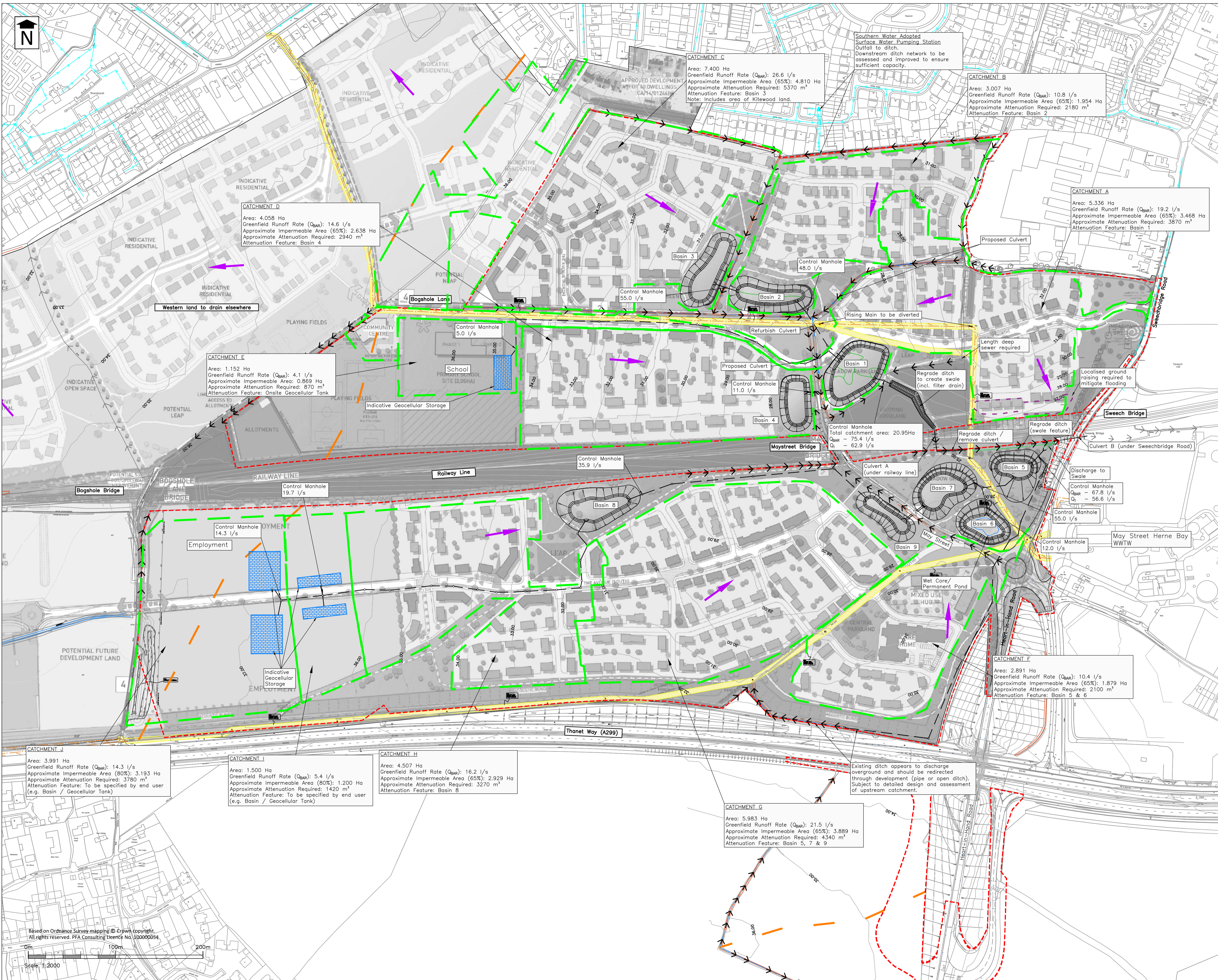




APPENDIX B

Site Wide Drainage Strategy



Stratton Park House, Wanborough Road
Swindon, SN3 4HG

Telephone
01793 828000

Facsimile
01793 835500

Email
admin@pfapl.com

Website
www.pfapl.com

For Planning
These drawings are produced for the purposes of supporting a planning application and should not be relied upon for tender, pricing, or construction purposes.

KEY

- - - Application Boundary (Indicative Only)
- - - Sub Catchment Boundary
- - - Indicative Overland Flow Route
- - - Ridgeline
- - - Rising Main (Southern Water)
- - - Surface Water Sewer (Southern Water)
- - - 3m Easement
- - - Attenuation Feature
- - - Direction of flow in ditch / watercourse (based on survey)
- - - Direction of flow in ditch / watercourse (estimate)
- - - Network Rail Culvert
- - - Indicative Proposed Surface Water Sewer
- - - Proposed Culvert

NOTES

- a. Drawing based upon topographical survey provided by Kitewood (2008 Hillborough and Altra Survey), updated by MULTI-LMN, May 2015 and MK Surveys (Job # 21962 Feb 2016).
- b. Drawing based upon Pegasus Planning Phase 1 Site Layout (Drawing Number LON.0709_01A) and Masterplan (Drawing Number: LON.0242_55U).
- c. Greenfield Runoff:
(Q1: 3.0 l/s/ha & Q_{GR}: 3.6 l/s/ha).
- d. All detention basins are online.
- e. Surface water drainage system is indicative only and subject to detailed design and approval.
- f. Position of services and relative easements are approximate.

Rev	Date	Description	Initials	Check
R	18/06/18	Masterplan updated to LON.0242_55T	FN	CI

Status

FOR PLANNING

Client

Taylor Wimpey

Project

Land at Hillborough, Herne Bay, Kent

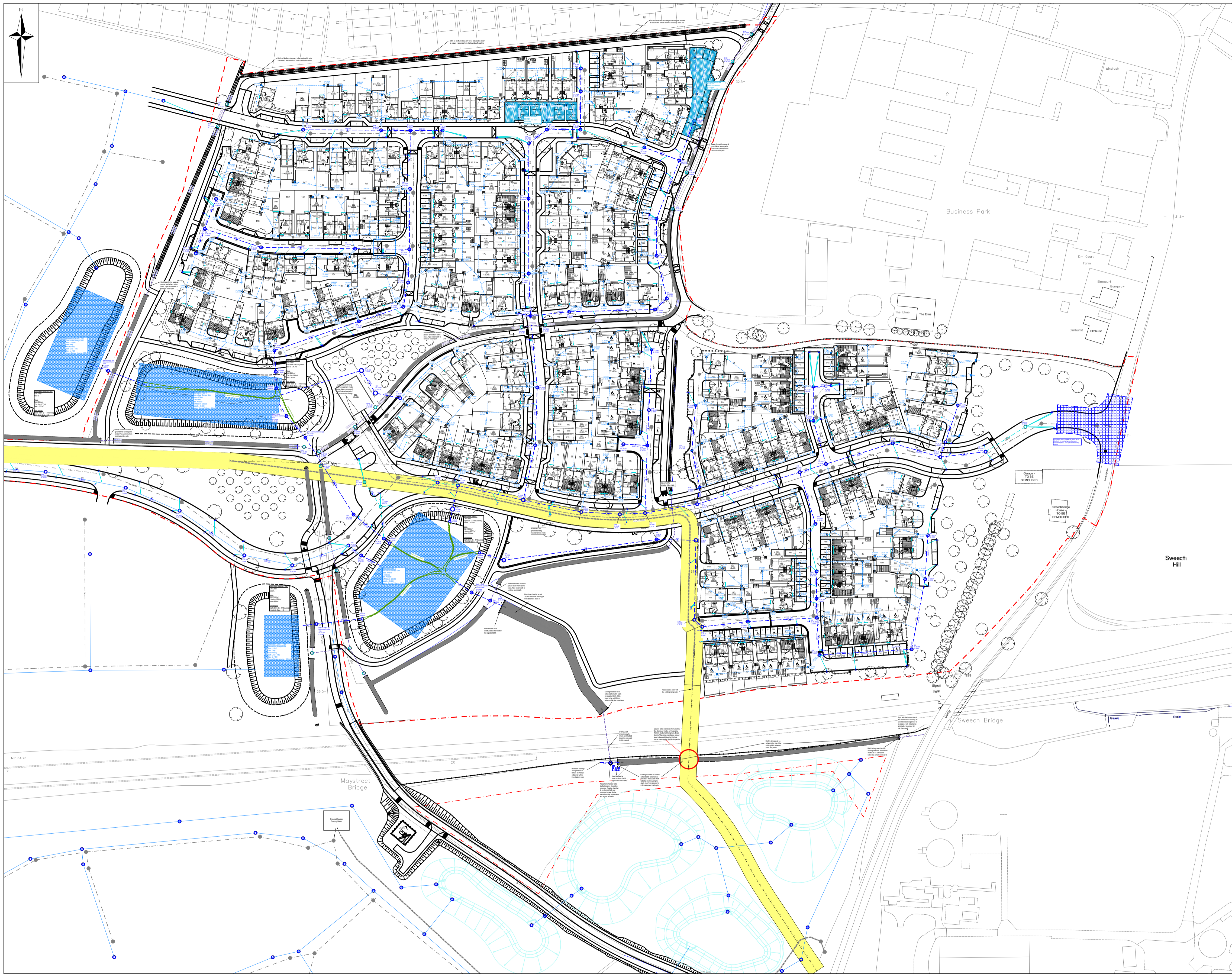
Drawing Title

Proposed Surface Water Drainage Arrangements INITIAL OPTIONS

Drawing No. **T306/05** Rev R

Date	October 2016
Scale	1:2000 @ A1
Drawn By	BF
Checked By	CI
E-Mail	cisherwood@pfapl.com
File Ref.	\T306\AutoCAD\Drawings\T306-05.dwg

Based on Ordnance Survey mapping © Crown copyright.
All rights reserved. PFA Consulting Licence No. 100000054.
Scale: 1:2000



Drainage Legend

	Existing Surface Water Sewer		Existing Foul Water Sewer
	Proposed Adoptable Surface Water Sewer		Proposed Adoptable Foul Water Sewer
	Adoptable Surface Water Manhole		Adoptable Foul Water Manhole
	Adoptable Surface Water Type 3 Inspection Chamber		Adoptable Foul Water Type 3 Inspection Chamber
	Proposed Adoptable Highway Drain		Proposed Private Foul Water Sewer
	Adoptable Highway Drain Manhole		Private Foul Water Manhole
	Surface Water Gully & Connection		Private Foul Water Type 3 Inspection Chamber
	Proposed Private Surface Water Sewer		Private Foul Water Type 2 Inspection Chamber
	Private Surface Water Manhole		Private Foul Water 2500mm Inspection Chamber
	Private Surface Water Type 3 Inspection Chamber		Proposed Foul Rising Water Main
	Rodding Eye		Proposed Foul Rising Water Main Diversion Route
	Strategic Surface Water Sewer (Proposed Future Phases)		8.0m Easement to rising mains
	Plot Threshold Slot Drain		Proposed ditch to replace existing. In some locations new ditch will be cut along the line of the existing where this is practicable.
	Yard Gully		Proposed enhanced swale to replace existing ditch in constrained locations where there is insufficient room to form or maintain a ditch.
	Linear Drainage Channel		Planning Boundary
	Permeable Block Paving		
	Below Ground Storage Tank		
	Proposed Headwall & Ductile Iron Non-return Flap Valve		

- Notes:**
- This drawing presents the site drainage layout for the proposed development at Hillborough, Herne Bay, Kent.
 - This drawing is to be read in conjunction with all relevant Engineer's and Architect's drawings and specifications.
 - This drawing is to be printed in COLOUR.
 - For Drainage Construction Details refer to RSK drawing 4005-4008 & for Typical SuDS Details refer to RSK drawing 4009.
 - Figures quoted next to manholes / rodding eyes are cover & invert level, in Metres AOD.
 - Footpaths are to be laid with a crossfall to allow drainage to soft landscaped areas.
 - This drawing is schematic for clarity, and where possible drains should be laid within 2m of houses, and connections kept as short as possible.
 - Where possible all drainage runs shall be kept a minimum of 4.0m from any existing tree that is to be retained.
 - This drawing has been prepared for House Drainage purposes only, and must not be used for House Setting Out.
 - All drainage design is subject to technical approval, no connections shall be made to any public sewers without written consent from the drainage authority.
 - The location of rain water pipes (RWP) are subject to confirmation by the Architect / Services Engineer.
 - The location of soil vent pipes (SVP) / stub stacks (SS) is subject to confirmation by the Architect / Services Engineer.
 - Where pipes pass under buildings, unless beam & block floors are used, they are to be surrounded in concrete.
 - All rest bends associated with stub stacks, soil vent pipes, wc connections and stub wastes are to be set with their inverts at 450mm below Finished Floor Level (FFL).
 - All drains and connections to be 100mm diameter, unless shown otherwise.
 - All branch drains, or connections, are to discharge to the collectors obliquely, and in the direction of the main flow.
 - All high void ratio attenuation units to be installed strictly in accordance with manufacturer's requirements.
 - All services should be laid below the permeable paving construction and coordinated around the proposed drainage on site. Where the service trench crosses the permeable paving the ducting will need to be sealed to ensure no egress of surface water runoff into the service ducting.
 - All adoptable drainage to be constructed in conjunction with Design Construction Guidance (Water UK).
 - For guidance on types and distances of proposed trees away from adoptable sewers refer to Design and Construction Guidance Section B5.1.10 & 11 and B7.6.
 - Diversion of the existing foul water rising main is subject to S185 Sewer Diversion approval with Southern Water. No works in the vicinity of the rising main shall take place until technical approval is granted and coordinated with Southern Water. The design of these works will be conducted by Southern Water and will be constructed by Southern Water's approved contractor.
 - Enhanced swale and culvert levels are subject to further site investigation works to ascertain existing levels to confirm the design.

**ISSUED FOR PLANNING
CONDITION 3**

CIVIL / STRUCTURAL DESIGN RISK MANAGEMENT

Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:-

- There will be deep excavations for structures and drainage systems. This is a high risk, high severity hazard. The contractor should provide protection and support in accordance with health and safety legislation.
- Live Services - risks to contractor's personnel - Seek written confirmation from statutory Authority and/or Building/site owner that all live services - especially electricity services - have been disconnected or diverted prior to construction. If any services are to remain live during the construction work, ensure that the locations of these are identified and clearly marked. All operatives are to be made aware of their presence. Employ hand digging near/adjacent to any known live services.

RSK LDE LTD has followed its Design Risk Management process for Hazard Elimination and Risk reduction in developing the designs shown on this drawing. Abnormal or unusual residual risks may be shown above where it is considered that such risk may not normally be expected by competent persons engaged on work of this nature or type.

Rev.	Date	Amendment	Drawn	Chkd.	Appd.
P01	09.12.2021	Issued For discharge of Planning Condition 3.	CPM	GT	SM

RSK
LAND & DEVELOPMENT ENGINEERING LTD

18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT
United Kingdom

Tel: +44 (0) 1442 437500
Fax: +44 (0) 1442 437550
Email: info@rsk.co.uk
Web: www.rsk.co.uk

Client: **Taylor Wimpey**

Project Title: **PHASE 1
HILLBOROUGH
HERNE BAY, KENT**

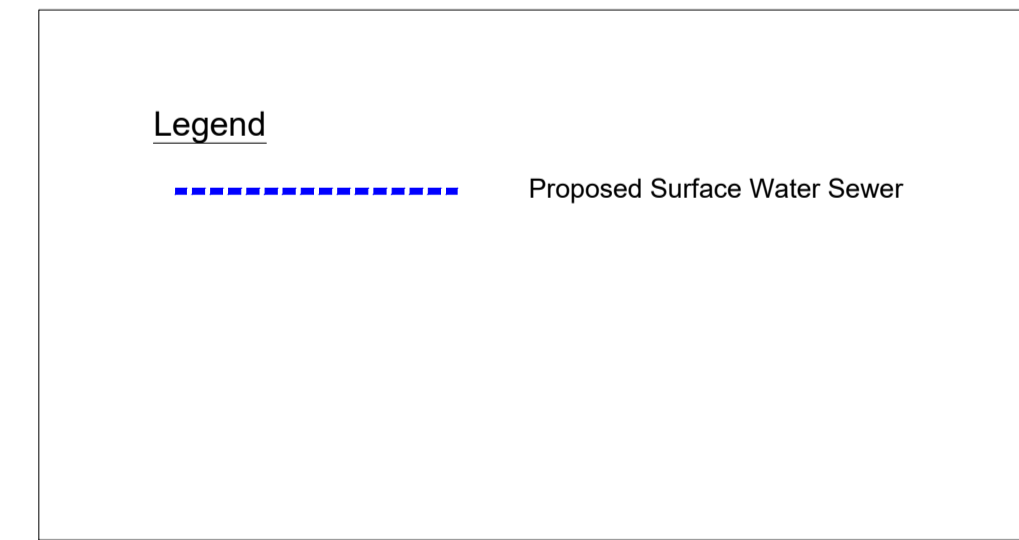
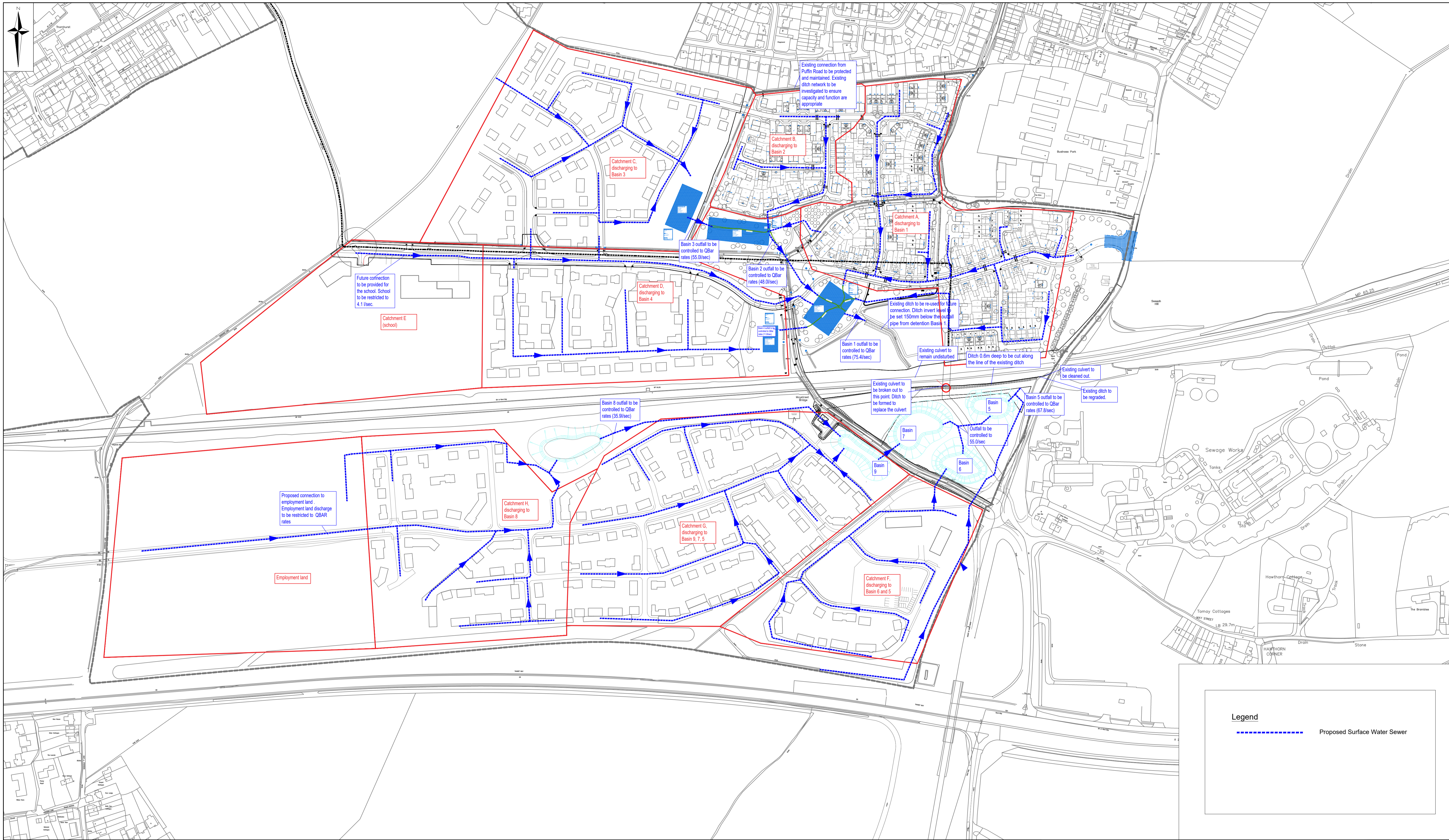
Drawing Title: **SURFACE WATER
DRAINAGE DETAILED
DESIGN
PHASE 1**

Status: **PLANNING**

Drawn	Date	Checked	Date	Approved	Date
AM	14.06.2021	SM	15.06.2021		
Scale	1:1000	Orig Size	A1	Dimensions	Metres
RSK Project No.	133598	Drawing File	21142.RSK.PH1.XX.DR.C.3013P Site Drainage.dwg		
Drawing No.	21142	RSK	PH1	XX	DR C 3013
Project	Org.	Vol./Sys.	Lev./Loc.	Type	Role
					Draw. No.

Scale 1:250

0 2.5 5 7.5 10 12.5m



- Notes:**
- This drawing presents the site drainage layout for the proposed development at Hillborough, Herne Bay, Kent.
 - This drawing is to be read in conjunction with all relevant Engineer's and Architect's drawings and specifications.
 - This drawing is to be printed in COLOUR.
 - For Drainage Construction Details refer to RSK drawing 4005-4008 & for Typical SuDS Details refer to RSK drawing 4009.
 - Figures quoted next to manholes / rodding eyes are cover & invert level, in Metres AOD.
 - Footpaths are to be laid with a crossfall to allow drainage to soft landscaped areas.
 - This drawing is schematic for clarity, and where possible drains should be laid within 2m of houses, and connections kept as short as possible.
 - Where possible all drainage runs shall be kept a minimum of 4.0m from any existing tree that is to be retained.
 - This drawing has been prepared for House Drainage purposes only, and must not be used for House Setting Out.
 - All drainage design is subject to technical approval, no connections shall be made to any public sewers without written consent from the drainage authority.
 - The location of rain water pipes (RWP) are subject to confirmation by the Architect / Services Engineer.
 - The location of soil vent pipes (SVP) / stub stacks (SS) is subject to confirmation by the Architect / Services Engineer.
 - Where pipes pass under buildings, unless beam & block floors are used, they are to be surrounded in concrete.
 - All rest bends associated with stub stacks, soil vent pipes, wc connections and stub wastes are to be set with their inverts at 450mm below Finished Floor Level (FFL).
 - All drains and connections to be 100mm diameter, unless shown otherwise.
 - All branch drains, or connections, are to discharge to the collectors obliquely, and in the direction of the main flow.
 - All high void ratio attenuation units to be installed strictly in accordance with manufacturer's requirements.
 - All services should be laid below the permeable paving construction and coordinated around the proposed drainage on site. Where the service trench crosses the permeable paving the ducting will need to be sealed to ensure no egress of surface water runoff into the service ducting.
 - All adoptable drainage to be constructed in conjunction with Design Construction Guidance (Water UK).
 - For guidance on types and distances of proposed trees away from adoptable sewers refer to Design and Construction Guidance Section B5.1.10 & 11 and B7.6.
 - Diversion of the existing foul water rising main is subject to S185 Sewer Diversion approval with Southern Water. No works in the vicinity of the rising main shall take place until technical approval is granted and coordinated with Southern Water. The design of these works will be conducted by Southern Water and will be constructed by Southern Water's approved contractor.
 - Enhanced swale and culvert levels are subject to further site investigation works to ascertain existing levels to confirm the design.
 - All cover and invert levels to be checked and verified to the engineer prior to any works commencing.

CIVIL / STRUCTURAL DESIGN RISK MANAGEMENT

Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:-

- There will be deep excavations for structures and drainage systems. This is a high risk, high severity hazard. The contractor should provide protection and support in accordance with health and safety legislation.
- Live Services - risks to contractor's personnel - Seek written confirmation from statutory Authority and/or Building/site owner that all live services - especially electricity services - have been disconnected or diverted prior to construction. If any services are to remain live during the construction work, ensure that the locations of these are identified and clearly marked. All operatives are to be made aware of their presence. Employ hand digging near/adjacent to any known live services.

RSK LDE LTD has followed its Design Risk Management process for Hazard Elimination and Risk reduction in developing the designs shown on this drawing. Abnormal or unusual residual risks may be shown above where it is considered that such risk may not normally be expected by competent persons engaged on work of this nature or type.

Rev.	Date	Amendment	Drawn	Chkd.	Appd.
P01	09.12.2021	Issued For Planning Condition Discharge	CPM	GT	SM

Client
Taylor Wimpey

Project Title
**PHASE 1
HILLBOROUGH
HERNE BAY, KENT**

Drawing Title
**SURFACE WATER
DRAINAGE STRATEGY**

RSK
LAND & DEVELOPMENT ENGINEERING LTD

18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT
United Kingdom

Tel: +44 (0) 1442 437500
Fax: +44 (0) 1442 437550
Email: info@rsk.co.uk
Web: www.rsk.co.uk

Status TENDER	
Drawn Date CPM 25.11.2021	Checked Date GT 25.11.2021
Approved Date SM 25.11.2021	
Scale 1:2000	Orig Size A1
Dimensions Metres	
RSK Project No. 133598	Drawing File 21142.RSK.PH1-XX-DR-C-3032 Strategic Surface Water Drainage.dwg
Drawing No. 21142	Rev. P01
Project	Org. Vol./Sys. Lev./Loc. Type Role Draw. No.
Scale 1:250 0 2.5 5 7.5 10 12.5m	

APPENDIX C

SuDS Details

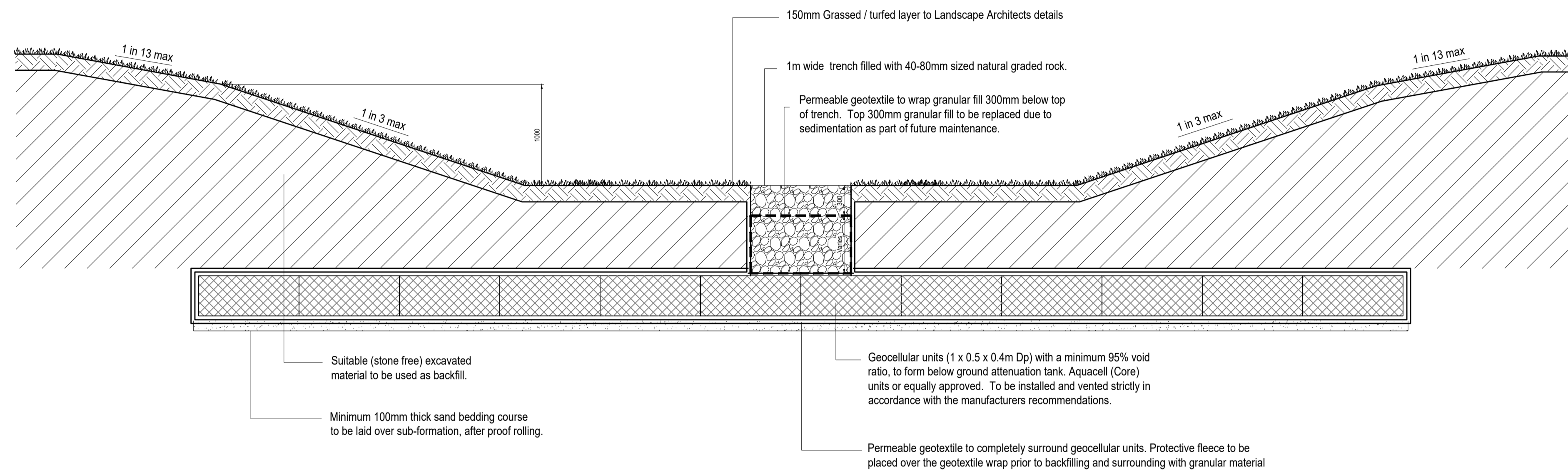
Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:-

1. There will be deep excavations for structures and drainage systems. This is a high risk, high severity hazard. The contractor should provide protection and support in accordance with health and safety legislation.
2. Live Services - risks to contractor's personnel - Seek written confirmation from statutory Authority and/or Building/site owner that all live services - especially electricity services - have been disconnected or diverted prior to construction. If any services are to remain live during the construction work, ensure that the locations of these are identified and clearly marked. All operatives are to be made aware of their presence. Employ hand digging near/adjacent to any known live services.

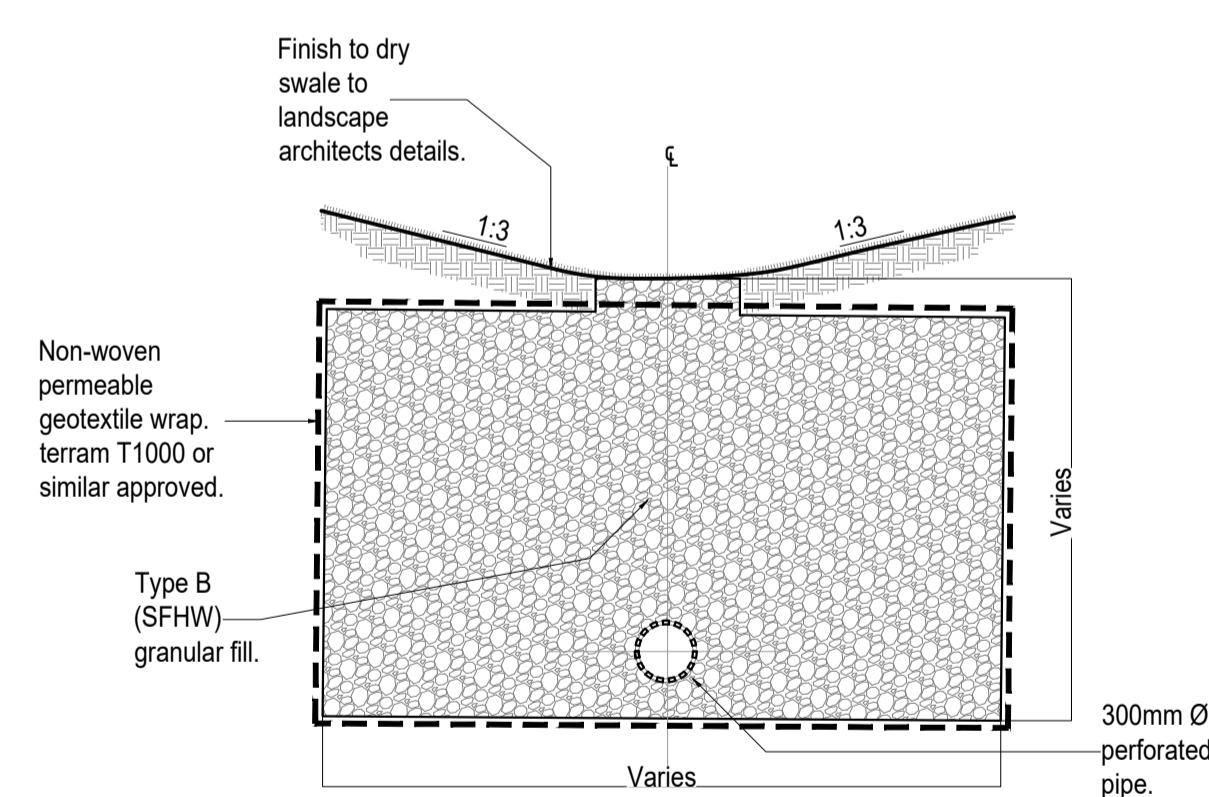
RSK LDE LTD has followed its Design Risk Management process for Hazard Elimination and Risk reduction in developing the designs shown on this drawing. Abnormal or unusual residual risks may be shown above where it is considered that such risk may not normally be expected by competent persons engaged on work of this nature or type.

Notes:

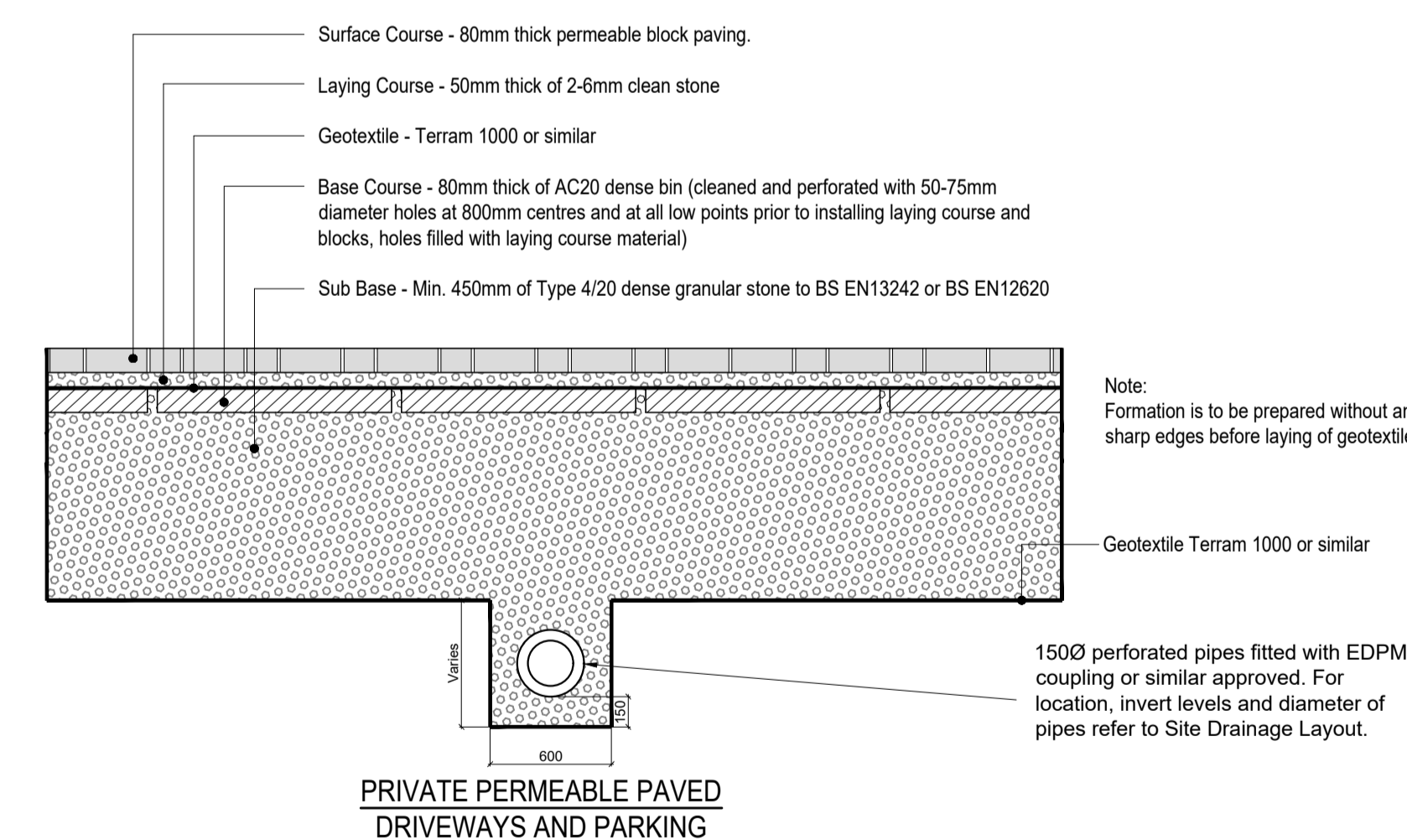
1. This drawing is to be read in conjunction with all Engineering Drawings, Standard Details and specifications for this job.
2. For the Site Drainage Plan refer to RSK drawing 3001-3012.
3. All drains and connections to be 100mm diameter, unless shown otherwise.
4. Where pipes pass under buildings, unless beam & block floors are used, they are to be surrounded in concrete.
5. All branch drains, or connections, are to discharge to the collectors obliquely, and in the direction of the main flow.
6. Where possible all drainage runs shall be kept a minimum of 4.0m from any existing tree that is to be retained.
7. All drainage design is subject to technical approval, no connections shall be made to any public sewers without written consent from the drainage authority.
8. All high void ratio attenuation units to be installed strictly in accordance with manufacturers requirements.



Typical Section Through Attenuation Basin With Geocellular Storage Below



Typical Enhanced Swale Detail With 300mmØ 360° Perforated Pipe



T01	22.06.2021	Issued For Tender	AM	SM	
Rev.	Date	Amendment	Drawn	Chkd.	Appd.

RSK
LAND & DEVELOPMENT ENGINEERING LTD
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP5 9RT
United Kingdom
Tel: +44 (0) 1442 437500
Fax: +44 (0) 1442 437550
Email: info@rsk.co.uk
Web: www.rsk.co.uk

Client
Taylor Wimpey

Project Title
**PHASE 1
HILLBOROUGH
HERNE BAY
KENT**

Status
TENDER


Drawing Title
TYPICAL SUDS DETAILS

Drawn	Date	Checked	Date	Approved	Date
AM	15.06.2021	SM	15.06.2021		
Scale	NTS	Orig Size	A1	Dimensions	m
Project No.	133598		Drawing File	21142-RSK-PH1-XX-DR-C-4009 - Typical SUDS Details.dwg	
Drawing No.	21442	Rev.	T01		
Project	Orig.	Vol./Sys.	Lev./Loc.	Type	Role
				4009	Draw. No.



APPENDIX D

Surface Water Calculations

RSK LDE		Page 1
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 1

Pipe Sizes STANDARD Manhole Sizes STANDARD












FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	19.800	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
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 Surface Network 1

« - 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
1.000	53.895	0.625	86.2	0.027	15.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	53.895	0.875	61.6	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	13.230	0.225	58.8	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.003	20.913	0.275	76.0	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	31.047	0.550	56.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.005	64.290	1.500	42.9	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.006	41.449	1.000	41.4	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.007	67.984	1.625	41.8	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.008	38.450	0.925	41.6	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.009	35.788	0.875	40.9	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.010	26.365	0.650	40.6	0.027	0.00	0.0	0.600	o	300	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)
1.000	29.93	15.64	35.650	0.027	0.0	0.0	0.0	1.41	56.0	2.2
1.001	29.34	16.18	35.025	0.054	0.0	0.0	0.0	1.67	66.4	4.3
1.002	29.20	16.30	34.150	0.081	0.0	0.0	0.0	1.71	67.9	6.4
1.003	28.95	16.54	33.925	0.108	0.0	0.0	0.0	1.50	59.7	8.5
1.004	28.70	16.78	33.575	0.108	0.0	0.0	0.0	2.10	148.2	8.5
1.005	28.25	17.23	33.025	0.135	0.0	0.0	0.0	2.41	170.2	10.3
1.006	27.98	17.51	31.525	0.162	0.0	0.0	0.0	2.45	173.1	12.3
1.007	27.54	17.98	30.525	0.189	0.0	0.0	0.0	2.44	172.3	14.1
1.008	27.30	18.24	28.900	0.216	0.0	0.0	0.0	2.45	172.9	16.0
1.009	27.08	18.48	27.975	0.243	0.0	0.0	0.0	2.47	174.3	17.8
1.010	26.92	18.66	27.100	0.270	0.0	0.0	0.0	2.48	175.0	19.7

RSK LDE		Page 2
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT		Herne Bay, Hillborough Surface Water Drainage Network Calculations
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...		Designed by SMarks Checked by
XP Solutions		Network 2019.1



Network Design Table for Surface Network 1

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
1.011	18.410	0.525	35.1	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
1.012	21.277	0.625	34.0	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
1.013	18.030	0.150	120.2	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
1.014	11.548	0.100	115.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
1.015	37.470	0.000	0.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.000	15.593	0.950	16.4	0.060	15.00	0.0	0.600	o	150	Pipe/Conduit	🔴
3.000	12.729	0.125	101.8	0.038	15.00	0.0	0.600	o	150	Pipe/Conduit	🔴
2.001	28.892	0.200	144.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	🔴
2.002	45.910	0.325	141.3	0.079	0.00	0.0	0.600	o	225	Pipe/Conduit	🔴
2.003	26.458	0.225	117.6	0.130	0.00	0.0	0.600	o	225	Pipe/Conduit	🔴
4.000	38.059	0.375	101.5	0.100	15.00	0.0	0.600	o	225	Pipe/Conduit	🔴
4.001	14.194	0.200	71.0	0.191	0.00	0.0	0.600	o	225	Pipe/Conduit	🔴
5.000	15.784	0.175	90.2	0.099	15.00	0.0	0.600	o	225	Pipe/Conduit	🔴
4.002	28.525	0.600	47.5	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	🔴
4.003	29.463	1.000	29.5	0.041	0.00	0.0	0.600	o	225	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)
1.011	26.82	18.77	26.450	0.297	0.0	0.0	0.0	2.66	188.3	21.6
1.012	26.71	18.90	25.925	0.324	0.0	0.0	0.0	2.70	191.1	23.4
1.013	26.53	19.11	25.300	0.351	0.0	0.0	0.0	1.43	101.3	25.2
1.014	26.41	19.24	25.150	0.351	0.0	0.0	0.0	1.46	103.4	25.2
1.015	23.36	23.44	25.050	0.351	0.0	0.0	0.0	0.15	10.5«	25.2
2.000	30.54	15.10	29.325	0.060	0.0	0.0	0.0	2.50	44.2	5.0
3.000	30.42	15.21	28.500	0.038	0.0	0.0	0.0	1.00	17.6	3.1
2.001	29.91	15.66	28.300	0.098	0.0	0.0	0.0	1.09	43.2	7.9
2.002	29.15	16.35	28.100	0.177	0.0	0.0	0.0	1.10	43.7	14.0
2.003	28.76	16.72	27.775	0.307	0.0	0.0	0.0	1.20	47.9	23.9
4.000	30.10	15.49	29.725	0.100	0.0	0.0	0.0	1.30	51.6	8.2
4.001	29.92	15.64	29.350	0.291	0.0	0.0	0.0	1.55	61.8	23.6
5.000	30.44	15.19	29.325	0.099	0.0	0.0	0.0	1.38	54.8	8.2
4.002	29.65	15.89	29.150	0.417	0.0	0.0	0.0	1.90	75.6	33.5
4.003	29.42	16.09	28.550	0.458	0.0	0.0	0.0	2.42	96.2	36.5

RSK LDE		Page 3
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT		Herne Bay, Hillborough Surface Water Drainage Network Calculations
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...		Designed by SMarks Checked by
XP Solutions		Network 2019.1



Network Design Table for Surface Network 1

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
2.004	16.243	0.125	129.9	0.043	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.005	12.092	0.150	80.6	0.047	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.006	22.825	0.400	57.1	0.065	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.007	43.592	0.200	218.0	0.063	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.008	10.461	0.050	209.2	0.086	0.00	0.0	0.600	o	450	Pipe/Conduit	🔴
2.009	12.166	0.650	18.7	0.020	0.00	0.0	0.600	o	450	Pipe/Conduit	🔴
6.000	17.585	0.050	351.7	0.000	15.00	0.0	0.600	o	300	Pipe/Conduit	🔴
6.001	82.407	0.200	412.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
7.000	12.341	0.095	129.9	0.039	15.00	0.0	0.600	o	225	Pipe/Conduit	🔴
7.001	13.044	0.100	130.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	🔴
7.002	43.773	0.337	130.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	🔴
2.010	11.010	0.000	0.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.011	14.023	0.050	280.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.012	44.272	0.160	276.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
2.013	19.733	0.070	281.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔴
8.000	14.871	0.125	119.0	0.040	15.00	0.0	0.600	o	150	Pipe/Conduit	🔴
8.001	12.862	0.105	122.5	0.023	0.00	0.0	0.600	o	150	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)
2.004	28.56	16.92	27.475	0.808	0.0	0.0	0.0	1.38	97.4	62.5
2.005	28.45	17.03	27.350	0.855	0.0	0.0	0.0	1.75	123.9	65.9
2.006	28.27	17.21	27.200	0.920	0.0	0.0	0.0	2.09	147.4	70.4
2.007	27.61	17.90	26.800	0.983	0.0	0.0	0.0	1.06	75.0	73.5
2.008	27.49	18.02	26.450	1.069	0.0	0.0	0.0	1.40	222.9	79.6
2.009	27.45	18.07	26.400	1.089	0.0	0.0	0.0	4.72	750.1	81.0
6.000	30.25	15.35	26.150	0.000	0.0	0.0	0.0	0.83	58.9	0.0
6.001	28.34	17.14	26.100	0.000	0.0	0.0	0.0	0.77	54.3	0.0
7.000	30.46	15.18	26.482	0.039	0.0	0.0	0.0	1.15	45.5	3.2
7.001	30.23	15.37	26.387	0.039	0.0	0.0	0.0	1.15	45.5	3.2
7.002	29.52	16.01	26.287	0.039	0.0	0.0	0.0	1.15	45.5	3.2
2.010	26.37	19.30	25.900	1.128	0.0	0.0	0.0	0.15	10.5«	81.0
2.011	26.16	19.55	25.900	1.128	0.0	0.0	0.0	0.93	66.0«	81.0
2.012	25.53	20.33	25.850	1.128	0.0	0.0	0.0	0.94	66.5«	81.0
2.013	25.26	20.69	25.690	1.128	0.0	0.0	0.0	0.93	65.8«	81.0
8.000	30.35	15.27	26.000	0.040	0.0	0.0	0.0	0.92	16.3	3.3
8.001	30.08	15.51	25.875	0.063	0.0	0.0	0.0	0.91	16.0	5.1

RSK LDE		Page 4
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT		Herne Bay, Hillborough Surface Water Drainage Network Calculations
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...		Designed by SMarks Checked by
XP Solutions		Network 2019.1



Network Design Table for Surface Network 1

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
2.014	31.285	0.570	54.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
9.000	21.451	1.275	16.8	0.079	15.00	0.0	0.600	o	225	Pipe/Conduit	
9.001	33.670	0.875	38.5	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.002	45.095	0.225	200.4	0.065	0.00	0.0	0.600	o	300	Pipe/Conduit	
9.003	16.925	0.075	225.7	0.031	0.00	0.0	0.600	o	300	Pipe/Conduit	
10.000	9.397	0.800	11.7	0.077	15.00	0.0	0.600	o	225	Pipe/Conduit	
9.004	33.662	0.100	336.6	0.068	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.005	30.057	0.085	353.6	0.088	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.006	32.621	0.095	343.4	0.038	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.007	14.250	0.040	356.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.008	55.709	0.140	397.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.009	29.594	0.080	369.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.010	26.212	0.910	28.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.000	22.918	0.280	81.9	0.030	15.00	0.0	0.600	o	225	Pipe/Conduit	
11.001	22.208	0.280	79.3	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit	
12.000	7.811	0.780	10.0	0.112	15.00	0.0	0.600	o	150	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)
2.014	25.08	20.93	25.620	1.191	0.0	0.0	0.0	2.13	150.3	81.0
9.000	30.54	15.11	29.025	0.079	0.0	0.0	0.0	3.21	127.5	6.5
9.001	30.23	15.38	27.750	0.110	0.0	0.0	0.0	2.12	84.1	9.0
9.002	29.46	16.06	26.800	0.175	0.0	0.0	0.0	1.11	78.2	14.0
9.003	29.17	16.33	26.575	0.206	0.0	0.0	0.0	1.04	73.7	16.3
10.000	30.62	15.04	28.375	0.077	0.0	0.0	0.0	3.84	152.7	6.4
9.004	28.64	16.84	26.350	0.351	0.0	0.0	0.0	1.10	175.3	27.2
9.005	28.18	17.30	26.250	0.439	0.0	0.0	0.0	1.08	171.0	33.5
9.006	27.70	17.80	26.165	0.477	0.0	0.0	0.0	1.09	173.6	35.8
9.007	27.49	18.02	26.070	0.477	0.0	0.0	0.0	1.07	170.4	35.8
9.008	26.68	18.94	26.030	0.477	0.0	0.0	0.0	1.01	161.1	35.8
9.009	26.28	19.41	25.890	0.477	0.0	0.0	0.0	1.05	167.2	35.8
9.010	26.18	19.52	25.810	0.477	0.0	0.0	0.0	3.80	604.3	35.8
11.000	30.36	15.26	29.760	0.030	0.0	0.0	0.0	1.45	57.5	2.5
11.001	30.07	15.52	29.480	0.061	0.0	0.0	0.0	1.47	58.4	5.0
12.000	30.62	15.04	30.055	0.112	0.0	0.0	0.0	3.20	56.6	9.3

RSK LDE		Page 5
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT		Herne Bay, Hillborough Surface Water Drainage Network Calculations
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...		Designed by SMarks Checked by
XP Solutions		Network 2019.1





















Network Design Table for Surface Network 1

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
11.002	24.258	0.310	78.3	0.039	0.00	0.0	0.600	o	300	Pipe/Conduit	
11.003	34.117	0.430	79.3	0.033	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.000	16.605	1.125	14.8	0.111	15.00	0.0	0.600	o	225	Pipe/Conduit	
13.001	21.967	1.065	20.6	0.018	0.00	0.0	0.600	o	225	Pipe/Conduit	
11.004	13.385	0.160	83.7	0.037	0.00	0.0	0.600	o	300	Pipe/Conduit	
14.000	26.366	1.400	18.8	0.060	15.00	0.0	0.600	o	225	Pipe/Conduit	
11.005	52.451	0.660	79.5	0.100	0.00	0.0	0.600	o	300	Pipe/Conduit	
15.000	22.093	0.250	88.4	0.053	15.00	0.0	0.600	o	225	Pipe/Conduit	
15.001	18.194	0.200	91.0	0.066	0.00	0.0	0.600	o	225	Pipe/Conduit	
15.002	8.484	0.848	10.0	0.025	0.00	0.0	0.600	o	225	Pipe/Conduit	
11.006	25.844	0.245	105.5	0.050	0.00	0.0	0.600	o	300	Pipe/Conduit	
16.000	29.469	0.420	70.2	0.049	15.00	0.0	0.600	o	150	Pipe/Conduit	
16.001	17.306	0.175	98.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
16.002	33.081	1.280	25.8	0.093	0.00	0.0	0.600	o	225	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)
11.002	29.81	15.74	29.125	0.212	0.0	0.0	0.0	1.78	125.8	17.1
11.003	29.45	16.07	28.815	0.245	0.0	0.0	0.0	1.77	124.9	19.5
13.000	30.57	15.08	30.650	0.111	0.0	0.0	0.0	3.42	136.1	9.2
13.001	30.42	15.21	29.525	0.129	0.0	0.0	0.0	2.89	115.1	10.6
11.004	29.31	16.19	28.385	0.411	0.0	0.0	0.0	1.72	121.6	32.6
14.000	30.50	15.15	29.700	0.060	0.0	0.0	0.0	3.03	120.5	5.0
11.005	28.79	16.69	28.225	0.571	0.0	0.0	0.0	1.77	124.8	44.5
15.000	30.36	15.26	30.000	0.053	0.0	0.0	0.0	1.39	55.3	4.4
15.001	30.10	15.49	29.750	0.119	0.0	0.0	0.0	1.37	54.5	9.7
15.002	30.06	15.52	28.488	0.144	0.0	0.0	0.0	4.16	165.5	11.7
11.006	28.51	16.97	27.565	0.765	0.0	0.0	0.0	1.53	108.2	59.1
16.000	30.19	15.41	29.345	0.049	0.0	0.0	0.0	1.20	21.2	4.0
16.001	29.94	15.63	28.850	0.049	0.0	0.0	0.0	1.31	52.3	4.0
16.002	29.70	15.84	28.675	0.142	0.0	0.0	0.0	2.58	102.7	11.4

Network Design Table for Surface Network 1

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
11.007	12.269	0.160	76.7	0.020	0.00	0.0	0.600	o	300	Pipe/Conduit	
11.008	22.763	0.400	56.9	0.049	0.00	0.0	0.600	o	300	Pipe/Conduit	
11.009	25.060	0.185	135.5	0.060	0.00	0.0	0.600	o	300	Pipe/Conduit	
17.000	20.542	0.625	32.9	0.071	15.00	0.0	0.600	o	225	Pipe/Conduit	
18.000	18.197	0.305	59.7	0.032	15.00	0.0	0.600	o	150	Pipe/Conduit	
17.001	30.651	0.525	58.4	0.034	0.00	0.0	0.600	o	225	Pipe/Conduit	
17.002	17.990	0.250	72.0	0.054	0.00	0.0	0.600	o	225	Pipe/Conduit	
17.003	21.488	0.200	107.4	0.046	0.00	0.0	0.600	o	225	Pipe/Conduit	
17.004	7.853	0.060	130.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
17.005	41.830	0.390	107.3	0.025	0.00	0.0	0.600	o	225	Pipe/Conduit	
17.006	19.050	0.225	84.7	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit	
19.000	11.151	0.175	63.7	0.054	15.00	0.0	0.600	o	225	Pipe/Conduit	
19.001	18.711	0.175	106.9	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
19.002	16.365	0.225	72.7	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
19.003	11.040	0.125	88.3	0.030	0.00	0.0	0.600	o	225	Pipe/Conduit	
19.004	26.908	0.515	52.2	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit	
19.005	36.700	0.360	101.9	0.090	0.00	0.0	0.600	o	225	Pipe/Conduit	
19.006	20.675	0.250	82.7	0.169	0.00	0.0	0.600	o	300	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)
11.007	28.39	17.09	27.320	0.927	0.0	0.0	0.0	1.80	127.0	71.3
11.008	28.21	17.27	27.160	0.976	0.0	0.0	0.0	2.09	147.6	74.6
11.009	27.91	17.58	26.760	1.036	0.0	0.0	0.0	1.35	95.4	78.3
17.000	30.49	15.15	30.300	0.071	0.0	0.0	0.0	2.29	91.1	5.9
18.000	30.39	15.23	30.055	0.032	0.0	0.0	0.0	1.30	23.1	2.6
17.001	30.05	15.53	29.675	0.137	0.0	0.0	0.0	1.72	68.2	11.1
17.002	29.83	15.72	29.150	0.191	0.0	0.0	0.0	1.54	61.4	15.4
17.003	29.52	16.01	28.900	0.237	0.0	0.0	0.0	1.26	50.1	18.9
17.004	29.39	16.12	28.700	0.237	0.0	0.0	0.0	1.14	45.4	18.9
17.005	28.81	16.68	28.640	0.262	0.0	0.0	0.0	1.26	50.2	20.4
17.006	28.58	16.90	28.250	0.314	0.0	0.0	0.0	1.42	56.5	24.3
19.000	30.53	15.11	29.850	0.054	0.0	0.0	0.0	1.64	65.3	4.5
19.001	30.25	15.36	29.675	0.093	0.0	0.0	0.0	1.26	50.3	7.6
19.002	30.04	15.54	29.500	0.120	0.0	0.0	0.0	1.54	61.0	9.8
19.003	29.89	15.67	29.275	0.150	0.0	0.0	0.0	1.39	55.3	12.1
19.004	29.62	15.92	29.150	0.171	0.0	0.0	0.0	1.81	72.1	13.7
19.005	29.11	16.39	28.635	0.261	0.0	0.0	0.0	1.29	51.5	20.6
19.006	28.90	16.59	28.200	0.430	0.0	0.0	0.0	1.73	122.3	33.7




Network Design Table for Surface Network 1

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
17.007	35.057	0.450	77.9	0.093	0.00	0.0	0.600	o	300	Pipe/Conduit	
17.008	28.220	0.500	56.4	0.098	0.00	0.0	0.600	o	300	Pipe/Conduit	
17.009	27.411	0.425	64.5	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
11.010	32.626	0.465	70.2	0.073	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.011	11.851	0.120	98.8	0.090	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.012	36.898	0.940	39.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
20.000	18.580	1.460	12.7	0.018	15.00	0.0	0.600	o	225	Pipe/Conduit	
20.001	17.594	0.960	18.3	0.018	0.00	0.0	0.600	o	225	Pipe/Conduit	
20.002	16.886	0.605	27.9	0.035	0.00	0.0	0.600	o	225	Pipe/Conduit	
21.000	15.639	0.000	0.0	0.000	15.00	0.0	0.600	o	300	Pipe/Conduit	
21.001	7.412	0.025	296.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
20.003	17.257	0.175	98.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
20.004	36.976	0.650	56.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.016	26.862	0.100	268.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.017	8.174	0.020	408.7	0.000	0.00	0.0	0.600	o	450	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)
17.007	28.25	17.23	27.950	0.837	0.0	0.0	0.0	1.78	126.0	64.0
17.008	28.03	17.45	27.500	0.935	0.0	0.0	0.0	2.10	148.2	71.0
17.009	27.81	17.68	27.000	1.021	0.0	0.0	0.0	1.96	138.6	76.9
11.010	27.60	17.91	26.425	2.130	0.0	0.0	0.0	2.43	386.4	159.2
11.011	27.51	18.00	25.960	2.220	0.0	0.0	0.0	2.05	325.4	165.4
11.012	27.34	18.19	25.840	2.220	0.0	0.0	0.0	3.25	517.3	165.4
20.000	30.57	15.08	28.975	0.018	0.0	0.0	0.0	3.69	146.6	1.5
20.001	30.46	15.18	27.515	0.036	0.0	0.0	0.0	3.07	122.1	3.0
20.002	30.32	15.29	26.555	0.071	0.0	0.0	0.0	2.49	98.9	5.8
21.000	28.73	16.75	25.900	0.000	0.0	0.0	0.0	0.15	10.5	0.0
21.001	28.59	16.89	25.900	0.000	0.0	0.0	0.0	0.91	64.2	0.0
20.003	28.41	17.07	25.875	0.071	0.0	0.0	0.0	1.58	111.9	5.8
20.004	28.12	17.36	25.700	0.071	0.0	0.0	0.0	2.09	147.6	5.8
1.016	23.13	23.80	24.900	4.310	0.0	0.0	0.0	1.24	196.5<	270.0
1.017	23.05	23.94	24.800	4.310	0.0	0.0	0.0	1.00	158.9<	270.0

RSK LDE		Page 8
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	

Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

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 Coefficient 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 Storage Structures 7
Number of Online Controls 4 Number of Time/Area Diagrams 3
Number of Offline Controls 0 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.400
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 120, 480, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	S110	15 Winter	100	+40%				
1.001	S111	15 Winter	100	+40%				
1.002	S112	15 Winter	100	+40%				
1.003	S113	15 Winter	100	+40%	100/15 Summer			
1.004	S114	120 Winter	100	+40%				
1.005	S115	120 Winter	100	+40%				
1.006	S116	120 Winter	100	+40%				
1.007	S117	120 Winter	100	+40%				
1.008	S118	120 Winter	100	+40%				
1.009	S119	120 Winter	100	+40%	100/120 Winter			
1.010	S120	120 Winter	100	+40%	100/120 Winter			
1.011	S121	120 Winter	100	+40%	100/15 Summer			
1.012	S122	120 Winter	100	+40%	100/15 Summer			
1.013	S123	120 Winter	100	+40%	30/15 Summer			
1.014	S124	120 Winter	100	+40%	2/15 Winter			
1.015	S125	120 Winter	100	+40%	2/15 Winter			
2.000	S94	15 Winter	100	+40%	100/15 Summer			
3.000	S93	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
2.001	S92	15 Winter	100	+40%	30/15 Summer			
2.002	S91	15 Winter	100	+40%	30/15 Summer			

RSK LDE		Page 9
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	


Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S110	35.709	-0.166	0.000	0.15		8.3	OK	
1.001	S111	35.120	-0.130	0.000	0.36		22.8	OK	
1.002	S112	34.288	-0.087	0.000	0.67		39.7	OK	
1.003	S113	34.161	0.011	0.000	1.02		55.3	SURCHARGED	
1.004	S114	33.791	-0.084	0.000	0.87		116.9	OK	
1.005	S115	33.216	-0.109	0.000	0.73		118.8	OK	
1.006	S116	31.719	-0.106	0.000	0.75		120.7	OK	
1.007	S117	30.719	-0.106	0.000	0.74		122.5	OK	
1.008	S118	29.148	-0.052	0.000	0.78		124.3	OK	
1.009	S119	28.635	0.360	0.000	0.76		122.1	SURCHARGED	
1.010	S120	28.146	0.746	0.000	0.78		121.7	SURCHARGED	
1.011	S121	27.760	1.010	0.000	0.76		122.7	FLOOD RISK	
1.012	S122	27.463	1.238	0.000	0.74		123.7	FLOOD RISK	
1.013	S123	27.126	1.526	0.000	1.43		124.8	FLOOD RISK	
1.014	S124	26.822	1.372	0.000	1.57		124.6	FLOOD RISK	
1.015	S125	26.578	1.228	0.000	4.49		124.4	SURCHARGED	
2.000	S94	29.975	0.500	0.000	0.47		19.2	FLOOD RISK	
3.000	S93	29.708	1.058	8.150	1.98		31.7	FLOOD	3
2.001	S92	29.829	1.304	0.000	0.86		34.7	FLOOD RISK	
2.002	S91	29.838	1.513	0.000	0.94		39.1	FLOOD RISK	

RSK LDE		Page 10
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	


Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
2.003	S90	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
4.000	S98	15 Winter	100	+40%	30/15 Summer		
4.001	S97A	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
5.000	S96	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
4.002	S97	15 Winter	100	+40%	30/15 Summer		
4.003	S95	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
2.004	S89	15 Summer	100	+40%	2/15 Summer	100/15 Summer	
2.005	S88	15 Winter	100	+40%	2/15 Winter	100/15 Summer	
2.006	S86	15 Winter	100	+40%	2/15 Summer	100/15 Summer	
2.007	S85	15 Winter	100	+40%	2/15 Summer		
2.008	S84	1440 Winter	100	+40%	30/15 Summer		
2.009	S100	1440 Winter	100	+40%	100/480 Summer		
6.000	POND 3	480 Winter	100	+40%	2/15 Summer		
6.001	BASIN 3 OUTFALL	480 Winter	100	+40%	2/15 Summer	100/120 Summer	
7.000	S22	1440 Winter	100	+40%	30/1440 Summer		
7.001	S21	1440 Winter	100	+40%	30/1440 Summer		
7.002	S20	1440 Winter	100	+40%	30/1440 Summer		
2.010	POND 2	1440 Winter	100	+40%	2/480 Summer		
2.011	BASIN 2 OUTFALL	1440 Winter	100	+40%	2/480 Summer		
2.012	S101	480 Winter	100	+40%	100/120 Summer		
2.013	S102	480 Winter	100	+40%	100/120 Summer		
8.000	S19A	480 Winter	100	+40%	100/15 Summer		
8.001	S19	480 Winter	100	+40%	100/15 Summer		
2.014	S103	480 Winter	100	+40%	100/120 Summer		
9.000	S30	15 Winter	100	+40%			
9.001	S31	15 Winter	100	+40%			
9.002	S32	15 Winter	100	+40%	100/15 Summer		
9.003	S33	15 Winter	100	+40%	100/15 Summer		
10.000	S34	15 Winter	100	+40%			
9.004	S35	15 Winter	100	+40%	100/15 Summer		
9.005	S36	15 Winter	100	+40%	100/15 Summer		
9.006	S37	15 Winter	100	+40%	100/15 Summer		
9.007	S38	15 Winter	100	+40%	100/15 Summer		
9.008	S39	15 Winter	100	+40%	100/15 Summer		
9.009	S40	15 Winter	100	+40%	100/15 Winter		
9.010	S41	480 Winter	100	+40%	100/480 Winter		
11.000	S1	15 Winter	100	+40%	100/15 Summer	100/15 Summer	
11.001	S2	15 Winter	100	+40%	30/15 Winter		
12.000	S4	15 Winter	100	+40%	100/15 Summer	100/15 Winter	
11.002	S3	15 Winter	100	+40%	30/15 Summer		
11.003	S5	15 Winter	100	+40%	30/15 Summer		
13.000	S6	15 Winter	100	+40%	100/15 Summer		
13.001	S7	15 Winter	100	+40%	100/15 Summer		
11.004	S8	15 Winter	100	+40%	30/15 Summer		
14.000	S10A	15 Winter	100	+40%	100/15 Summer		
11.005	S10	15 Winter	100	+40%	30/15 Summer		
15.000	S11	15 Winter	100	+40%	100/15 Summer		
15.001	S12	15 Winter	100	+40%	100/15 Summer		
15.002	S12A	15 Winter	100	+40%	30/15 Summer		

RSK LDE		Page 11
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	


Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
2.003	S90		29.509	1.509	14.853	1.44		63.9
4.000	S98		30.944	0.994	0.000	0.63		30.9
4.001	S97A		30.792	1.217	17.108	1.28		69.1
5.000	S96		30.729	1.179	0.641	0.71		34.2
4.002	S97		30.669	1.294	0.000	1.18		83.1
4.003	S95		29.817	1.042	15.386	1.07		95.7
2.004	S89		29.317	1.542	0.050	1.76		145.1
2.005	S88		28.953	1.303	11.430	1.64		158.8
2.006	S86		28.804	1.304	0.126	1.22		158.9
2.007	S85		28.355	1.255	0.000	2.55		179.0
2.008	S84		27.121	0.221	0.000	0.19		29.8
2.009	S100		27.120	0.270	0.000	0.07		30.3
6.000	POND 3		29.566	3.116	0.000	0.82		41.5
6.001	BASIN 3 OUTFALL		29.800	3.400	0.393	0.67		34.8
7.000	S22		27.119	0.412	0.000	0.03		1.0
7.001	S21		27.118	0.506	0.000	0.05		1.9
7.002	S20		27.118	0.606	0.000	0.06		2.8
2.010	POND 2		27.118	0.918	0.000	1.58		43.6
2.011	BASIN 2 OUTFALL		27.133	0.933	0.000	0.73		39.9
2.012	S101		26.603	0.453	0.000	0.64		39.9
2.013	S102		26.518	0.528	0.000	0.70		39.9
8.000	S19A		26.442	0.292	0.000	0.18		2.7
8.001	S19		26.441	0.416	0.000	0.29		4.2
2.014	S103		26.440	0.520	0.000	0.31		42.7
9.000	S30		29.095	-0.155	0.000	0.21		24.6
9.001	S31		27.864	-0.111	0.000	0.50		39.2
9.002	S32		27.266	0.166	0.000	1.00		73.4
9.003	S33		27.086	0.211	0.000	1.30		81.7
10.000	S34		28.441	-0.159	0.000	0.19		23.9
9.004	S35		26.968	0.168	0.000	0.87		133.7
9.005	S36		26.885	0.185	0.000	1.17		172.0
9.006	S37		26.777	0.162	0.000	1.23		185.1
9.007	S38		26.637	0.117	0.000	1.53		181.6
9.008	S39		26.530	0.050	0.000	1.17		173.0
9.009	S40		26.353	0.013	0.000	1.15		165.1
9.010	S41		26.330	0.070	0.000	0.06		31.6
11.000	S1		31.192	1.207	12.095	1.05		55.5
11.001	S2		31.339	1.634	0.000	1.15		61.6
12.000	S4		31.725	1.520	0.172	0.76		37.1
11.002	S3		31.428	2.003	0.000	0.72		80.9
11.003	S5		31.411	2.296	0.000	0.73		84.1
13.000	S6		31.551	0.676	0.000	0.32		38.4
13.001	S7		31.478	1.728	0.000	0.40		41.9
11.004	S8		31.345	2.660	0.000	1.02		101.9
14.000	S10A		31.236	1.311	0.000	0.19		21.1
11.005	S10		31.206	2.681	0.000	0.98		115.7
15.000	S11		30.822	0.597	0.000	0.38		19.4
15.001	S12		30.794	0.819	0.000	0.97		47.3

RSK LDE		Page 12
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	

Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Overflow Act.	Water Surcharged Flooded			Volume Flow / Cap.	Overflow (l/s)	Pipe (l/s)
			Level (m)	Depth (m)	Flow (m³)			
15.002	S12A		30.689	1.976	0.000	0.33	42.8	
PN	US/MH Name	Status	Level Exceeded					
2.003	S90	FLOOD	3					
4.000	S98	FLOOD RISK						
4.001	S97A	FLOOD	2					
5.000	S96	FLOOD	2					
4.002	S97	FLOOD RISK						
4.003	S95	FLOOD	3					
2.004	S89	FLOOD	1					
2.005	S88	FLOOD	2					
2.006	S86	FLOOD	2					
2.007	S85	FLOOD RISK						
2.008	S84	SURCHARGED						
2.009	S100	SURCHARGED						
6.000	POND 3	FLOOD RISK						
6.001	BASIN 3 OUTFALL	FLOOD	3					
7.000	S22	SURCHARGED						
7.001	S21	FLOOD RISK						
7.002	S20	SURCHARGED						
2.010	POND 2	SURCHARGED						
2.011	BASIN 2 OUTFALL	SURCHARGED						
2.012	S101	SURCHARGED						
2.013	S102	SURCHARGED						
8.000	S19A	SURCHARGED						
8.001	S19	SURCHARGED						
2.014	S103	SURCHARGED						
9.000	S30	OK						
9.001	S31	OK						
9.002	S32	SURCHARGED						
9.003	S33	SURCHARGED						
10.000	S34	OK						
9.004	S35	SURCHARGED						
9.005	S36	SURCHARGED						
9.006	S37	SURCHARGED						
9.007	S38	SURCHARGED						
9.008	S39	SURCHARGED						
9.009	S40	SURCHARGED						
9.010	S41	SURCHARGED						
11.000	S1	FLOOD	2					
11.001	S2	FLOOD RISK						
12.000	S4	FLOOD	1					
11.002	S3	FLOOD RISK						
11.003	S5	SURCHARGED						
13.000	S6	SURCHARGED						

RSK LDE		Page 13
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	

Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Status	Level Exceeded
13.001		S7 SURCHARGED	
11.004		S8 SURCHARGED	
14.000	S10A	SURCHARGED	
11.005	S10	SURCHARGED	
15.000	S11	SURCHARGED	
15.001	S12	SURCHARGED	
15.002	S12A	FLOOD RISK	

Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1


PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
11.006	S13	15 Winter	100	+40%	30/15 Summer		
16.000	S14	15 Winter	100	+40%	100/15 Summer		
16.001	S14A	15 Winter	100	+40%	100/15 Summer		
16.002	S14B	15 Winter	100	+40%	100/15 Summer		
11.007	S15	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
11.008	S16A	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
11.009	S16	15 Winter	100	+40%	2/15 Summer	100/15 Summer	
17.000	S75	15 Winter	100	+40%	100/15 Winter		
18.000	S74A	15 Winter	100	+40%	100/15 Summer		
17.001	S74	15 Winter	100	+40%	30/15 Winter		
17.002	S73	15 Winter	100	+40%	30/15 Summer		
17.003	S72	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
17.004	S71	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
17.005	S70	15 Winter	100	+40%	30/15 Summer	100/15 Winter	
17.006	S69	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
19.000	S81	15 Winter	100	+40%	100/15 Summer		
19.001	S80	15 Winter	100	+40%	100/15 Summer		
19.002	S79	15 Winter	100	+40%	30/15 Summer		
19.003	S78	15 Winter	100	+40%	30/15 Summer		
19.004	S78A	15 Winter	100	+40%	30/15 Summer		
19.005	S77	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
19.006	S76	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
17.007	S68	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
17.008	S67	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
17.009	S66	15 Winter	100	+40%	30/15 Summer	100/15 Summer	
11.010	S17	15 Winter	100	+40%	30/15 Summer		
11.011	S18	15 Winter	100	+40%	2/15 Summer		
11.012	S18A	480 Winter	100	+40%	100/120 Summer		
20.000	S131	15 Winter	100	+40%			
20.001	S132	15 Winter	100	+40%			
20.002	S133	15 Winter	100	+40%			
21.000	POND 4	480 Winter	100	+40%	2/120 Summer		
21.001	BASIN 4 OUTFALL	1440 Winter	100	+40%	2/120 Summer	30/480 Winter	
20.003	S134	480 Winter	100	+40%	100/480 Summer		
20.004	S135	480 Winter	100	+40%	100/120 Summer		
1.016	POND 1	480 Winter	100	+40%	30/120 Winter		
1.017	BASIN 1 OUTFALL	480 Winter	100	+40%	30/120 Summer	100/15 Winter	

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
11.006	S13		30.591	2.726	0.000	1.73		167.4
16.000	S14		30.330	0.835	0.000	0.87		17.6
16.001	S14A		30.187	1.112	0.000	0.49		22.6
16.002	S14B		30.170	1.270	0.000	0.50		48.7
11.007	S15		29.847	2.227	11.574	1.97		197.9
11.008	S16A		29.428	1.968	0.755	1.52		198.0

Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)
11.009	S16		28.677	1.617	0.864	2.46		209.3
17.000	S75		30.542	0.017	0.000	0.47		38.7
18.000	S74A		30.623	0.418	0.000	0.50		10.9
17.001	S74		30.559	0.659	0.000	0.68		43.6
17.002	S73		30.530	1.155	0.000	0.82		45.3
17.003	S72		30.332	1.207	6.702	1.19		54.3
17.004	S71		30.250	1.325	0.122	1.58		54.5
17.005	S70		30.200	1.335	0.004	1.16		55.3
17.006	S69		29.853	1.378	3.112	1.13		57.3
19.000	S81		30.629	0.554	0.000	0.32		17.6
19.001	S80		30.610	0.710	0.000	0.73		33.2
19.002	S79		30.511	0.786	0.000	0.84		45.6
19.003	S78		30.370	0.870	0.000	0.81		37.7
19.004	S78A		30.302	0.927	0.000	0.56		37.6
19.005	S77		30.139	1.279	5.523	1.06		51.4
19.006	S76		29.744	1.244	21.427	0.88		94.1
17.007	S68		29.631	1.381	9.912	1.26		146.6
17.008	S67		29.046	1.246	8.256	1.33		177.4
17.009	S66		28.412	1.112	5.810	1.52		189.8
11.010	S17		27.666	0.791	0.000	1.22		409.4
11.011	S18		26.961	0.551	0.000	2.36		460.5
11.012	S18A		26.440	0.150	0.000	0.32		147.9
20.000	S131		29.005	-0.195	0.000	0.04		5.6
20.001	S132		27.572	-0.168	0.000	0.15		16.0
20.002	S133		26.659	-0.121	0.000	0.44		38.4
21.000	POND 4		27.459	1.259	0.000	0.74		15.4
21.001	BASIN 4 OUTFALL		27.501	1.301	0.640	0.24		11.2
20.003	S134		26.353	0.178	0.000	0.17		15.8
20.004	S135		26.342	0.342	0.000	0.11		15.6
1.016	POND 1		26.328	0.978	0.000	1.39		231.2
1.017	BASIN 1 OUTFALL		26.492	1.242	4.308	1.39		125.0

PN	US/MH Name	Status	Level Exceeded
11.006	S13	FLOOD RISK	
16.000	S14	FLOOD RISK	
16.001	S14A	SURCHARGED	
16.002	S14B	FLOOD RISK	
11.007	S15	FLOOD	2
11.008	S16A	FLOOD	2
11.009	S16	FLOOD	2
17.000	S75	SURCHARGED	
18.000	S74A	SURCHARGED	
17.001	S74	SURCHARGED	
17.002	S73	FLOOD RISK	
17.003	S72	FLOOD	2

RSK LDE		Page 16
18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Herne Bay, Hillborough Surface Water Drainage Network Calculations	
Date 12/11/2021 10:00 File 133598 - SW DRAINAGE NE...	Designed by SMarks Checked by	
XP Solutions	Network 2019.1	

Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Status	Level Exceeded
17.004	S71	FLOOD	2
17.005	S70	FLOOD	1
17.006	S69	FLOOD	2
19.000	S81	SURCHARGED	
19.001	S80	SURCHARGED	
19.002	S79	SURCHARGED	
19.003	S78	SURCHARGED	
19.004	S78A	SURCHARGED	
19.005	S77	FLOOD	2
19.006	S76	FLOOD	2
17.007	S68	FLOOD	2
17.008	S67	FLOOD	2
17.009	S66	FLOOD	2
11.010	S17	SURCHARGED	
11.011	S18	SURCHARGED	
11.012	S18A	SURCHARGED	
20.000	S131	OK	
20.001	S132	OK	
20.002	S133	OK	
21.000	POND 4	FLOOD RISK	
21.001	BASIN 4 OUTFALL	FLOOD	6
20.003	S134	SURCHARGED	
20.004	S135	SURCHARGED	
1.016	POND 1	SURCHARGED	
1.017	BASIN 1 OUTFALL	FLOOD	7