.100	162.106	3.834	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
1.001	User	-	100	0.071	0.071	0.071
1.002	User	-	100	0.063	0.063	0.063
1.003	User	-	100	0.062	0.062	0.062
1.004	User	-	100	0.061	0.061	0.061
1.005	User	-	100	0.063	0.063	0.063
1.006	User	-	100	0.063	0.063	0.063
1.007	User	-	100	0.063	0.063	0.063
1.008	User	-	100	0.069	0.069	0.069
1.009	User	-	100	0.061	0.061	0.061
1.010	User	-	100	0.063	0.063	0.063
1.011	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.040	0.040	0.040
				Total	Total	Total
				0.681	0.681	0.681

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
SW1.012	SW	166.100	162.106	162.000	0	0

Online Controls for Storm

Hydro-Brake® Optimum Manhole: SWS1.13, DS/PN: SW1.012, Volume (m³): 4.8

Unit Reference	MD-SHE-0123-8900-2000-8900
Design Head (m)	2.000
Design Flow (l/s)	8.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	123
Invert Level (m)	162.232
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	8.9	Kick-Flo®	1.101	6.7
Flush-Flo™	0.536	8.5	Mean Flow over Head Range	-	7.6

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)	Depth (m)	Flow (l/s)
0.100	4.4	0.800	8.2	2.000	8.9	4.000	12.4	7.000	16.1
0.200	7.3	1.000	7.5	2.200	9.3	4.500	13.1	7.500	16.7
0.300	8.0	1.200	7.0	2.400	9.7	5.000	13.7	8.000	17.2
0.400	8.4	1.400	7.5	2.600	10.1	5.500	14.4	8.500	17.7
0.500	8.5	1.600	8.0	3.000	10.8	6.000	15.0	9.000	18.2
0.600	8.5	1.800	8.5	3.500	11.6	6.500	15.6	9.500	18.7

Volume Summary (Static)

Length Calculations based on Centre-Centre

Storage			
Pipe Number	USMH Name	Structure Volume (m³)	Total Volume (m³)
SW1.000	SWS1.01	0.000	0.000
SW1.001	SWS1.02	53.250	53.250
SW1.002	SWS1.03	47.250	47.250
SW1.003	SWS1.04	46.500	46.500
SW1.004	SWS1.05	45.750	45.750
SW1.005	SWS1.06	47.250	47.250
SW1.006	SWS1.07	47.250	47.250
SW1.007	SWS1.08	47.250	47.250
SW1.008	SWS1.09	51.750	51.750
SW1.009	SWS1.10	45.750	45.750
SW1.010	SWS1.11	47.250	47.250
SW1.011	SWS1.12	0.000	0.000
SW1.012	SWS1.13	0.000	0.000
Total		479.250	479.250

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria			
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Storage Structures	10
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0
Synthetic Rainfall Details			
Rainfall Model	FSR M5-60 (mm)	19.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R	0.250
		Cv (Winter)	0.850
Margin for Flood Risk Warning (mm)			300.0
Analysis Timestep	2.5	Second Increment (Extended)	
DTS Status			ON
DVD Status			OFF
Inertia Status			OFF
Profile(s)		Summer and Winter	
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440		
Return Period(s) (years)		1, 30, 100	
Climate Change (%)		0, 35, 40	

										Water	Surcharged	Flooded
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	
SW1.000	SWS1.01	240 Winter	1	+0%	1/15 Summer				162.835	0.029	0.000	
SW1.001	SWS1.02	240 Winter	1	+0%	1/15 Summer				162.835	0.035	0.000	
SW1.002	SWS1.03	240 Winter	1	+0%	1/15 Summer				162.834	0.054	0.000	
SW1.003	SWS1.04	240 Winter	1	+0%	1/15 Summer				162.832	0.072	0.000	
SW1.004	SWS1.05	240 Winter	1	+0%	1/15 Summer				162.830	0.090	0.000	
SW1.005	SWS1.06	120 Winter	1	+0%	1/15 Summer				162.826	0.106	0.000	
SW1.006	SWS1.07	120 Winter	1	+0%	1/15 Summer				162.823	0.123	0.000	
SW1.007	SWS1.08	120 Winter	1	+0%	1/15 Summer				162.819	0.139	0.000	
SW1.008	SWS1.09	60 Winter	1	+0%	1/15 Summer				162.815	0.155	0.000	
SW1.009	SWS1.10	60 Winter	1	+0%	1/15 Summer				162.809	0.169	0.000	
SW1.010	SWS1.11	30 Winter	1	+0%	1/15 Summer				162.804	0.174	0.000	
SW1.011	SWS1.12	30 Winter	1	+0%	1/15 Summer				162.808	0.188	0.000	
SW1.012	SWS1.13	30 Winter	1	+0%	1/15 Summer				162.833	0.441	0.000	

Pipe						
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
SW1.000	SWS1.01	0.03		0.4	SURCHARGED	
SW1.001	SWS1.02	0.86		6.3	SURCHARGED*	
SW1.002	SWS1.03	0.95		6.9	SURCHARGED*	
SW1.003	SWS1.04	1.01		7.3	SURCHARGED*	
SW1.004	SWS1.05	1.04		7.6	SURCHARGED*	
SW1.005	SWS1.06	1.06		7.7	SURCHARGED*	
SW1.006	SWS1.07	1.08		7.9	SURCHARGED*	
SW1.007	SWS1.08	1.09		7.9	SURCHARGED*	
SW1.008	SWS1.09	1.20		8.8	SURCHARGED*	
SW1.009	SWS1.10	1.34		9.7	SURCHARGED*	
SW1.010	SWS1.11	0.98		12.5	SURCHARGED*	
SW1.011	SWS1.12	1.05		10.7	SURCHARGED	
SW1.012	SWS1.13	0.83		8.5	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria			
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Storage Structures	10
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0
Synthetic Rainfall Details			
Rainfall Model	FSR M5-60 (mm)	19.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R	0.250
		Cv (Winter)	0.850
Margin for Flood Risk Warning (mm)			300.0
Analysis Timestep	2.5	Second Increment (Extended)	
DTS Status			ON
DVD Status			OFF
Inertia Status			OFF
Profile(s)		Summer and Winter	
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440		
Return Period(s) (years)		1, 30, 100	
Climate Change (%)		0, 35, 40	

										Water	Surcharged	Flooded
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	
SW1.000	SWS1.01	360 Winter	30	+35%	1/15 Summer				162.963	0.157	0.000	
SW1.001	SWS1.02	360 Winter	30	+35%	1/15 Summer				162.963	0.163	0.000	
SW1.002	SWS1.03	360 Winter	30	+35%	1/15 Summer				162.961	0.181	0.000	
SW1.003	SWS1.04	360 Winter	30	+35%	1/15 Summer				162.958	0.198	0.000	
SW1.004	SWS1.05	360 Winter	30	+35%	1/15 Summer				162.952	0.212	0.000	
SW1.005	SWS1.06	360 Winter	30	+35%	1/15 Summer				162.946	0.226	0.000	
SW1.006	SWS1.07	360 Winter	30	+35%	1/15 Summer				162.937	0.237	0.000	
SW1.007	SWS1.08	360 Winter	30	+35%	1/15 Summer				162.927	0.247	0.000	
SW1.008	SWS1.09	360 Winter	30	+35%	1/15 Summer				162.915	0.255	0.000	
SW1.009	SWS1.10	240 Winter	30	+35%	1/15 Summer				162.901	0.261	0.000	
SW1.010	SWS1.11	240 Winter	30	+35%	1/15 Summer				162.885	0.255	0.000	
SW1.011	SWS1.12	360 Winter	30	+35%	1/15 Summer				162.945	0.325	0.000	
SW1.012	SWS1.13	15 Winter	30	+35%	1/15 Summer				163.649	1.257	0.000	

				Pipe			Level
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	Exceeded	
SW1.000	SWS1.01	0.00		0.0	FLOOD RISK		
SW1.001	SWS1.02	0.14		1.0	FLOOD RISK*		
SW1.002	SWS1.03	0.26		1.9	FLOOD RISK*		
SW1.003	SWS1.04	0.39		2.8	FLOOD RISK*		
SW1.004	SWS1.05	0.52		3.8	FLOOD RISK*		
SW1.005	SWS1.06	0.66		4.8	FLOOD RISK*		
SW1.006	SWS1.07	0.80		5.9	FLOOD RISK*		
SW1.007	SWS1.08	0.96		7.0	FLOOD RISK*		
SW1.008	SWS1.09	1.23		9.0	FLOOD RISK*		
SW1.009	SWS1.10	1.16		8.5	FLOOD RISK*		
SW1.010	SWS1.11	0.75		9.5	FLOOD RISK*		
SW1.011	SWS1.12	0.85		8.7	FLOOD RISK		
SW1.012	SWS1.13	0.84		8.5	SURCHARGED		

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Additional Flow - % of Total Flow 0.000

Hot Start (mins) 0

MADD Factor * 10m³/ha Storage 2.000

Hot Start Level (mm) 0

Inlet Coeffiecient 0.800

Manhole Headloss Coeff (Global) 0.500

Flow per Person per Day (l/per/day) 0.000

Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 1

Number of Storage Structures 10

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000

Cv (Summer) 0.750

Region England and Wales

Ratio R 0.250

Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status ON

DVD Status OFF

Inertia Status OFF

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

Return Period(s) (years) 1, 30, 100

Climate Change (%) 0, 35, 40

						Water		Surcharged	Flooded		
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)
SW1.000	SWS1.01	480 Winter	100	+40%	1/15 Summer				163.037	0.231	0.000
SW1.001	SWS1.02	480 Winter	100	+40%	1/15 Summer				163.037	0.237	0.000
SW1.002	SWS1.03	480 Winter	100	+40%	1/15 Summer				163.035	0.255	0.000
SW1.003	SWS1.04	480 Winter	100	+40%	1/15 Summer				163.031	0.271	0.000
SW1.004	SWS1.05	480 Winter	100	+40%	1/15 Summer				163.025	0.285	0.000
SW1.005	SWS1.06	480 Winter	100	+40%	1/15 Summer				163.017	0.297	0.000
SW1.006	SWS1.07	360 Winter	100	+40%	1/15 Summer				163.008	0.308	0.000
SW1.007	SWS1.08	360 Winter	100	+40%	1/15 Summer				162.997	0.317	0.000
SW1.008	SWS1.09	360 Winter	100	+40%	1/15 Summer				162.984	0.324	0.000
SW1.009	SWS1.10	360 Winter	100	+40%	1/15 Summer				162.968	0.328	0.000
SW1.010	SWS1.11	360 Winter	100	+40%	1/15 Summer				162.951	0.321	0.000
SW1.011	SWS1.12	960 Winter	100	+40%	1/15 Summer				162.984	0.364	0.000
SW1.012	SWS1.13	15 Winter	100	+40%	1/15 Summer				164.059	1.667	0.000

		Pipe				Level	
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Exceeded	
SW1.000	SWS1.01	0.00		0.0	FLOOD RISK		
SW1.001	SWS1.02	0.13		0.9	FLOOD RISK*		
SW1.002	SWS1.03	0.24		1.8	FLOOD RISK*		
SW1.003	SWS1.04	0.36		2.6	FLOOD RISK*		
SW1.004	SWS1.05	0.47		3.4	FLOOD RISK*		
SW1.005	SWS1.06	0.58		4.2	FLOOD RISK*		
SW1.006	SWS1.07	0.74		5.4	FLOOD RISK*		
SW1.007	SWS1.08	0.87		6.4	FLOOD RISK*		
SW1.008	SWS1.09	1.01		7.4	FLOOD RISK*		
SW1.009	SWS1.10	1.14		8.3	FLOOD RISK*		
SW1.010	SWS1.11	0.78		9.9	FLOOD RISK*		
SW1.011	SWS1.12	0.86		8.8	FLOOD RISK		
SW1.012	SWS1.13	0.84		8.5	SURCHARGED		