



LAND NORTH WEST OF BOORLEY GREEN

FLOOD RISK ASSESSMENT AND SURFACE WATER & FOUL DRAINAGE STRATEGY UPDATE FOR RESERVED MATTERS APPLICATION PURSUANT TO OUTLINE PERMISSION O/15/75953



MAY 2023



PFA Consulting
Stratton Park House
Wanborough Road
Swindon
SN3 4HG

Tel: 01793 828000
Fax: 01793 835500
Email: admin@pfapl.com
Web: www.pfapl.com

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DOCUMENT CONTROL

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CONTENTS

PAGE NO.

1.	INTRODUCTION	1
2.	FLOOD RISK.....	2
3.	SURFACE WATER DRAINAGE STRATEGY	3
	Detention Basins	3
	Exceedance	3
	Surface Water Drainage Pollution and Water Quality	4
	Maintenance	4
	Hampshire County Council Checklist	5
4.	FOUL DRAINAGE STRATEGY	6
	Approved	6
	Alternative	6
	Flood Risk	7
5.	CONCLUSIONS	8

FIGURES:

Figure 1 Flood Map for Planning

TABLES

Table A Proposed Surface Water Drainage Network Details

APPENDICES:

Appendix 1 Planning Layout – AAP Architecture - Drawing No. P1388.01 and P1388.04
Appendix 2 Indicative Surface Water Drainage Strategy - Drawing No. M380/02 Rev G
Appendix 3 Surface Water Detention Basins – Phase 1 – Drawing No. M380/12 Rev B
Appendix 4 Micro Drainage Calculations (including simulation results)
Appendix 5 Exceedance Flow Routes – Drawing No. M380/14 and M380/15
Appendix 6 Surface Water Drainage Pollution Hazard Assessment
Appendix 7 Hampshire County Council Check List
Appendix 8 On-site Sewage Treatment Works Location Plan – Drawing No. M380/11 Rev B
Appendix 9 Summary of Nutrem Process

1. INTRODUCTION

1.1. This Flood Risk Assessment and Surface and Foul Water Drainage Strategy Update has been prepared on behalf of Miller Homes Ltd and Gleeson Developments Ltd (the applicants) in respect of the land north west of Boorley Green subject of outline planning consent, Application Reference O/15/75953.

1.2. For the Outline Consent a Flood Risk and Surface Water Drainage Strategy report was prepared by FMW Consultancy Ltd, December 2014 and is referenced at Condition 12 as follows:

The development permitted by this planning permission shall be carried out in accordance with the approved Flood Risk Assessment (FRA) (by FMW Consultancy, FMW 1467F, dated December 2014) and the following mitigation measure detailed within the FRA:

- **All buildings and developments must be located within Flood Zone 1 only. The mitigation measures shall be fully implemented prior to occupation and in accordance with the timing/phasing arrangements embodied within the scheme.**

1.3. This Update sets out the work done since the Outline Consent was granted in order to support the Reserved Matters application for Phase 1 comprising 301 dwellings and associated roads and infrastructure. A copy of the Planning Layout is contained in **Appendix 1**.

2. FLOOD RISK

- 2.1. The approved FRA of December 2014 sets out the Flood Risk for the development and shows that all the application site lies within Flood Zone 1 with only small areas associated with Moorgreen Stream on the northern boundary falling in Zones 2 and 3.
- 2.2. This Update does not change any of the findings within the approved FRA, but acts as a platform upon which the Surface Water Drainage Strategy has been advanced in a little more detail to support the Reserved Matters Application. Furthermore, the criteria of a 20m ecology buffer with the stream within which no development shall lie ensures that no encroachment occurs within the small areas comprising Flood Zones 2 and 3.
- 2.3. The current Flood Map for Planning published by the Environment Agency appears below. When reviewed there is no change to that shown in the approved FRA. Therefore, the first requirement within Condition 12 is that “All buildings and development must be located within Flood Zone 1 only” is satisfied.

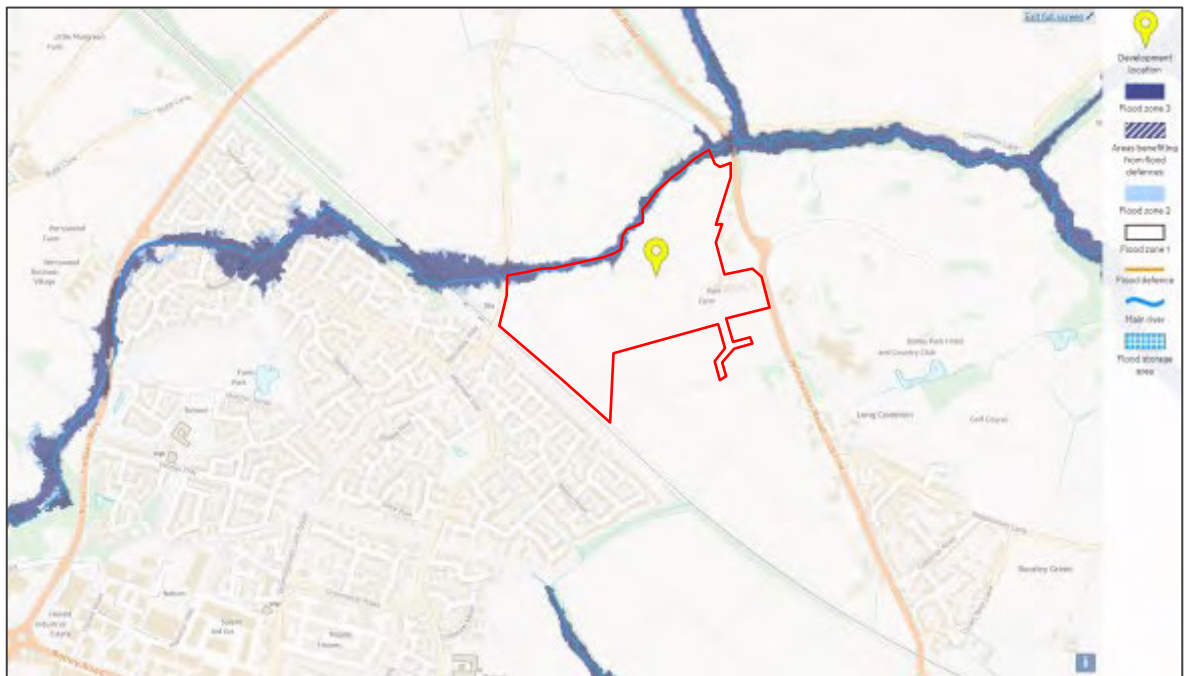


Figure 1: Flood Map for Planning

3. SURFACE WATER DRAINAGE STRATEGY

Detention Basins

- 3.1. The Surface Water Drainage Strategy set out in the approved FRA is to use above ground attenuation basins with a controlled discharge to the stream. Surface water is collected across the development site by surface water sewers which outfall into the proposed detention basins. The option of infiltration to ground was discounted due to the sub-soil being unsuitable.
- 3.2. The FRA sets out an indicative SuDS strategy based on attenuation basins. That strategy has been expanded upon and appears on Drawing No. M380/02 enclosed in **Appendix 2**. That drawing shows the sub-catchments which relate to Phase 1 comprising Catchments A1, A2 and B. Catchments C to E relate to Phase 2 and do not form part of this application.
- 3.3. The detention basins are designed to attenuate water up to the 1:100 year rainfall event including a 40% allowance for climate change with discharge at 5 l/s/ha into the Moorgreen Stream.
- 3.4. The proposal is to use detention basins which are landscaped depressions that are dry except during and immediately following storm events. The basins will be on-line where surface water runoff from regular events is routed through the basin and when the flows rise, due to a restricted outlet, the basin fills and provides storage of runoff and flow attenuation.
- 3.5. To expand on the basins within Phase 1, a further plan has been prepared, Drawing No. M380/12 which appears in **Appendix 3**. That drawing shows basins A1, A2 and B in plan and cross section. The top water level is based on 1:100 year rainfall event plus 40% for climate change. The assessment calculations supporting the basins are enclosed in **Appendix 4**.
- 3.6. All three basins have side slopes of 1:4 which exceeds the criteria within the SuDS manual, CIRIA C753 and concurs with the preference of Eastleigh Borough Council (EBC). Each basin is shown with an internal wetland area and a dry flow channel between the inlet and outlets.
- 3.7. Calculations have been undertaken to establish the required storage for the development with discharge at 5 l/s/ha as set out in approved FRA (by FMW Consultancy, FMW 1467F, dated December 2014). A Micro Drainage model (V.2017.1) has been created for the proposed system and simulations have been run for the 1:1, 1:30, 1:100, and 1:100 year (+ climate change) storm events. A copy of these results is reproduced in Appendix 3 and **Table A** below.

Table A: Proposed Surface Water Drainage Network Details

	Critical Storm Event				
	1	30	100	100 + 20%	100 + 40%
CATCHMENT A					
Allowable Discharge Rate (l/s) ^a	62.0	62.0	62.0	-	-
Approximate Attenuation (m ³) ^b	1430	2540	3200	3970	4730
Calculated Discharge Rate (l/s)	25.0	50.9	55.1	55.6	55.7
CATCHMENT B					
Allowable Discharge Rate (l/s) ^a	22.5	22.5	22.5	-	-
Approximate Attenuation (m ³) ^b	320	795	1000	1200	1470
Calculated Discharge Rate (l/s)	22.3	22.5	22.5	22.5	22.5

Notes: ^a 5 l/s/ha as per approved FRA.

^b Includes storage in pipe network.

Exceedance

- 3.8. The location and topographical layout of the basins is such that in an extreme rainfall event beyond the design event, the natural exceedance route is northwards towards the stream and away from

the built development. Indicative exceedance flow routes have been identified on Drawing No. M380/14 and M380/15 contained in **Appendix 5**. The detention basins are designed to attenuate water up to the 1:100 year rainfall event including a 40% allowance for climate change.

Surface Water Drainage Pollution and Water Quality

- 3.9. The matter of water quality has been reviewed across the three sub-catchments following the “simple indices approach” with the SuDS manual. The results, which are set out in **Appendix 6** show that for each sub-catchment incorporating a detention basin, the mitigation indices are equal to or greater than the hazard indices, therefore adequate treatment prevails within the SuDS proposals to prevent contamination of local watercourses without the need for further pollution control measures.
- 3.10. The typical elements that make up the treatment train are as follows:-
- Trapped gullies within all roads
 - Above ground detention basins
 - Wetland areas within basins
 - Above ground swale between basin and outfall to watercourse, and between basins.
- 3.11. The preference of EBC is for three stages of naturalised treatment which is achieved in the list above by ignoring the benefit of the trapped gullies. Each basin has been designed to have two stages of treatment comprising the basin itself and the wetland area before discharging via a swale into the stream. Therefore the preference of EBC as regards naturalised water quality is built into the design of basins and swales.

Maintenance

- 3.12. It is proposed that the surface water sewers within the development would be offered for adoption under Section 104 Agreement of the Water Industry Act 1991. The maintenance of the surface water sewers would therefore be the responsibility of the sewerage undertaker.
- 3.13. Under the Design and Construction Guidance, issued by Water UK in October 2019, which is to be read in conjunction with the Sewerage Sector Guidance published by the sewerage undertakers pursuant to the ‘Code for adoption agreements for water and sewerage companies operating wholly or mainly in England’ (the Code), SuDS components may be adoptable by the sewerage company. Icosa agrees with the interpretation that SuDS can be considered sewers, and are therefore adopting SuDS components (as of April 2020).
- 3.14. The SuDS components, comprising detention basins and swales, would therefore be maintained by a Sewerage Company. A 12-month functioning period would apply where the developer would be responsible for the maintenance of the SuDS components before handover to the Sewerage Company.
- 3.15. Guidance on the operation maintenance requirements of sustainable drainage systems is contained in the SuDS Manual. There are three categories of maintenance: regular, occasional and remedial actions.
- 3.16. Regular maintenance consists of basic task including litter and debris removal, grass cutting and vegetation management, and includes inspection and monitoring to identify potential system failures such as blockages, silt and sediment build-up, eroded or damaged areas, and condition of inlet and outlets.

- 3.17. Occasional maintenance comprises tasks that are likely to be required periodically for example sediment removal and vegetation removal.
- 3.18. Remedial maintenance comprises intermittent tasks directed by faults and would comprise inlet/outlet repairs, erosion repairs, and dealing with a spillage event.

Hampshire County Council Checklist

- 3.19. Hampshire County Council in its role as the Lead Local Flood Authority have produced a checklist to cross reference their requirements with any supporting documentation. A copy of the completed checklist is contained in **Appendix 7**.

4. FOUL DRAINAGE STRATEGY

Approved

- 4.1. The approved FRA at Section 5 advises that the foul drainage comprising a gravity network will discharge to nearby public sewer(s) subject of improvement and maintained by Southern Water. Further information on this proposal could be found in a Utilities Report completed by FMW Consultancy Ltd.
- 4.2. To deliver the strategy outlined in the FRA a Sewer Requisition under Section 98 of the Water Industry Act 1991 would be required. To that end, the applicant commissioned an initial sewer requisition enquiry from Southern Water. The enquiry response contained critical uncertainties in terms of long lead-in times, unknown costs and delivery of the sewer. Therefore a Sewer Requisition incorporating a point of connection to the existing public sewer is not a practical option and an alternative proposal has been considered.

Alternative

- 4.3. The alternative proposal for foul discharge is a gravity network draining to an on-site waste water treatment works (WWTW) operated and maintained by an Independent Sewerage Undertaker. The WWTW is to be located in the north-east corner of the site as shown on Drawing No. M380/11 enclosed in **Appendix 8**. The WWTW will treat the foul flows such that the quality of the effluent discharging to the stream meets the criteria set under a permit issued by the Environment Agency. An interim permit has been issued and set high standards for the effluent quality in excess of standard foul water quality discharge requirements.
- 4.4. The Independent Sewerage Undertaker has selected a treatment plant which follows the Nutrem process to satisfy the high standards within the interim permit. A summary of the Nutrem process appears in **Appendix 9**.
- 4.5. The Nutrem process has two outputs, effluent and sludge storage. The treated effluent discharges to the watercourse and is subject to regular testing to ensure the standards within the permit are being met. The sludge is transported off-site typically once a week in a sealed tanker.
- 4.6. Whilst the Nutrem process is essentially enclosed and closely controlled, to prevent potential odour emissions, a stand-off distance of 40m between the WWTW and any property has been implemented. The 40m stand-off distance is shown on Drg. no. M380/11.
- 4.7. Access to the WWTW is being considered both from the proposed development and the B3354 Winchester Road via an existing field access. The proposal to use the field access is subject to a separate Technical Note and Road Safety Audit Stage 1 (RSA1).
- 4.8. In the event of a power failure, resilience of the system to collect and treat the sewage produced at the site is provided by various design elements, monitoring and back-up systems.
- The network will be designed to hold the volume of sewerage typically produced by residents within 12-24hrs.
 - The treatment process operates on a batch basis so storage is also built into the treatment stage.
 - The undertaker will be notified of power failures by remote telemetry and process monitoring systems.
 - The on-site storage will provide the undertaker sufficient time to mobilise a response. This can include stand-by staff, a generator and/or mobile pumps.

- 4.9. The Nutrem process needs approximately 25m³ of sewage per day before it can operate effectively. That volume equates to approximately 6-7 dwellings at 6 x dry weather flow or 12-14 dwellings at 3 x dry weather flow. Until that volume is reached the applicant will make temporary provision using an oversized manhole on the gravity network as a storage vessel which can be emptied on a daily basis via a tanker to a licensed disposal facility offsite. The manhole can be located away from any occupied properties.
- 4.10. Further details regarding visual impact, noise, odour and ecology are covered in the updated Environmental Statement to which reference should be made.

Flood Risk

- 4.11. In terms of flood risk associated with the WWTW, it is to be located in the north-east corner of the development within Zone 1, thus satisfying the criteria of Condition 12. In terms of the effluent quantity and its impact on the stream, the EA as part of their interim permit, refer to their indicative modelling of the flows. Therefore, as part of their assessment process leading to the interim permit, the EA has taken account of the impact of the additional flows from the WWTW and not raised any concerns regarding an increase in flood risk.

5. CONCLUSIONS

- 5.1. This Flood Risk Assessment and Surface and Foul Water Update has been prepared by PFA Consulting for the Phase 1 of the proposed development and associated uses at land north west of Boorley Green subject to Outline Planning Consent Reference O/15/75953 and pursuant to Condition 12.
- 5.2. The Update relates to Phase 1 comprising 301 units and formed by Catchments A1, A2 and B. The other sub-catchments C to E form Phase 2 which is not part of this application.
- 5.3. This Update sets out how the original approved drainage strategy for the development at land north west of Boorley Green has evolved to support the Reserved Matters application for Phase 1. The Update does not purport to provide a full engineering technical submission typical of that required for Section 104 Agreement or similar. Such technical submissions will be made prior to the commencement of construction of each Phase.
- 5.4. The Flood Map for Planning published on the EA's website shows the whole of the built area within the application site boundary as being within Zone 1 which makes it appropriate for all land uses. Any Flood Zone 2 and 3 area associated with Moorgreen Stream does not impact on the built area and is offset from that built area by a buffer strip which material exceeds any Zone 2 and 3 designation.
- 5.5. The approved FRA advanced a SuDS strategy based on attenuation basins with a controlled discharge. That strategy has been maintained and advanced further to support Phase 1 comprising sub-catchments A1, A2, and B served by detention basins which are normally dry only filling at time of a storm.
- 5.6. The strategy uses an attenuation rate which does not exceed the greenfield runoff rate and thus there is no adverse impact on the flood flow rates and risk downstream.
- 5.7. The detention basins have been designed to provide sufficient hydraulic capacity to attenuate runoff up to the 1:100 year rainfall event including a 40% allowance for climate change. The detention basins have side slopes of 1:4 and three stages of naturalised treatment as preferred by EBC. The exceedance route is such that under an extreme event above the design standard, flows will naturally flow towards the stream and away from built development. The basins will be maintained by a management company and adequate provision for access is made.
- 5.8. An alternative foul water drainage strategy to that contained within the approved FRA has been advanced due to critical uncertainties (timescale, cost and delivery) in securing an adequate point of connection to the existing foul sewer network. The alternative strategy comprises an on-site waste water treatment works (WWTW) operated by an Independent Sewerage Undertaker under an Environment Agency permit which sets high standards for the effluent discharge to the stream. The WWTW will be managed by the undertaker and monitored 24/7 with resilience built in for such events as a local power cut. The WWTW can be located in Flood Zone1, appropriate for land uses.

- 5.9. In conclusion, the findings of the approved Flood Risk Assessment and Surface Water Drainage Strategy have been followed and expanded upon as required by Condition 12. The criteria under Condition 12 that all buildings and development shall lie within Flood Zone 1 have been upheld. The SuDS drainage strategy has been developed such that all detention basins within Phase 1 have the appropriate hydraulic capacity, side slopes of 1:4 and include three stages of naturalised treatment between the inlet and outlet for the purposes of water quality. Therefore in terms of surface water drainage, the requirements of Condition 12 have been met with Phase 1. In terms of foul drainage strategy, an alternative proposal comprising an onsite waste water treatment plant which will satisfy the high standards set by the Environment Agency is proposed.

Phase 1 Schedule of Accommodation: Private

Code	Housetype	No.
Block 3	1 Bed Flat @ ave. 602 sqft	2
Block 3	2 Bed Flat @ ave. 721 sqft	4
NY	2 Bed House @ 864 sqft	4
NY	2 Bed House @ 864 sqft	2
B	2 Bed House @ 873 sqft	11
B1	2 Bed House @ 873 sqft	10
N	2 Bed House @ 1045 sqft	28
N1	2 Bed House @ 1045 sqft	4
IG	3 Bed House @ 1110 sqft	3
C	3 Bed House @ 1063 sqft	17
D1	3 Bed House @ 1063 sqft	1
E	3 Bed House @ 1202 sqft	24
CR	4 Bed House @ 1308 sqft	23
A	4 Bed House @ 1308 sqft	15
R	4 Bed House @ 1407 sqft	17
R1	4 Bed House @ 1407 sqft	3
S	4 Bed House @ 1419 sqft	9
W	4 Bed House @ 1280 sqft	1
		196

Code	Housetype	No.
Block 31	1 Bed Flat @ ave. 602 sqft	2
Block 31	2 Bed Flat @ ave. 721 sqft	2
Block C	1 Bed Flat @ ave. 596 sqft	2
Block C	2 Bed Flat @ ave. 723 sqft	2
23F	2 Bed Flat @ 720 sqft	2
13M	1 Bed Maisonette @ 618/560 sqft	2
13M	2 Bed Maisonette @ 721/514 sqft	2
13MW	1 Bed Maisonette @ 700/587 sqft (1 x wheelchair)	2
23MW	2 Bed Maisonette @ 833/719 sqft (1 x wheelchair)	2
2	2 Bed House @ 879 sqft	26
2A	2 Bed House @ 879 sqft	3
3	3 Bed House @ 1019 sqft	20
3A	3 Bed House @ 1019 sqft	3
3T	3 Bed Townhouse @ 1178 sqft	18
4	4 Bed House @ 1160 sqft	2
4S	4 Bed House @ 1219 sqft	2
		106
TOTAL		301

KEY

- SITE BOUNDARY
- 1.8m LARCH LAP FENCE
- 1.8m CLOSE BOARD FENCE
- 1.8m BRICK SCREEN WALL
- 1.2m GARDEN RAILINGS OR 1.2m PICKET FENCE (SEE TO ENCLOSEMENT LAYOUT FOR DETAILS)
- 1.2m ESTATE RAILINGS
- 0.6m KNEE RAIL
- TURF TO GARDENS
- HARVEST REGULAR BLOCK PAVED SURFACE
- AUTUMN REGULAR BLOCK PAVED SURFACE
- PENNANT GREY REGULAR BLOCK PAVED SURFACE
- INDICATIVE TREE PLANTING
- EXISTING TREES TO BE RETAINED
- EXISTING TREES TO BE REMOVED
- EXISTING SHRUB PLANTING
- INDICATIVE SHRUB PLANTING
- GATE & PATHS
- PAIRS - NATURAL GRASS TO UDSR AFTER PATHS - BUFF GRASS TO BROOKSIDE & SUBURBAN AREA
- DOOR AND PATIO TO REAR ACCESS
- DOOR/LEVEL THRESHOLD AND PATH IN CONCRETE SLABS
- PERSONNEL DOOR TO GARAGE
- ACTIVE FRONTAGE / ADDITIONAL WINDOW
- EXISTING FOOTPATH TO BE RETAINED
- PRIVATE UNIT
- AFFORDABLE UNITS
- BUILDING TO BE REMOVED
- SHED FOR CYCLE STORAGE

Rev. Date Description Drawn Checked

Client: [Redacted]

Project: Land to the north west of Boorley Green, Botley, Southampton.

Drawing Title: Planning Layout Sheet 1 of 5

Scale: 1:500 @ A0

Date: January 2017

Org/Ref: 1388.01

Drawn: DGP

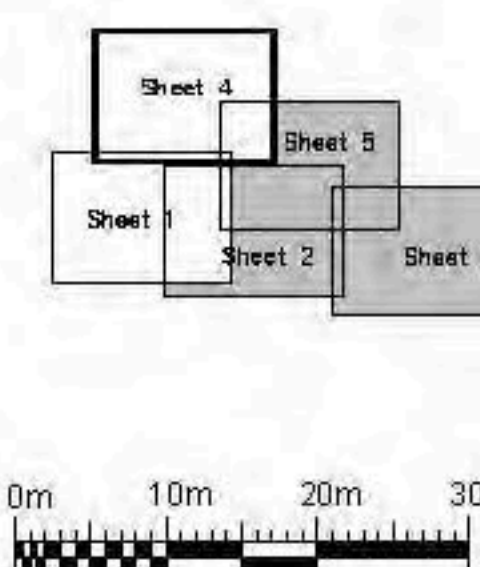
Checked: AAP

File: P1388 Layout

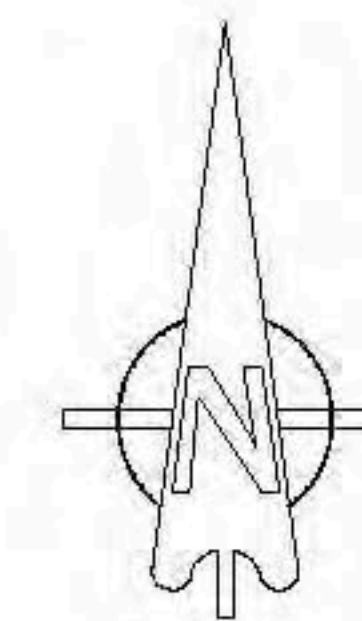
Rev. PLANNING

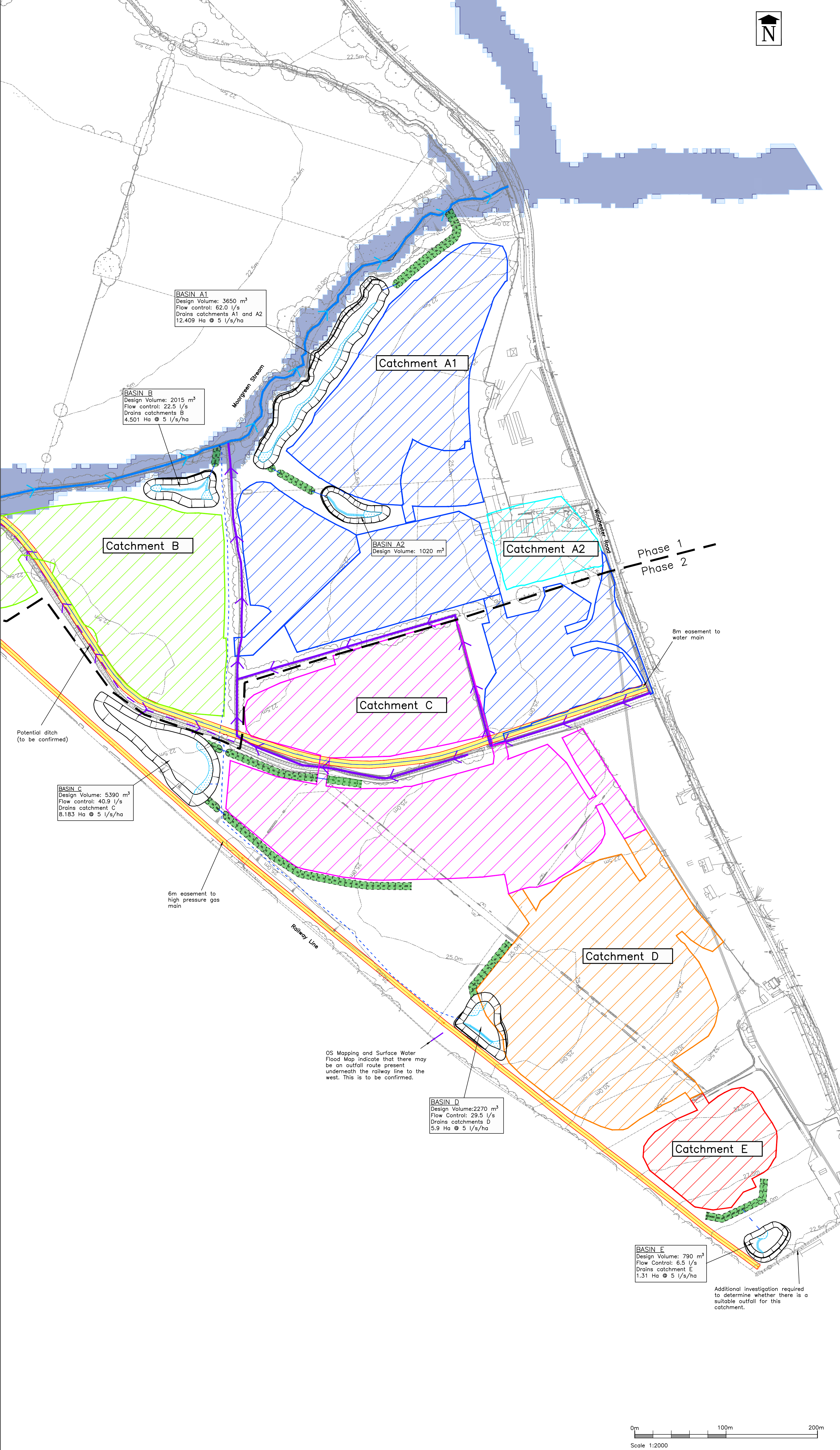
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	SITE BOUNDARY
	1.8m LARCH LAP FENCE
	1.8m CLOSE BOARD FENCE
	1.8m BRICK BOREEN WALL
	1.2m GARDEN RAILING OR 1.2m PICKET FENCE (REFER TO HOUSING LAYOUT FOR DETAILS)
	0.9m B&B RAILING
	0.9m KNEE RAIL
	TURF TO GARDENS
	HARVEST TEGULAR BLOCK PAVED SURFACE
	AUTUMN TEGULAR BLOCK PAVED SURFACE
	PENNAHT GREY TEGULAR BLOCK PAVED SURFACE
	INDICATIVE TREE PLANTING
	EXISTING TREES TO BE RETAINED
	EXISTING TREES TO BE REMOVED
	EXISTING SHRUB PLANTING
	INDICATIVE SHRUB PLANTING
	GATE & PATHS Paths - Natural Access to Urban areas Paths - Ruff Access to Brookes & Suburban areas
	DOOR AND PATIO TO REAR ACCESS
	DOOR/LEVEL THRESHOLD AND PATH IN CONCRETE SLAB
	PERSONNEL DOOR TO GARAGE
	ACTIVE FRONTAGE / ADDITIONAL WINDOW
	EXISTING FOOTPATH TO BE RETAINED
	PRIVATE UNITS
	AFFORDABLE UNITS
	BUILDING TO BE REMOVED
	SHED FOR CYCLE STORAGE



Phase 1 Schedule of Accommodation		
Private		
Code	Housetype	No
Block B	1 Bed Flat @ ave. 602 sqt	2
Block B	2 Bed Flat @ ave. 721 sqt	2
M.Y	2 Bed House @ 864 sqt	4
M.V	2 Bed House @ 864 sqt	2
B	2 Bed House @ 873 sqt	11
B1	2 Bed House @ 873 sqt	10
B2	2 Bed House @ 1045 sqt	11
M1	3 Bed House @ 1065 sqt	2
IG	3 Bed House @ 1100 sqt	2
D	3 Bed House @ 1043 sqt	17
D1	3 Bed House @ 1063 sqt	17
Edie	3 Bed House @ 1202 sqt	2
DR	4 Bed House @ 1309 sqt	23
C	4 Bed House @ 1398 sqt	15
A	4 Bed House @ 1523 sqt	17
R	4 Bed House @ 1407 sqt	17
Ridgeway	4 Bed House @ 1407 sqt	1
S	4 Bed House @ 1419 sqt	9
W	4 Bed House @ 1290 sqt	1
		186
Affordable		
Code	Housetype	No
Block B1	1 Bed Flat @ ave. 602 sqt	2
Block B1	2 Bed Flat @ ave. 721 sqt	2
Block C	2 Bed House @ ave. 868 sqt	4
Block C	2 Bed House @ ave. 723 sqt	2
2BF	2 Bed Flat @ 720 sqt	2
1BM	1 Bed Maisonette @ 818/500 sqt	2
2EM	2 Bed Maisonette @ 721/814 sqt	2
1EMV	1 Bed Maisonette @ 700/587 sqt (1 x wheelchair)	2
2	2 Bed Maisonette @ 832/715 sqt (1 x wheelchair)	2
2A	2 Bed House @ 878 sqt	26
3	3 Bed House @ 1019 sqt	20
3A	3 Bed House @ 1019 sqt	8
3B	3 Bed House @ 1179 sqt	3
4	4 Bed House @ 1180 sqt	2
4S	4 Bed House @ 1219 sqt	1
		105
TOTAL		305





Stratton Park House, Wanborough Road
Swindon, SN3 4HG

Telephone
01793 828000

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.

- NOTES**
1. Ponds, wetland areas, swales and pipes subject to detailed design
 2. Drainage Strategy based on FMW Flood Risk Assessment and Drainage Strategy, Project No. FMW1467F, and FMW Indicative Surface Water Drainage Strategy, Drawing No. FMW1467F SK03
 3. This drawing is based on Anthony Brookes Topographical Survey Drawing no. A258/7834/1
 4. Services easements are based on FMW Affected Utilities Plan, Drawing No. FMW1467U SK01 Revision A, dated 04/09/14 and Gas Main and Water Main Survey, Drawing No. 18031-1250-002, dated July 2017.
 5. Layout is based on AAP Architects Appraisal Layout, Drawing No. P1388.APP.01
 6. Developed is split into two phases. Phase 1 comprises Catchments A1, A2 and B. Phase 2 comprises Catchments C, D and E.

- KEY**
- Watercourse/assumed watercourse
 - Main River
 - Proposed Surface Water Drainage Catchment
 - Proposed Attenuation Feature
 - Proposed Surface Water Sewer
 - Proposed Swale
 - Indicative wetland areas within basins
 - Easement for services
 - Flood Zone 2 Extents
 - Flood Zone 3 Extents

Rev	Date	Description	Drawn	Check
#	27.04.17	First Issue	JB	CI
A	28.04.17	Added water main easement, moved swale	JB	MWS
B	08.05.17	Amended Basin D, updated Layout	JB	DRB
C	23.05.17	Updated basins A1, A2, B, Added flood ext., changed title to include SW	JB	DRB
D	04.08.17	Added wetland areas within ponds	AF	DRB
E	18.08.17	Ponds changed to 1:4, wetlands, swales and low flow channels added/amended	JB	DRB
F	31.08.17	Headwall updated	BF	CI
G	22.09.17	Attenuation details added. Phase 1 and 2 boundary added.	BF	CI

Status
FOR PLANNING

Client
**millermhomes
gleeson**

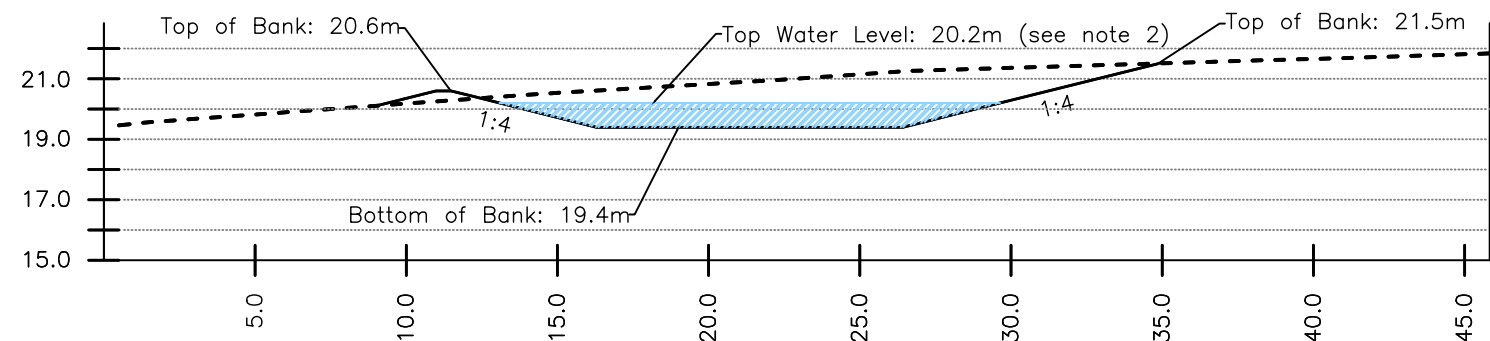
Project
**Winchester Road
Hedge End
Southampton**

Drawing Title
**Indicative Surface Water
Drainage Strategy**

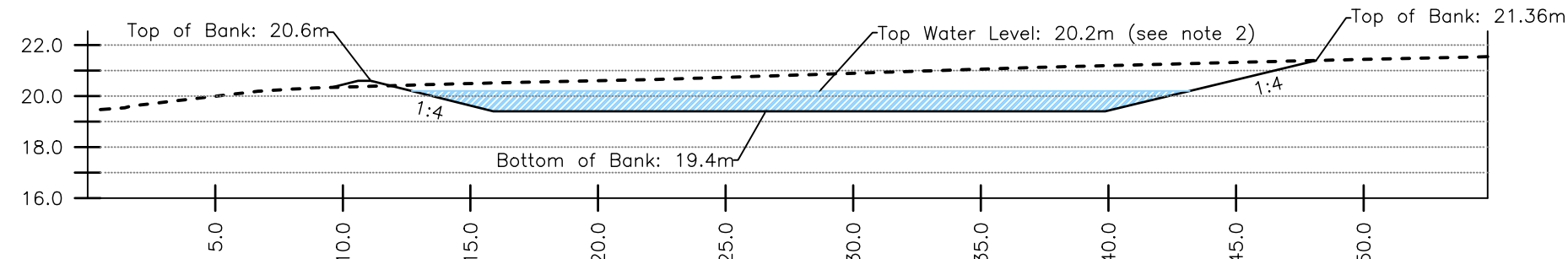
Drawing No. **M380/2** Rev G

Date: April 2017 Scale: 1:2000 @ A1

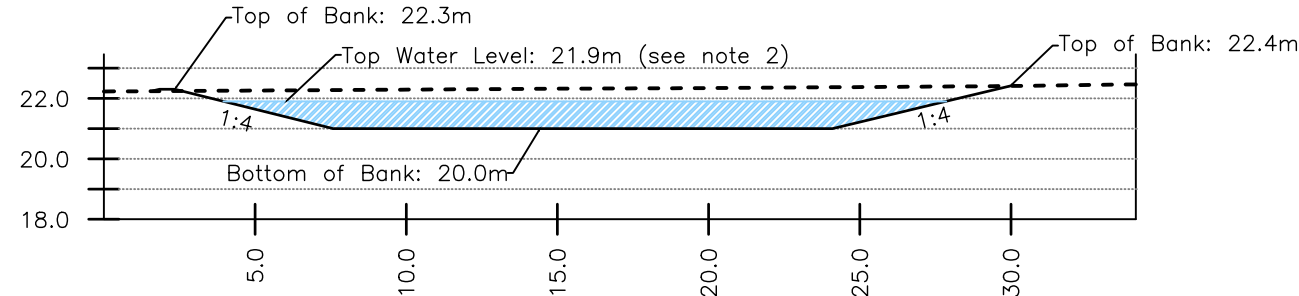
E-Mail: cisherwood@pfapl.com



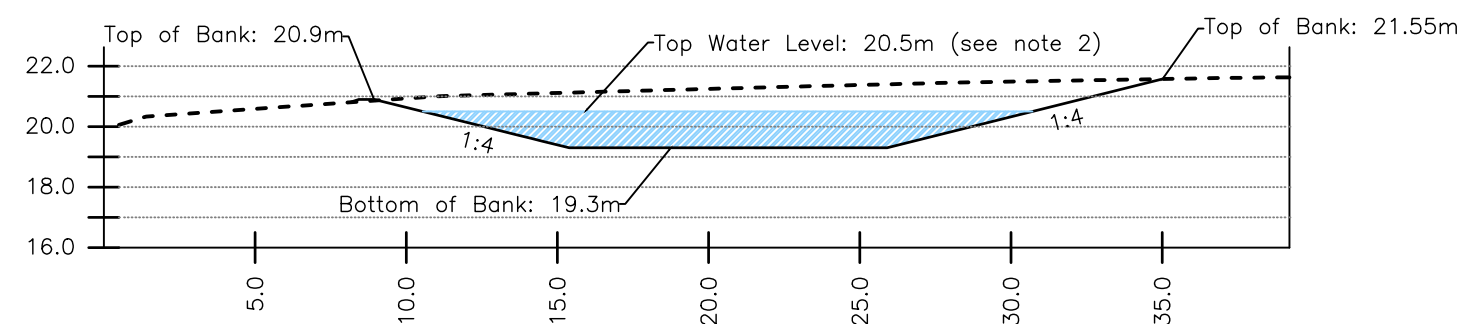
Basin A1 – Section A



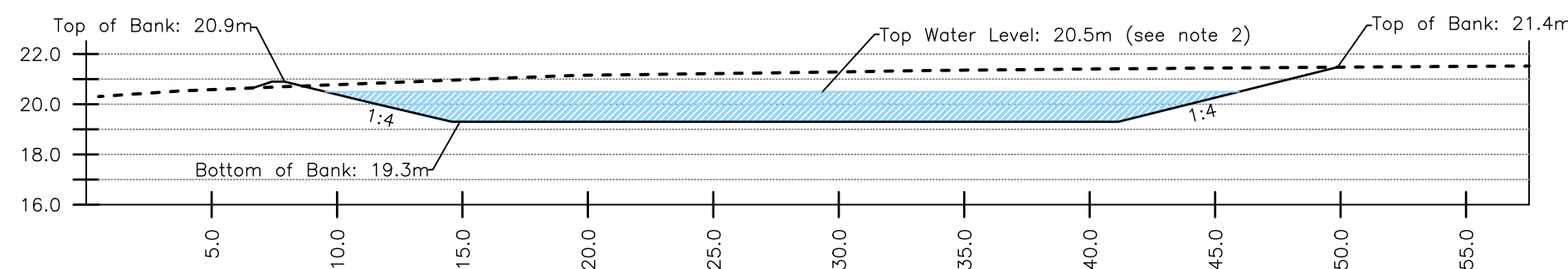
Basin A1 – Section B



Basin A2 – Section C

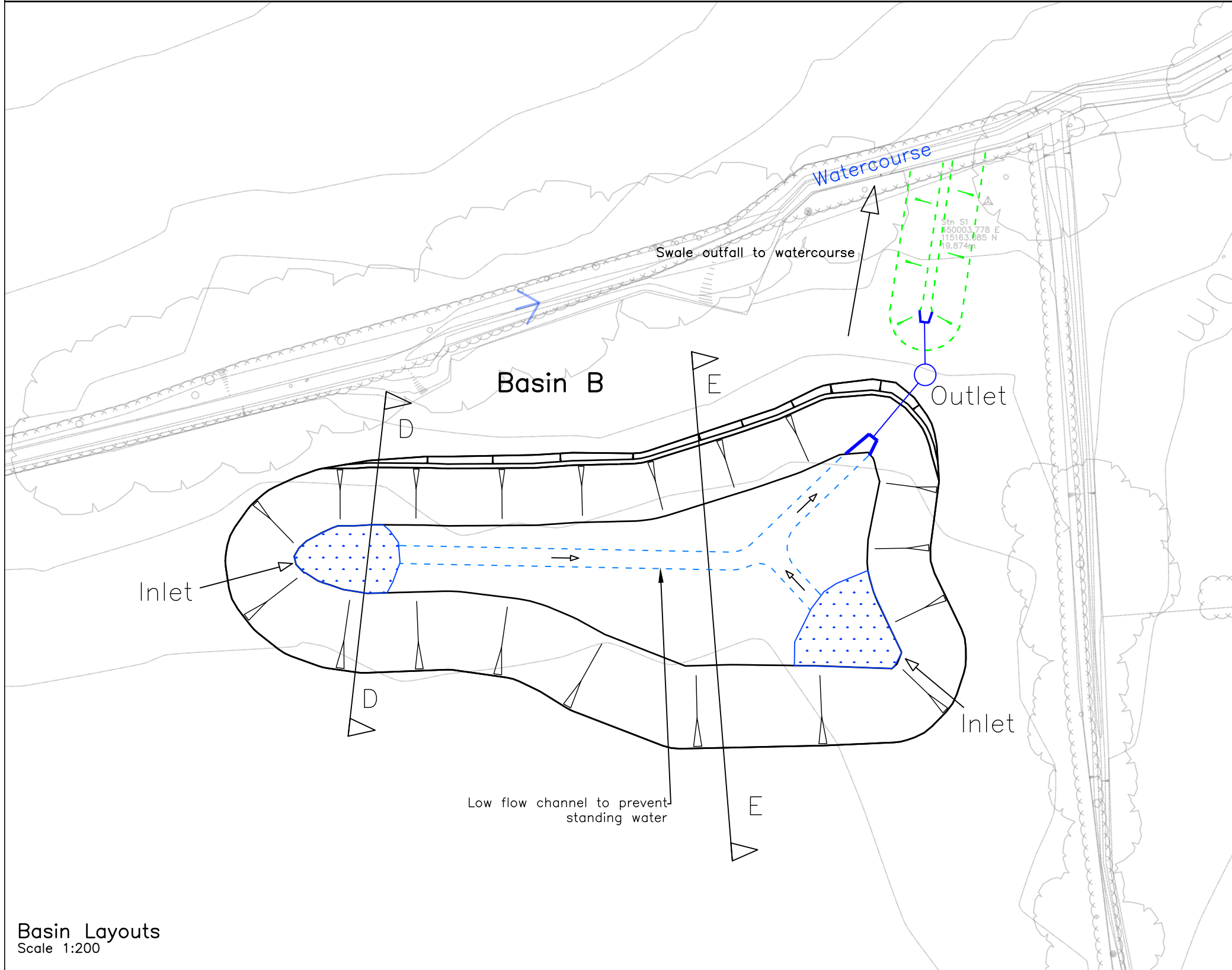


Basin B – Section D

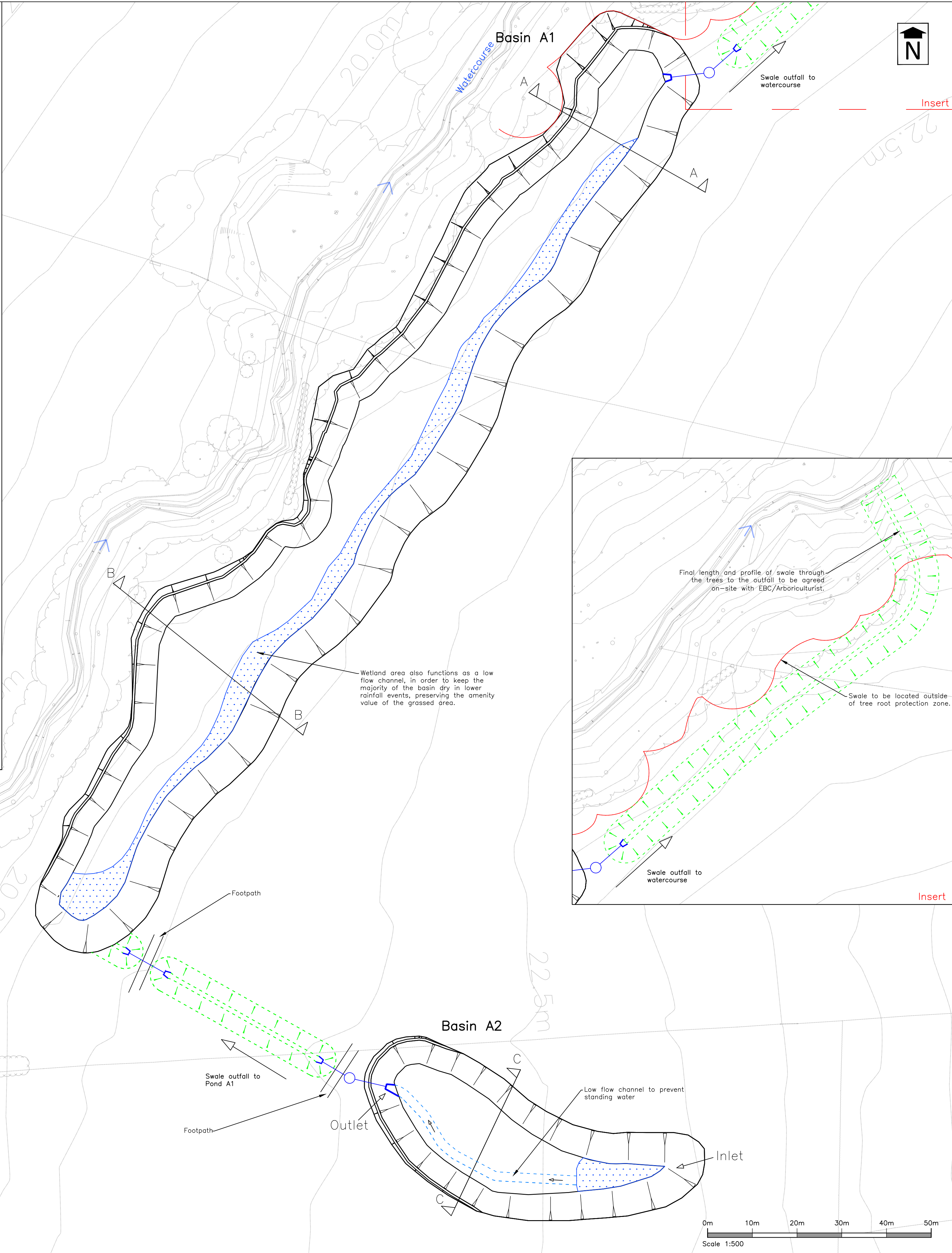


Basin B – Section E

Sections
Scale 1:250



Basin Layouts
Scale 1:200



Insert



Stratton Park House, Wanborough Road
Swindon, SN3 4HG

Telephone
01793 828000

Website
www.pfapl.com

NOTES

- To be read in conjunction with Drawing Number M380/2, Indicative Surface Water Drainage Strategy.
- Top Water Level based on 1 in 100 year rainfall event, + 40% allowance for climate change.
- Location/design of Swales, Low Flow Channels and Wetland areas and surface water sewers are indicative, as per Drawing M380/2 Rev F, and subject to detailed design.
- Landscaping of basins, wetlands and swales subject to detailed design.

KEY

- Indicative Wetlands Area
- Swale
- SW Sewer

Rev	Date	Description	Drawn	Check
#	24/08/17	First Issue.	AF	CI
A	29/08/17	Revised for FRA update.	JB	CI
B	22/09/17	Outfall swale relocated away from tree Root Protection Zones. Swale on the upstream of Basin A1 updated.	BF	CI

Status

FOR INFORMATION

Client

mill

erhomes

Project

Boorley Gardens
Winchester Road
Hedge End

Drawing Title

Surface Water Detention
Basins - Phase 1

Drawing No.

M380/12

Rev B

Date: August 2017
Scale: As shown @ A1
E-Mail: cisherwood@pfapl.com

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

- Indicates pipe length does not match coordinates

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	12.927	0.128	100.9	0.019	5.00	0.0	0.600		o	150	Pipe/Conduit	
S1.001	40.222	0.890	45.2	0.064	0.00	0.0	0.600		o	150	Pipe/Conduit	
S1.002	27.695	0.394	70.3	0.038	0.00	0.0	0.600		o	225	Pipe/Conduit	
S2.000	20.425	0.407	50.2	0.045	5.00	0.0	0.600		o	150	Pipe/Conduit	
S2.001	17.669	0.399	44.3	0.023	0.00	0.0	0.600		o	150	Pipe/Conduit	
S3.000	10.461	0.260	40.2	0.025	5.00	0.0	0.600		o	150	Pipe/Conduit	
S2.002	10.408	0.098	106.4	0.013	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.003	6.804	0.066	103.1	0.009	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.004	67.289	1.376	48.9	0.072	0.00	0.0	0.600		o	300	Pipe/Conduit	
S4.000	16.020	0.170	94.1	0.053	5.00	0.0	0.600		o	150	Pipe/Conduit	
S5.000	8.876	0.133	66.5	0.063	5.00	0.0	0.600		o	150	Pipe/Conduit	
S4.001	7.401	0.044	167.9	0.003	0.00	0.0	0.600		o	225	Pipe/Conduit	
S4.002	67.964	0.901	75.4	0.115	0.00	0.0	0.600		o	300	Pipe/Conduit	
S6.000	11.505	0.091	126.5	0.132	5.00	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)
S1.000	82.96	5.22	26.135	0.019	0.0	0.0	0.0	1.00	17.7	4.3
S1.001	80.17	5.66	26.007	0.084	0.0	0.0	0.0	1.50	26.5	18.2
S1.002	78.44	5.96	25.042	0.122	0.0	0.0	0.0	1.56	62.1	25.9
S2.000	82.80	5.24	25.627	0.045	0.0	0.0	0.0	1.42	25.1	10.1
S2.001	81.57	5.43	25.220	0.068	0.0	0.0	0.0	1.52	26.8	15.1
S3.000	83.65	5.11	25.081	0.025	0.0	0.0	0.0	1.59	28.1	5.6
S2.002	80.72	5.57	24.746	0.106	0.0	0.0	0.0	1.27	50.4	23.2
S1.003	78.03	6.03	24.573	0.237	0.0	0.0	0.0	1.55	109.4	50.1
S1.004	75.35	6.53	24.507	0.309	0.0	0.0	0.0	2.25	159.3	63.0
S4.000	82.68	5.26	24.537	0.053	0.0	0.0	0.0	1.04	18.3	12.0
S5.000	83.58	5.12	24.500	0.063	0.0	0.0	0.0	1.23	21.8	14.2
S4.001	81.90	5.38	24.292	0.119	0.0	0.0	0.0	1.01	40.0	26.4
S4.002	78.17	6.01	24.173	0.234	0.0	0.0	0.0	1.81	128.1	49.6
S6.000	83.28	5.17	23.438	0.132	0.0	0.0	0.0	1.16	46.2	29.9

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S4.003	45.062	0.141	319.6	0.153	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.005	23.574	0.150	157.2	0.018	0.00	0.0	0.600		o	525	Pipe/Conduit	
S7.000	22.042	0.167	131.9	0.090	5.00	0.0	0.600		o	225	Pipe/Conduit	
S7.001	8.407	0.050	167.9	0.049	0.00	0.0	0.600		o	225	Pipe/Conduit	
S7.002	6.341	0.065	96.9	0.007	0.00	0.0	0.600		o	225	Pipe/Conduit	
S7.003	42.814	0.177	241.9	0.099	0.00	0.0	0.600		o	450	Pipe/Conduit	
S7.004	5.774	0.043	134.3	0.017	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.006	39.648	0.095	417.3	0.116	0.00	0.0	0.600		o	800	Pipe/Conduit	
S8.000	63.287	1.244	50.9	0.315	5.00	0.0	0.600		o	300	Pipe/Conduit	
S1.007	42.592	0.135	316.2	0.022	0.00	0.0	0.600		o	800	Pipe/Conduit	
S9.000	36.914	1.279	28.9	0.160	5.00	0.0	0.600		o	225	Pipe/Conduit	
S9.001	7.842	0.319	24.6	0.033	0.00	0.0	0.600		o	225	Pipe/Conduit	
S9.002	1.803	0.052	34.5	0.003	0.00	0.0	0.600		o	225	Pipe/Conduit	
S9.003	8.476	0.466	18.2	0.007	0.00	0.0	0.600		o	225	Pipe/Conduit	
S9.004	15.989	0.641	24.9	0.057	0.00	0.0	0.600		o	225	Pipe/Conduit	
S9.005	4.169	0.110	37.9	0.011	0.00	0.0	0.600		o	300	Pipe/Conduit	
S9.006	50.456	1.393	36.2	0.033	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.008	52.162	0.179	291.1	0.033	0.00	0.0	0.600		o	800	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)
S4.003	74.63	6.67	23.122	0.520	0.0	0.0	0.0	1.13	180.0	105.1
S1.005	73.54	6.89	22.906	0.846	0.0	0.0	0.0	1.78	386.2	168.5
S7.000	82.26	5.32	23.559	0.090	0.0	0.0	0.0	1.14	45.2	20.0
S7.001	81.39	5.46	23.392	0.139	0.0	0.0	0.0	1.01	40.0	30.5
S7.002	80.90	5.54	23.342	0.145	0.0	0.0	0.0	1.33	52.8	31.8
S7.003	77.70	6.09	23.051	0.244	0.0	0.0	0.0	1.30	207.2	51.4
S7.004	77.40	6.14	22.874	0.262	0.0	0.0	0.0	1.75	278.7	54.8
S1.006	71.35	7.35	22.756	1.224	0.0	0.0	0.0	1.42	713.5	236.5
S8.000	81.29	5.48	24.405	0.315	0.0	0.0	0.0	2.21	156.2	69.4
S1.007	69.44	7.79	22.661	1.561	0.0	0.0	0.0	1.63	820.7	293.6
S9.000	82.72	5.25	27.362	0.160	0.0	0.0	0.0	2.44	97.2	35.8
S9.001	82.40	5.30	26.082	0.193	0.0	0.0	0.0	2.65	105.3	43.0
S9.002	82.32	5.31	25.764	0.195	0.0	0.0	0.0	2.23	88.9	43.6
S9.003	82.03	5.36	25.712	0.203	0.0	0.0	0.0	3.08	122.6	45.0
S9.004	81.39	5.46	25.246	0.260	0.0	0.0	0.0	2.63	104.6	57.2
S9.005	81.22	5.49	24.530	0.271	0.0	0.0	0.0	2.56	181.1	59.6
S9.006	79.30	5.81	24.420	0.304	0.0	0.0	0.0	2.62	185.3	65.4
S1.008	67.35	8.30	22.526	1.898	0.0	0.0	0.0	1.70	855.5	346.2

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S10.000	8.554	0.144	59.3	0.034	5.00	0.0	0.600		o	150	Pipe/Conduit	
S10.001	6.880	0.174	39.6	0.025	0.00	0.0	0.600		o	150	Pipe/Conduit	
S10.002	40.316	2.320	17.4	0.125	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.009	6.683	0.013	514.1	0.135	0.00	0.0	0.600		o	900	Pipe/Conduit	
S1.010	8.252	0.017	500.0	0.014	0.00	0.0	0.600		o	900	Pipe/Conduit	
S1.011	8.475	0.017	500.0	0.011	0.00	0.0	0.600		o	900	Pipe/Conduit	
S1.012	8.254	0.017	500.0	0.020	0.00	0.0	0.600		o	900	Pipe/Conduit	
S1.013	8.000	0.016	500.0	0.016	0.00	0.0	0.600		o	900	Pipe/Conduit	
S1.014	49.666	0.839	59.2	0.010	0.00	0.0	0.600		o	900	Pipe/Conduit	
S1.015	20.412	0.041	500.0	0.184	0.00	0.0	0.600		o	900	Pipe/Conduit	
S11.000	12.582	0.125	100.9	0.028	5.00	0.0	0.600		o	150	Pipe/Conduit	
S11.001	13.006	0.401	32.4	0.086	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.016	25.070#	0.150	167.1	0.005	0.00	0.0	0.600		o	900	Pipe/Conduit	
S1.017	10.176	0.100	101.8	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.018	7.577	0.080	94.7	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.019	40.502	0.081	500.0	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	
S1.020	9.086	0.050	181.7	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.021	3.620#	0.012	301.7	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	
S12.000	34.361	0.615	55.9	0.109	5.00	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)
S10.000	83.65	5.11	25.635	0.034	0.0	0.0	0.0	1.31	23.1	7.7
S10.001	83.18	5.18	25.491	0.059	0.0	0.0	0.0	1.60	28.3	13.3
S10.002	81.82	5.39	25.242	0.184	0.0	0.0	0.0	3.15	125.4	40.7
S1.009	67.03	8.38	22.247	2.217	0.0	0.0	0.0	1.37	874.7	402.4
S1.010	66.64	8.48	22.234	2.231	0.0	0.0	0.0	1.39	887.1	402.6
S1.011	66.26	8.58	22.217	2.241	0.0	0.0	0.0	1.39	887.1	402.6
S1.012	65.88	8.68	22.201	2.261	0.0	0.0	0.0	1.39	887.1	403.5
S1.013	65.53	8.78	22.184	2.277	0.0	0.0	0.0	1.39	887.1	404.1
S1.014	64.79	8.98	22.168	2.287	0.0	0.0	0.0	4.08	2593.1	404.1
S1.015	63.92	9.22	21.329	2.471	0.0	0.0	0.0	1.39	887.1	427.7
S11.000	82.99	5.21	22.564	0.028	0.0	0.0	0.0	1.00	17.7	6.3
S11.001	82.39	5.30	22.364	0.114	0.0	0.0	0.0	2.31	91.7	25.5
S1.016	63.33	9.40	21.288	2.589	0.0	0.0	0.0	2.42	1540.2	444.1
S1.017	62.96	9.50	21.000	2.589	0.0	0.0	0.0	1.56	110.2«	444.1
S1.018	62.69	9.58	20.900	2.589	0.0	0.0	0.0	1.62	114.2«	444.1
S1.019	53.39	12.96	20.820	2.589	0.0	0.0	0.0	0.20	22.5«	444.1
S1.020	53.09	13.09	20.739	2.589	0.0	0.0	0.0	1.16	82.2«	444.1
S1.021	52.57	13.33	20.689	2.589	0.0	0.0	0.0	0.26	28.9«	444.1
S12.000	82.24	5.33	22.304	0.109	0.0	0.0	0.0	1.75	69.7	24.2

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S13.000	14.433	0.143	100.9	0.043	5.00	0.0	0.600		o	150	Pipe/Conduit	
S12.001	18.287	0.219	83.4	0.025	0.00	0.0	0.600		o	225	Pipe/Conduit	
S12.002	12.086	0.304	39.8	0.019	0.00	0.0	0.600		o	225	Pipe/Conduit	
S12.003	10.867	0.267	40.7	0.033	0.00	0.0	0.600		o	225	Pipe/Conduit	
S12.004	39.628	0.960	41.3	0.060	0.00	0.0	0.600		o	225	Pipe/Conduit	
S12.005	14.440#	0.363	39.8	0.130	0.00	0.0	0.600		o	300	Pipe/Conduit	
S14.000	26.930	0.267	100.9	0.007	5.00	0.0	0.600		o	150	Pipe/Conduit	
S14.001	20.549	0.122	168.4	0.088	0.00	0.0	0.600		o	225	Pipe/Conduit	
S14.002	10.052	0.060	167.5	0.009	0.00	0.0	0.600		o	225	Pipe/Conduit	
S14.003	38.528	0.230	167.5	0.057	0.00	0.0	0.600		o	225	Pipe/Conduit	
S15.000	29.948	0.297	100.9	0.070	5.00	0.0	0.600		o	150	Pipe/Conduit	
S16.000	9.236	0.463	20.0	0.041	5.00	0.0	0.600		o	150	Pipe/Conduit	
S15.001	44.772	0.755	59.3	0.076	0.00	0.0	0.600		o	225	Pipe/Conduit	
S17.000	12.264	0.122	100.9	0.046	5.00	0.0	0.600		o	150	Pipe/Conduit	
S15.002	26.068	0.108	241.4	0.026	0.00	0.0	0.600		o	375	Pipe/Conduit	
S15.003	14.200	0.044	321.9	0.042	0.00	0.0	0.600		o	375	Pipe/Conduit	
S15.004	18.554	0.058	321.9	0.039	0.00	0.0	0.600		o	375	Pipe/Conduit	
S15.005	10.410	0.032	321.9	0.016	0.00	0.0	0.600		o	375	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)
S13.000	82.79	5.24	21.907	0.043	0.0	0.0	0.0	1.00	17.7	9.7
S12.001	80.91	5.54	21.689	0.177	0.0	0.0	0.0	1.43	57.0	38.8
S12.002	80.32	5.64	21.469	0.196	0.0	0.0	0.0	2.08	82.7	42.6
S12.003	79.80	5.72	21.166	0.229	0.0	0.0	0.0	2.06	81.8	49.5
S12.004	77.94	6.05	20.899	0.289	0.0	0.0	0.0	2.04	81.2	61.0
S12.005	77.40	6.14	19.863	0.419	0.0	0.0	0.0	2.50	176.8	87.8
S14.000	81.47	5.45	21.063	0.007	0.0	0.0	0.0	1.00	17.7	1.6
S14.001	79.41	5.79	20.746	0.095	0.0	0.0	0.0	1.00	39.9	20.4
S14.002	78.45	5.96	20.624	0.104	0.0	0.0	0.0	1.01	40.1	22.1
S14.003	75.02	6.59	20.564	0.162	0.0	0.0	0.0	1.01	40.1	32.8
S15.000	81.16	5.50	22.393	0.070	0.0	0.0	0.0	1.00	17.7	15.3
S16.000	83.93	5.07	22.559	0.041	0.0	0.0	0.0	2.26	40.0	9.2
S15.001	78.56	5.94	22.021	0.186	0.0	0.0	0.0	1.70	67.6	39.6
S17.000	83.03	5.20	21.463	0.046	0.0	0.0	0.0	1.00	17.7	10.3
S15.002	76.49	6.31	21.117	0.258	0.0	0.0	0.0	1.16	128.3	53.4
S15.003	75.25	6.55	21.009	0.300	0.0	0.0	0.0	1.00	110.9	61.1
S15.004	73.70	6.86	20.965	0.339	0.0	0.0	0.0	1.00	110.9	67.6
S15.005	72.87	7.03	20.907	0.355	0.0	0.0	0.0	1.00	110.9	70.1

PFA Consulting		Page 5
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S15.006	20.817	0.065	321.9	0.019	0.00	0.0	0.600		o	375	Pipe/Conduit	
S18.000	20.953	0.342	61.2	0.086	5.00	0.0	0.600		o	150	Pipe/Conduit	
S18.001	7.031	0.294	23.9	0.009	0.00	0.0	0.600		o	225	Pipe/Conduit	
S15.007	11.915	0.037	321.9	0.012	0.00	0.0	0.600		o	375	Pipe/Conduit	
S15.008	46.478	0.318	146.2	0.175	0.00	0.0	0.600		o	375	Pipe/Conduit	
S15.009	7.320	0.341	21.4	0.006	0.00	0.0	0.600		o	375	Pipe/Conduit	
S19.000	18.630	0.263	71.0	0.045	5.00	0.0	0.600		o	150	Pipe/Conduit	
S19.001	21.942	1.064	20.6	0.030	0.00	0.0	0.600		o	150	Pipe/Conduit	
S20.000	12.132	0.120	100.9	0.059	5.00	0.0	0.600		o	150	Pipe/Conduit	
S20.001	20.493	0.122	168.4	0.034	0.00	0.0	0.600		o	225	Pipe/Conduit	
S19.002	71.834	0.574	125.1	0.110	0.00	0.0	0.600		o	300	Pipe/Conduit	
S14.004	34.492	0.078	442.2	0.159	0.00	0.0	0.600		o	525	Pipe/Conduit	
S14.005	12.517	0.028	447.0	0.026	0.00	0.0	0.600		o	525	Pipe/Conduit	
S14.006	14.415	0.029	497.1	0.038	0.00	0.0	0.600		o	525	Pipe/Conduit	
S21.000	11.024	0.080	137.8	0.019	5.00	0.0	0.600		o	225	Pipe/Conduit	
S22.000	9.669	0.096	100.7	0.053	5.00	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)
S15.006	71.26	7.37	20.875	0.374	0.0	0.0	0.0	1.00	110.9	72.2
S18.000	82.59	5.27	21.671	0.086	0.0	0.0	0.0	1.29	22.8	19.3
S18.001	82.32	5.31	21.254	0.096	0.0	0.0	0.0	2.69	106.8	21.3
S15.007	70.38	7.57	20.810	0.482	0.0	0.0	0.0	1.00	110.9	91.9
S15.008	68.19	8.09	20.773	0.657	0.0	0.0	0.0	1.50	165.3	121.3
S15.009	68.07	8.12	20.455	0.663	0.0	0.0	0.0	3.93	433.9	122.2
S19.000	82.67	5.26	22.310	0.045	0.0	0.0	0.0	1.20	21.1	10.1
S19.001	81.63	5.42	22.047	0.075	0.0	0.0	0.0	2.23	39.4	16.7
S20.000	83.04	5.20	21.225	0.059	0.0	0.0	0.0	1.00	17.7	13.2
S20.001	80.90	5.54	21.030	0.092	0.0	0.0	0.0	1.00	39.9	20.3
S19.002	76.05	6.39	20.833	0.278	0.0	0.0	0.0	1.40	99.3	57.3
S14.004	65.95	8.66	20.034	1.262	0.0	0.0	0.0	1.06	229.2	225.4
S14.005	65.21	8.86	19.956	1.288	0.0	0.0	0.0	1.05	227.9	227.5
S14.006	64.35	9.10	19.928	1.326	0.0	0.0	0.0	1.00	216.0	231.2
S21.000	83.28	5.17	20.051	0.019	0.0	0.0	0.0	1.11	44.2	4.4
S22.000	83.31	5.16	20.117	0.053	0.0	0.0	0.0	1.00	17.7	12.0

PFA Consulting		Page 6
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S21.001	12.117	0.072	168.3	0.025	0.00	0.0	0.600		o	225	Pipe/Conduit	
S21.002	21.954	0.150	146.4	0.054	0.00	0.0	0.600		o	225	Pipe/Conduit	
S14.007	19.439	0.039	498.4	0.018	0.00	0.0	0.600		o	675	Pipe/Conduit	
S14.008	14.965	0.030	498.8	0.021	0.00	0.0	0.600		o	675	Pipe/Conduit	
S14.009	22.269	0.045	494.9	0.089	0.00	0.0	0.600		o	675	Pipe/Conduit	
S14.010	47.812	0.096	498.0	0.000	0.00	0.0	0.600		o	675	Pipe/Conduit	
S23.000	31.242	0.185	168.9	0.047	5.00	0.0	0.600		o	225	Pipe/Conduit	
S14.011	10.500#	0.021	500.0	0.000	0.00	0.0	0.600		o	675	Pipe/Conduit	
S24.000	41.944	1.035	40.5	0.101	5.00	0.0	0.600		o	225	Pipe/Conduit	
S24.001	5.751	0.211	27.3	0.008	0.00	0.0	0.600		o	225	Pipe/Conduit	
S24.002	25.866	0.391	66.2	0.067	0.00	0.0	0.600		o	225	Pipe/Conduit	
S24.003	14.989	0.299	50.1	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S24.004	28.717	0.553	51.9	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S25.000	12.749	0.126	100.9	0.033	5.00	0.0	0.600		o	150	Pipe/Conduit	
S24.005	36.855	0.244	151.0	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S24.006	8.478	0.035	241.9	0.069	0.00	0.0	0.600		o	300	Pipe/Conduit	
S26.000	22.715	0.225	100.9	0.038	5.00	0.0	0.600		o	150	Pipe/Conduit	
S26.001	24.828	0.246	100.9	0.042	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)
S21.001	81.99	5.37	19.971	0.097	0.0	0.0	0.0	1.00	40.0	21.6
S21.002	79.91	5.71	19.899	0.151	0.0	0.0	0.0	1.08	42.9	32.8
S14.007	63.38	9.38	19.749	1.495	0.0	0.0	0.0	1.17	417.6	256.7
S14.008	62.66	9.59	19.710	1.516	0.0	0.0	0.0	1.17	417.5	257.3
S14.009	61.62	9.91	19.680	1.605	0.0	0.0	0.0	1.17	419.2	267.9
S14.010	59.53	10.59	19.635	1.605	0.0	0.0	0.0	1.17	417.8	267.9
S23.000	81.04	5.52	19.724	0.047	0.0	0.0	0.0	1.00	39.9	10.3
S14.011	59.09	10.74	19.539	1.652	0.0	0.0	0.0	1.17	417.0	267.9
S24.000	82.16	5.34	22.990	0.101	0.0	0.0	0.0	2.06	81.9	22.4
S24.001	81.92	5.38	21.955	0.109	0.0	0.0	0.0	2.52	100.0	24.2
S24.002	80.27	5.65	21.744	0.176	0.0	0.0	0.0	1.61	64.0	38.2
S24.003	79.60	5.76	21.278	0.176	0.0	0.0	0.0	2.23	157.3	38.2
S24.004	78.34	5.98	20.979	0.176	0.0	0.0	0.0	2.19	154.5	38.2
S25.000	82.98	5.21	20.703	0.033	0.0	0.0	0.0	1.00	17.7	7.4
S24.005	75.72	6.46	20.427	0.208	0.0	0.0	0.0	1.28	90.3	42.7
S24.006	74.99	6.60	20.183	0.278	0.0	0.0	0.0	1.01	71.1	56.4
S26.000	81.91	5.38	23.694	0.038	0.0	0.0	0.0	1.00	17.7	8.5
S26.001	79.40	5.79	23.469	0.081	0.0	0.0	0.0	1.00	17.7	17.3

PFA Consulting		Page 7
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S26.002	9.443	0.068	139.9	0.022	0.00	0.0	0.600		o	225	Pipe/Conduit	
S27.000	8.168	0.081	100.9	0.025	5.00	0.0	0.600		o	150	Pipe/Conduit	
S26.003	24.364	0.688	35.4	0.037	0.00	0.0	0.600		o	225	Pipe/Conduit	
S26.004	10.929	0.329	33.2	0.014	0.00	0.0	0.600		o	225	Pipe/Conduit	
S26.005	17.198	0.499	34.4	0.021	0.00	0.0	0.600		o	225	Pipe/Conduit	
S28.000	7.485	0.074	100.9	0.041	5.00	0.0	0.600		o	150	Pipe/Conduit	
S28.001	10.617	0.424	25.1	0.020	0.00	0.0	0.600		o	150	Pipe/Conduit	
S26.006	23.837	0.246	96.7	0.069	0.00	0.0	0.600		o	300	Pipe/Conduit	
S26.007	10.945	0.105	104.3	0.031	0.00	0.0	0.600		o	300	Pipe/Conduit	
S26.008	11.524	0.114	100.8	0.038	0.00	0.0	0.600		o	300	Pipe/Conduit	
S26.009	10.551	0.176	60.1	0.025	0.00	0.0	0.600		o	300	Pipe/Conduit	
S26.010	25.268	0.700	36.1	0.025	0.00	0.0	0.600		o	300	Pipe/Conduit	
S24.007	8.478	0.023	365.4	0.010	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.008	8.753	0.131	66.7	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.009	9.926	0.077	128.7	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.010	19.678	0.049	400.9	0.000	0.00	0.0	0.600		o	450	Pipe/Conduit	
S24.011	17.230#	0.168	102.7	0.083	0.00	0.0	0.600		o	450	Pipe/Conduit	
S29.000	9.559	0.414	23.1	0.087	5.00	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)
S26.002	78.57	5.93	23.148	0.102	0.0	0.0	0.0	1.10	43.9	21.8
S27.000	83.48	5.14	23.236	0.025	0.0	0.0	0.0	1.00	17.7	5.6
S26.003	77.54	6.12	23.081	0.164	0.0	0.0	0.0	2.21	87.7	34.4
S26.004	77.10	6.20	22.392	0.178	0.0	0.0	0.0	2.28	90.5	37.2
S26.005	76.41	6.33	22.063	0.199	0.0	0.0	0.0	2.24	88.9	41.1
S28.000	83.55	5.12	22.137	0.041	0.0	0.0	0.0	1.00	17.7	9.3
S28.001	82.98	5.21	22.063	0.061	0.0	0.0	0.0	2.02	35.7	13.7
S26.006	75.11	6.58	21.489	0.328	0.0	0.0	0.0	1.60	113.0	66.8
S26.007	74.51	6.69	21.242	0.359	0.0	0.0	0.0	1.54	108.8	72.4
S26.008	73.89	6.82	21.137	0.397	0.0	0.0	0.0	1.57	110.7	79.5
S26.009	73.47	6.90	21.023	0.422	0.0	0.0	0.0	2.03	143.7	83.9
S26.010	72.70	7.06	20.847	0.447	0.0	0.0	0.0	2.63	185.6	88.0
S24.007	72.07	7.20	19.997	0.735	0.0	0.0	0.0	1.06	168.2	143.5
S24.008	71.80	7.26	19.974	0.735	0.0	0.0	0.0	2.49	396.3	143.5
S24.009	71.38	7.35	19.843	0.735	0.0	0.0	0.0	1.79	284.8	143.5
S24.010	69.94	7.67	19.766	0.735	0.0	0.0	0.0	1.01	160.5	143.5
S24.011	69.33	7.82	19.717	0.818	0.0	0.0	0.0	2.01	319.0	153.7
S29.000	83.88	5.08	24.164	0.087	0.0	0.0	0.0	2.10	37.2	19.8

PFA Consulting		Page 8
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S30.000	15.479	0.153	100.9	0.031	5.00	0.0	0.600		o	150	Pipe/Conduit	
S29.001	21.433	0.440	48.8	0.041	0.00	0.0	0.600		o	225	Pipe/Conduit	
S29.002	8.284	0.260	31.9	0.015	0.00	0.0	0.600		o	225	Pipe/Conduit	
S29.003	30.938	0.490	63.1	0.036	0.00	0.0	0.600		o	225	Pipe/Conduit	
S29.004	13.619	0.098	139.4	0.030	0.00	0.0	0.600		o	300	Pipe/Conduit	
S31.000	11.853	0.117	100.9	0.040	5.00	0.0	0.600		o	150	Pipe/Conduit	
S31.001	11.835	0.117	100.9	0.030	0.00	0.0	0.600		o	150	Pipe/Conduit	
S29.005	57.782	1.524	37.9	0.135	0.00	0.0	0.600		o	300	Pipe/Conduit	
S29.006	19.501	0.338	57.7	0.050	0.00	0.0	0.600		o	300	Pipe/Conduit	
S29.007	3.946	0.062	63.6	0.018	0.00	0.0	0.600		o	375	Pipe/Conduit	
S29.008	4.967	0.096	51.9	0.018	0.00	0.0	0.600		o	375	Pipe/Conduit	
S29.009	14.725	0.273	54.0	0.013	0.00	0.0	0.600		o	375	Pipe/Conduit	
S29.010	5.635	0.095	59.4	0.004	0.00	0.0	0.600		o	375	Pipe/Conduit	
S29.011	5.441	0.184	29.5	0.006	0.00	0.0	0.600		o	375	Pipe/Conduit	
S32.000	15.244	0.151	100.9	0.046	5.00	0.0	0.600		o	150	Pipe/Conduit	
S29.012	6.826	0.026	267.2	0.006	0.00	0.0	0.600		o	375	Pipe/Conduit	
S33.000	18.801	0.186	101.1	0.028	5.00	0.0	0.600		o	150	Pipe/Conduit	
S29.013	16.120#	0.140	115.0	0.015	0.00	0.0	0.600		o	375	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)
S30.000	82.68	5.26	23.903	0.031	0.0	0.0	0.0	1.00	17.7	6.8
S29.001	81.48	5.45	23.675	0.159	0.0	0.0	0.0	1.88	74.7	35.0
S29.002	81.11	5.51	23.235	0.174	0.0	0.0	0.0	2.33	92.5	38.2
S29.003	79.23	5.82	22.975	0.210	0.0	0.0	0.0	1.65	65.6	45.0
S29.004	78.26	5.99	22.410	0.239	0.0	0.0	0.0	1.33	94.0	50.7
S31.000	83.07	5.20	22.697	0.040	0.0	0.0	0.0	1.00	17.7	9.1
S31.001	81.81	5.39	22.580	0.070	0.0	0.0	0.0	1.00	17.7	15.5
S29.005	76.20	6.37	22.312	0.444	0.0	0.0	0.0	2.56	181.1	91.6
S29.006	75.37	6.52	20.788	0.494	0.0	0.0	0.0	2.07	146.6	100.9
S29.007	75.23	6.55	20.375	0.512	0.0	0.0	0.0	2.27	251.2	104.4
S29.008	75.06	6.59	20.313	0.530	0.0	0.0	0.0	2.52	278.3	107.8
S29.009	74.55	6.68	20.218	0.544	0.0	0.0	0.0	2.47	272.8	109.8
S29.010	74.35	6.72	19.945	0.548	0.0	0.0	0.0	2.36	260.2	110.3
S29.011	74.22	6.75	19.850	0.554	0.0	0.0	0.0	3.35	369.6	111.4
S32.000	82.71	5.25	20.042	0.046	0.0	0.0	0.0	1.00	17.7	10.3
S29.012	73.71	6.85	19.666	0.606	0.0	0.0	0.0	1.10	121.9	121.0
S33.000	82.32	5.31	20.051	0.028	0.0	0.0	0.0	1.00	17.7	6.2
S29.013	72.94	7.01	19.640	0.649	0.0	0.0	0.0	1.69	186.5	128.2

PFA Consulting		Page 9
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S34.000	38.960	0.386	100.9	0.043	5.00	0.0	0.600		o	150	Pipe/Conduit	
S34.001	9.438	0.134	70.4	0.111	0.00	0.0	0.600		o	300	Pipe/Conduit	
S34.002	41.858	0.388	107.8	0.085	0.00	0.0	0.600		o	300	Pipe/Conduit	
S34.003	31.170#	0.342	91.2	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.022	8.756	0.050	175.1	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.023	6.724	0.013	517.2	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	
S1.024	38.389	0.077	498.6	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	
S1.025	42.073	0.084	500.9	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	
S1.026	7.094	0.014	506.7	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	
S1.027	5.149	0.010	514.9	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	
S1.028	21.813	1.582	13.8	0.000	0.00	0.0		0.045 3 \=/		300	1:3 Swale	

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)
S34.000	80.25	5.65	20.901	0.043	0.0	0.0	0.0	1.00	17.7	9.2
S34.001	79.75	5.73	20.364	0.154	0.0	0.0	0.0	1.88	132.6	33.2
S34.002	77.13	6.19	20.230	0.238	0.0	0.0	0.0	1.51	107.0	49.8
S34.003	75.45	6.51	19.842	0.238	0.0	0.0	0.0	1.65	116.4	49.8
S1.022	52.30	13.45	19.400	6.366	0.0	0.0	0.0	1.19	83.8«	901.8
S1.023	51.10	14.02	19.350	6.366	0.0	0.0	0.0	0.20	22.1«	901.8
S1.024	45.40	17.22	19.337	6.366	0.0	0.0	0.0	0.20	22.5«	901.8
S1.025	40.63	20.73	19.260	6.366	0.0	0.0	0.0	0.20	22.4«	901.8
S1.026	39.94	21.33	19.176	6.366	0.0	0.0	0.0	0.20	22.3«	901.8
S1.027	39.45	21.77	19.162	6.366	0.0	0.0	0.0	0.20	22.1«	901.8
S1.028	39.11	22.07	19.152	6.366	0.0	0.0	0.0	1.20	135.3«	901.8

PFA Consulting		Page 10
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

PIPELINE SCHEDULES for Storm

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	150	S1001	27.785	26.135	1.500	Open Manhole	1200
S1.001	o	150	S1002	27.886	26.007	1.729	Open Manhole	1200
S1.002	o	225	S1003	26.767	25.042	1.500	Open Manhole	1200
S2.000	o	150	S1004	27.277	25.627	1.500	Open Manhole	1200
S2.001	o	150	S1005	26.870	25.220	1.500	Open Manhole	1200
S3.000	o	150	S1006	26.731	25.081	1.500	Open Manhole	1200
S2.002	o	225	S1007	26.471	24.746	1.500	Open Manhole	1200
S1.003	o	300	S1008	26.373	24.573	1.500	Open Manhole	1200
S1.004	o	300	S1009	26.307	24.507	1.500	Open Manhole	1200
S4.000	o	150	S1010	26.187	24.537	1.500	Open Manhole	1200
S5.000	o	150	S1011	26.150	24.500	1.500	Open Manhole	1200
S4.001	o	225	S1012	26.017	24.292	1.500	Open Manhole	1200
S4.002	o	300	S1013	25.989	24.173	1.516	Open Manhole	1200
S6.000	o	225	S1014	25.163	23.438	1.500	Open Manhole	1200
S4.003	o	450	S1015	25.072	23.122	1.500	Open Manhole	1350

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)
S1.000	12.927	100.9	S1002	27.886	26.007	1.729	Open Manhole	1200
S1.001	40.222	45.2	S1003	26.767	25.117	1.500	Open Manhole	1200
S1.002	27.695	70.3	S1008	26.373	24.648	1.500	Open Manhole	1200
S2.000	20.425	50.2	S1005	26.870	25.220	1.500	Open Manhole	1200
S2.001	17.669	44.3	S1007	26.471	24.821	1.500	Open Manhole	1200
S3.000	10.461	40.2	S1007	26.471	24.821	1.500	Open Manhole	1200
S2.002	10.408	106.4	S1008	26.373	24.648	1.500	Open Manhole	1200
S1.003	6.804	103.1	S1009	26.307	24.507	1.500	Open Manhole	1200
S1.004	67.289	48.9	S1016	25.199	23.131	1.768	Open Manhole	1500
S4.000	16.020	94.1	S1012	26.017	24.367	1.500	Open Manhole	1200
S5.000	8.876	66.5	S1012	26.017	24.367	1.500	Open Manhole	1200
S4.001	7.401	167.9	S1013	25.989	24.248	1.516	Open Manhole	1200
S4.002	67.964	75.4	S1015	25.072	23.272	1.500	Open Manhole	1350
S6.000	11.505	126.5	S1015	25.072	23.347	1.500	Open Manhole	1350
S4.003	45.062	319.6	S1016	25.199	22.981	1.768	Open Manhole	1500

PFA Consulting		Page 11
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S1.005	o	525	S1016	25.199	22.906	1.768	Open Manhole	1500
S7.000	o	225	S1017	24.684	23.559	0.900	Open Manhole	1200
S7.001	o	225	S1018	24.517	23.392	0.900	Open Manhole	1200
S7.002	o	225	S1019	24.483	23.342	0.916	Open Manhole	1200
S7.003	o	450	S1020	24.401	23.051	0.900	Open Manhole	1350
S7.004	o	450	S1021	24.792	22.874	1.468	Open Manhole	1350
S1.006	o	800	S1022	24.781	22.756	1.225	Open Manhole	1800
S8.000	o	300	S1023	26.130	24.405	1.425	Open Manhole	1200
S1.007	o	800	S1024	24.772	22.661	1.311	Open Manhole	1800
S9.000	o	225	S1025	29.087	27.362	1.500	Open Manhole	1200
S9.001	o	225	S1026	27.807	26.082	1.500	Open Manhole	1200
S9.002	o	225	S1027	27.489	25.764	1.500	Open Manhole	1200
S9.003	o	225	S1028	27.437	25.712	1.500	Open Manhole	1200
S9.004	o	225	S1029	26.971	25.246	1.500	Open Manhole	1200
S9.005	o	300	S1030	26.330	24.530	1.500	Open Manhole	1200
S9.006	o	300	S1031	26.219	24.420	1.500	Open Manhole	1200
S1.008	o	800	S1032	25.088	22.526	1.762	Open Manhole	1800

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)
S1.005	23.574	157.2	S1022	24.781	22.756	1.500	Open Manhole	1800
S7.000	22.042	131.9	S1018	24.517	23.392	0.900	Open Manhole	1200
S7.001	8.407	167.9	S1019	24.483	23.342	0.916	Open Manhole	1200
S7.002	6.341	96.9	S1020	24.401	23.276	0.900	Open Manhole	1350
S7.003	42.814	241.9	S1021	24.792	22.874	1.468	Open Manhole	1350
S7.004	5.774	134.3	S1022	24.781	22.831	1.500	Open Manhole	1800
S1.006	39.648	417.3	S1024	24.772	22.661	1.311	Open Manhole	1800
S8.000	63.287	50.9	S1024	24.772	23.161	1.311	Open Manhole	1800
S1.007	42.592	316.2	S1032	25.088	22.526	1.762	Open Manhole	1800
S9.000	36.914	28.9	S1026	27.807	26.082	1.500	Open Manhole	1200
S9.001	7.842	24.6	S1027	27.489	25.764	1.500	Open Manhole	1200
S9.002	1.803	34.5	S1028	27.437	25.712	1.500	Open Manhole	1200
S9.003	8.476	18.2	S1029	26.971	25.246	1.500	Open Manhole	1200
S9.004	15.989	24.9	S1030	26.330	24.605	1.500	Open Manhole	1200
S9.005	4.169	37.9	S1031	26.219	24.420	1.500	Open Manhole	1200
S9.006	50.456	36.2	S1032	25.088	23.026	1.762	Open Manhole	1800
S1.008	52.162	291.1	S1036	25.490	22.347	2.343	Open Manhole	1800

PFA Consulting		Page 12
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S10.000	o	150	S1033	27.285	25.635	1.500	Open Manhole	1200
S10.001	o	150	S1034	27.141	25.491	1.500	Open Manhole	1200
S10.002	o	225	S1035	26.967	25.242	1.500	Open Manhole	1200
S1.009	o	900	S1036	25.490	22.247	2.343	Open Manhole	1800
S1.010	o	900	S1037	25.534	22.234	2.400	Open Manhole	1800
S1.011	o	900	S1038	25.502	22.217	2.385	Open Manhole	1800
S1.012	o	900	S1039	25.379	22.201	2.279	Open Manhole	1800
S1.013	o	900	S1040	25.209	22.184	2.125	Open Manhole	1800
S1.014	o	900	S1041	25.038	22.168	1.970	Open Manhole	1800
S1.015	o	900	S1042	23.804	21.329	1.575	Open Manhole	1800
S11.000	o	150	S1043	24.214	22.564	1.500	Open Manhole	1200
S11.001	o	225	S1044	24.092	22.364	1.503	Open Manhole	1200
S1.016	o	900	S1045	23.962	21.288	1.774	Open Manhole	1800
S1.017	o	300	S1046-Basin A2	22.300	21.000	1.000	Open Manhole	1800
S1.018	o	300	S1047-Con	22.043	20.900	0.843	Open Manhole	1200
S1.019	3 \=/	300	S1048	22.030	20.820	1.060	Junction	
S1.020	o	300	S1049-GR	21.545	20.739	0.506	Junction	
S1.021	3 \=/	300	S1050	21.456	20.689	0.617	Junction	
S12.000	o	225	S1051	24.029	22.304	1.500	Open Manhole	1200
S13.000	o	150	S1052	23.557	21.907	1.500	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)
S10.000	8.554	59.3	S1034	27.141	25.491	1.500	Open Manhole	1200
S10.001	6.880	39.6	S1035	26.967	25.317	1.500	Open Manhole	1200
S10.002	40.316	17.4	S1036	25.490	22.922	2.343	Open Manhole	1800
S1.009	6.683	514.1	S1037	25.534	22.234	2.400	Open Manhole	1800
S1.010	8.252	500.0	S1038	25.502	22.217	2.385	Open Manhole	1800
S1.011	8.475	500.0	S1039	25.379	22.201	2.279	Open Manhole	1800
S1.012	8.254	500.0	S1040	25.209	22.184	2.125	Open Manhole	1800
S1.013	8.000	500.0	S1041	25.038	22.168	1.970	Open Manhole	1800
S1.014	49.666	59.2	S1042	23.804	21.329	1.575	Open Manhole	1800
S1.015	20.412	500.0	S1045	23.962	21.288	1.774	Open Manhole	1800
S11.000	12.582	100.9	S1044	24.092	22.439	1.503	Open Manhole	1200
S11.001	13.006	32.4	S1045	23.962	21.963	1.774	Open Manhole	1800
S1.016	25.070#	167.1	S1046-Basin A2	22.300	21.138	0.262	Open Manhole	1800
S1.017	10.176	101.8	S1047-Con	22.043	20.900	0.843	Open Manhole	1200
S1.018	7.577	94.7	S1048	22.030	20.820	0.910	Junction	
S1.019	40.502	500.0	S1049-GR	21.545	20.739	0.656	Junction	
S1.020	9.086	181.7	S1050	21.456	20.689	0.467	Junction	
S1.021	3.620#	301.7	S1144-Basin A1	20.600	20.677	-0.227	Open Manhole	1200
S12.000	34.361	55.9	S1053	23.690	21.689	1.776	Open Manhole	1200
S13.000	14.433	100.9	S1053	23.690	21.764	1.776	Open Manhole	1200

PFA Consulting		Page 13
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S12.001	o	225	S1053	23.690	21.689	1.776	Open Manhole	1200
S12.002	o	225	S1054	23.194	21.469	1.500	Open Manhole	1200
S12.003	o	225	S1055	22.891	21.166	1.500	Open Manhole	1200
S12.004	o	225	S1056	22.624	20.899	1.500	Open Manhole	1200
S12.005	o	300	S1057	21.663	19.863	1.500	Open Manhole	1200
S14.000	o	150	S1058	22.519	21.063	1.306	Open Manhole	1200
S14.001	o	225	S1059	22.756	20.746	1.785	Open Manhole	1200
S14.002	o	225	S1060	22.692	20.624	1.843	Open Manhole	1200
S14.003	o	225	S1061	22.582	20.564	1.793	Open Manhole	1200
S15.000	o	150	S1062	24.043	22.393	1.500	Open Manhole	1200
S16.000	o	150	S1063	24.209	22.559	1.500	Open Manhole	1200
S15.001	o	225	S1064	24.056	22.021	1.810	Open Manhole	1200
S17.000	o	150	S1065	23.113	21.463	1.500	Open Manhole	1200
S15.002	o	375	S1066	23.316	21.117	1.824	Open Manhole	1350
S15.003	o	375	S1067	23.510	21.009	2.126	Open Manhole	1350
S15.004	o	375	S1068	23.373	20.965	2.034	Open Manhole	1350
S15.005	o	375	S1069	23.150	20.907	1.868	Open Manhole	1350
S15.006	o	375	S1070	23.042	20.875	1.792	Open Manhole	1350

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)
S12.001	18.287	83.4	S1054	23.194	21.469	1.500	Open Manhole	1200
S12.002	12.086	39.8	S1055	22.891	21.166	1.500	Open Manhole	1200
S12.003	10.867	40.7	S1056	22.624	20.899	1.500	Open Manhole	1200
S12.004	39.628	41.3	S1057	21.663	19.938	1.500	Open Manhole	1200
S12.005	14.440#	39.8	S1144-Basin A1	20.600	19.500	0.800	Open Manhole	1200
S14.000	26.930	100.9	S1059	22.756	20.796	1.810	Open Manhole	1200
S14.001	20.549	168.4	S1060	22.692	20.624	1.843	Open Manhole	1200
S14.002	10.052	167.5	S1061	22.582	20.564	1.793	Open Manhole	1200
S14.003	38.528	167.5	S1081	22.251	20.334	1.692	Open Manhole	1500
S15.000	29.948	100.9	S1064	24.056	22.096	1.810	Open Manhole	1200
S16.000	9.236	20.0	S1064	24.056	22.096	1.810	Open Manhole	1200
S15.001	44.772	59.3	S1066	23.316	21.267	1.824	Open Manhole	1350
S17.000	12.264	100.9	S1066	23.316	21.342	1.824	Open Manhole	1350
S15.002	26.068	241.4	S1067	23.510	21.009	2.126	Open Manhole	1350
S15.003	14.200	321.9	S1068	23.373	20.965	2.034	Open Manhole	1350
S15.004	18.554	321.9	S1069	23.150	20.907	1.868	Open Manhole	1350
S15.005	10.410	321.9	S1070	23.042	20.875	1.792	Open Manhole	1350
S15.006	20.817	321.9	S1073	22.896	20.810	1.711	Open Manhole	1350

PFA Consulting		Page 14
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S18.000	o	150	S1071	23.321	21.671	1.500	Open Manhole	1200
S18.001	o	225	S1072	22.979	21.254	1.500	Open Manhole	1200
S15.007	o	375	S1073	22.896	20.810	1.711	Open Manhole	1350
S15.008	o	375	S1074	22.785	20.773	1.637	Open Manhole	1350
S15.009	o	375	S1075	22.330	20.455	1.500	Open Manhole	1350
S19.000	o	150	S1076	23.960	22.310	1.500	Open Manhole	1200
S19.001	o	150	S1077	23.697	22.047	1.500	Open Manhole	1200
S20.000	o	150	S1078	22.875	21.225	1.500	Open Manhole	1200
S20.001	o	225	S1079	22.995	21.030	1.740	Open Manhole	1200
S19.002	o	300	S1080	23.189	20.833	2.056	Open Manhole	1200
S14.004	o	525	S1081	22.251	20.034	1.692	Open Manhole	1500
S14.005	o	525	S1082	21.929	19.956	1.448	Open Manhole	1500
S14.006	o	525	S1083	21.861	19.928	1.408	Open Manhole	1500
S21.000	o	225	S1084	21.191	20.051	0.915	Open Manhole	1200
S22.000	o	150	S1085	21.457	20.117	1.190	Open Manhole	1200
S21.001	o	225	S1086	21.339	19.971	1.143	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)
S18.000	20.953	61.2	S1072	22.979	21.329	1.500	Open Manhole	1200
S18.001	7.031	23.9	S1073	22.896	20.960	1.711	Open Manhole	1350
S15.007	11.915	321.9	S1074	22.785	20.773	1.637	Open Manhole	1350
S15.008	46.478	146.2	S1075	22.330	20.455	1.500	Open Manhole	1350
S15.009	7.320	21.4	S1081	22.251	20.113	1.763	Open Manhole	1500
S19.000	18.630	71.0	S1077	23.697	22.047	1.500	Open Manhole	1200
S19.001	21.942	20.6	S1080	23.189	20.983	2.056	Open Manhole	1200
S20.000	12.132	100.9	S1079	22.995	21.105	1.740	Open Manhole	1200
S20.001	20.493	168.4	S1080	23.189	20.908	2.056	Open Manhole	1200
S19.002	71.834	125.1	S1081	22.251	20.259	1.692	Open Manhole	1500
S14.004	34.492	442.2	S1082	21.929	19.956	1.448	Open Manhole	1500
S14.005	12.517	447.0	S1083	21.861	19.928	1.408	Open Manhole	1500
S14.006	14.415	497.1	S1088	21.952	19.899	1.528	Open Manhole	1500
S21.000	11.024	137.8	S1086	21.339	19.971	1.143	Open Manhole	1200
S22.000	9.669	100.7	S1086	21.339	20.021	1.168	Open Manhole	1200
S21.001	12.117	168.3	S1087	21.676	19.899	1.552	Open Manhole	1200

PFA Consulting		Page 15
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S21.002	o	225	S1087	21.676	19.899	1.552	Open Manhole	1200
S14.007	o	675	S1088	21.952	19.749	1.528	Open Manhole	1500
S14.008	o	675	S1089	22.067	19.710	1.682	Open Manhole	1500
S14.009	o	675	S1090	21.898	19.680	1.543	Open Manhole	1500
S14.010	o	675	S1091	21.877	19.635	1.567	Open Manhole	1500
S23.000	o	225	S1092-GR	20.784	19.724	0.835	Open Manhole	1200
S14.011	o	675	S1093	21.281	19.539	1.067	Open Manhole	1500
S24.000	o	225	S1094	24.640	22.990	1.425	Open Manhole	1200
S24.001	o	225	S1095	23.605	21.955	1.425	Open Manhole	1200
S24.002	o	225	S1096	23.394	21.744	1.425	Open Manhole	1200
S24.003	o	300	S1097	22.404	21.278	0.825	Open Manhole	1200
S24.004	o	300	S1098	22.405	20.979	1.125	Open Manhole	1200
S25.000	o	150	S1099	21.753	20.703	0.900	Open Manhole	1200
S24.005	o	300	S1100	21.853	20.427	1.126	Open Manhole	1200
S24.006	o	300	S1101	22.088	20.183	1.605	Open Manhole	1200
S26.000	o	150	S1102	25.344	23.694	1.500	Open Manhole	1200
S26.001	o	150	S1103	25.284	23.469	1.665	Open Manhole	1200
S26.002	o	225	S1104	25.025	23.148	1.652	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)
S21.002	21.954	146.4	S1088	21.952	19.749	1.978	Open Manhole	1500
S14.007	19.439	498.4	S1089	22.067	19.710	1.682	Open Manhole	1500
S14.008	14.965	498.8	S1090	21.898	19.680	1.543	Open Manhole	1500
S14.009	22.269	494.9	S1091	21.877	19.635	1.567	Open Manhole	1500
S14.010	47.812	498.0	S1093	21.281	19.539	1.067	Open Manhole	1500
S23.000	31.242	168.9	S1093	21.281	19.539	1.517	Open Manhole	1500
S14.011	10.500#	500.0	S1144-Basin A1	20.600	19.518	0.407	Open Manhole	1200
S24.000	41.944	40.5	S1095	23.605	21.955	1.425	Open Manhole	1200
S24.001	5.751	27.3	S1096	23.394	21.744	1.425	Open Manhole	1200
S24.002	25.866	66.2	S1097	22.404	21.353	0.825	Open Manhole	1200
S24.003	14.989	50.1	S1098	22.405	20.979	1.125	Open Manhole	1200
S24.004	28.717	51.9	S1100	21.853	20.427	1.126	Open Manhole	1200
S25.000	12.749	100.9	S1100	21.853	20.577	1.126	Open Manhole	1200
S24.005	36.855	151.0	S1101	22.088	20.183	1.605	Open Manhole	1200
S24.006	8.478	241.9	S1116	22.008	20.148	1.561	Open Manhole	1350
S26.000	22.715	100.9	S1103	25.284	23.469	1.665	Open Manhole	1200
S26.001	24.828	100.9	S1104	25.025	23.223	1.652	Open Manhole	1200
S26.002	9.443	139.9	S1106	24.859	23.081	1.554	Open Manhole	1200

PFA Consulting		Page 16
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S27.000	o	150	S1105	24.886	23.236	1.500	Open Manhole	1200
S26.003	o	225	S1106	24.859	23.081	1.554	Open Manhole	1200
S26.004	o	225	S1107	24.117	22.392	1.500	Open Manhole	1200
S26.005	o	225	S1108	23.788	22.063	1.500	Open Manhole	1200
S28.000	o	150	S1109	23.487	22.137	1.200	Open Manhole	1200
S28.001	o	150	S1110	23.413	22.063	1.200	Open Manhole	1200
S26.006	o	300	S1111	23.289	21.489	1.500	Open Manhole	1200
S26.007	o	300	S1112	23.042	21.242	1.500	Open Manhole	1200
S26.008	o	300	S1113	22.937	21.137	1.500	Open Manhole	1200
S26.009	o	300	S1114	22.823	21.023	1.500	Open Manhole	1200
S26.010	o	300	S1115	22.647	20.847	1.500	Open Manhole	1200
S24.007	o	450	S1116	22.008	19.997	1.561	Open Manhole	1350
S24.008	o	450	S1117	21.925	19.974	1.501	Open Manhole	1350
S24.009	o	450	S1118	21.794	19.843	1.501	Open Manhole	1350
S24.010	o	450	S1119	21.717	19.766	1.501	Open Manhole	1350
S24.011	o	450	S1120	21.740	19.717	1.573	Open Manhole	1350
S29.000	o	150	S1121	25.814	24.164	1.500	Open Manhole	1200
S30.000	o	150	S1122	25.553	23.903	1.500	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)
S27.000	8.168	100.9	S1106	24.859	23.156	1.554	Open Manhole	1200
S26.003	24.364	35.4	S1107	24.117	22.392	1.500	Open Manhole	1200
S26.004	10.929	33.2	S1108	23.788	22.063	1.500	Open Manhole	1200
S26.005	17.198	34.4	S1111	23.289	21.564	1.500	Open Manhole	1200
S28.000	7.485	100.9	S1110	23.413	22.063	1.200	Open Manhole	1200
S28.001	10.617	25.1	S1111	23.289	21.639	1.500	Open Manhole	1200
S26.006	23.837	96.7	S1112	23.042	21.242	1.500	Open Manhole	1200
S26.007	10.945	104.3	S1113	22.937	21.137	1.500	Open Manhole	1200
S26.008	11.524	100.8	S1114	22.823	21.023	1.500	Open Manhole	1200
S26.009	10.551	60.1	S1115	22.647	20.847	1.500	Open Manhole	1200
S26.010	25.268	36.1	S1116	22.008	20.147	1.561	Open Manhole	1350
S24.007	8.478	365.4	S1117	21.925	19.974	1.501	Open Manhole	1350
S24.008	8.753	66.7	S1118	21.794	19.843	1.501	Open Manhole	1350
S24.009	9.926	128.7	S1119	21.717	19.766	1.501	Open Manhole	1350
S24.010	19.678	400.9	S1120	21.740	19.717	1.573	Open Manhole	1350
S24.011	17.230#	102.7	S1144-Basin A1	20.600	19.549	0.601	Open Manhole	1200
S29.000	9.559	23.1	S1123	25.718	23.750	1.818	Open Manhole	1200
S30.000	15.479	100.9	S1123	25.718	23.750	1.818	Open Manhole	1200

PFA Consulting		Page 17
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S29.001	o	225	S1123	25.718	23.675	1.818	Open Manhole	1200
S29.002	o	225	S1124	24.960	23.235	1.500	Open Manhole	1200
S29.003	o	225	S1125	24.700	22.975	1.500	Open Manhole	1200
S29.004	o	300	S1126	24.210	22.410	1.500	Open Manhole	1200
S31.000	o	150	S1127	24.347	22.697	1.500	Open Manhole	1200
S31.001	o	150	S1128	24.421	22.580	1.691	Open Manhole	1200
S29.005	o	300	S1129	24.340	22.312	1.728	Open Manhole	1200
S29.006	o	300	S1130	22.588	20.788	1.500	Open Manhole	1200
S29.007	o	375	S1131	22.250	20.375	1.500	Open Manhole	1350
S29.008	o	375	S1132	22.188	20.313	1.500	Open Manhole	1350
S29.009	o	375	S1133	22.093	20.218	1.500	Open Manhole	1350
S29.010	o	375	S1134	21.820	19.945	1.500	Open Manhole	1350
S29.011	o	375	S1135	21.725	19.850	1.500	Open Manhole	1350
S32.000	o	150	S1136	21.692	20.042	1.500	Open Manhole	1200
S29.012	o	375	S1137	21.596	19.666	1.555	Open Manhole	1350
S33.000	o	150	S1138	21.536	20.051	1.335	Open Manhole	1200
S29.013	o	375	S1139	21.528	19.640	1.513	Open Manhole	1350

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)
S29.001	21.433	48.8	S1124	24.960	23.235	1.500	Open Manhole	1200
S29.002	8.284	31.9	S1125	24.700	22.975	1.500	Open Manhole	1200
S29.003	30.938	63.1	S1126	24.210	22.485	1.500	Open Manhole	1200
S29.004	13.619	139.4	S1129	24.340	22.312	1.728	Open Manhole	1200
S31.000	11.853	100.9	S1128	24.421	22.580	1.691	Open Manhole	1200
S31.001	11.835	100.9	S1129	24.340	22.462	1.728	Open Manhole	1200
S29.005	57.782	37.9	S1130	22.588	20.788	1.500	Open Manhole	1200
S29.006	19.501	57.7	S1131	22.250	20.450	1.500	Open Manhole	1350
S29.007	3.946	63.6	S1132	22.188	20.313	1.500	Open Manhole	1350
S29.008	4.967	51.9	S1133	22.093	20.218	1.500	Open Manhole	1350
S29.009	14.725	54.0	S1134	21.820	19.945	1.500	Open Manhole	1350
S29.010	5.635	59.4	S1135	21.725	19.850	1.500	Open Manhole	1350
S29.011	5.441	29.5	S1137	21.596	19.666	1.555	Open Manhole	1350
S32.000	15.244	100.9	S1137	21.596	19.891	1.555	Open Manhole	1350
S29.012	6.826	267.2	S1139	21.528	19.640	1.513	Open Manhole	1350
S33.000	18.801	101.1	S1139	21.528	19.865	1.513	Open Manhole	1350
S29.013	16.120#	115.0	S1144-Basin A1	20.600	19.500	0.725	Open Manhole	1200

PFA Consulting		Page 18
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S34.000	o	150	S1140	22.551	20.901	1.500	Open Manhole	1200
S34.001	o	300	S1141	22.187	20.364	1.523	Open Manhole	1200
S34.002	o	300	S1142	22.030	20.230	1.500	Open Manhole	1200
S34.003	o	300	S1143	21.642	19.842	1.500	Open Manhole	1200
S1.022	o	300	S1144-Basin A1	20.600	19.400	0.900	Open Manhole	1200
S1.023	3 \=/	300	S1145-Con	21.143	19.350	1.643	Open Manhole	1200
S1.024	3 \=/	300	S1146	21.298	19.337	1.811	Junction	
S1.025	3 \=/	300	S1147	21.261	19.260	1.851	Junction	
S1.026	3 \=/	300	S1148	21.175	19.176	1.849	Junction	
S1.027	3 \=/	300	S1149	21.018	19.162	1.706	Junction	
S1.028	3 \=/	300	S1150	20.968	19.152	1.666	Junction	

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)
S34.000	38.960	100.9	S1141	22.187	20.514	1.523	Open Manhole	1200
S34.001	9.438	70.4	S1142	22.030	20.230	1.500	Open Manhole	1200
S34.002	41.858	107.8	S1143	21.642	19.842	1.500	Open Manhole	1200
S34.003	31.170#	91.2	S1144-Basin A1	20.600	19.500	0.800	Open Manhole	1200
S1.022	8.756	175.1	S1145-Con	21.143	19.350	1.493	Open Manhole	1200
S1.023	6.724	517.2	S1146	21.298	19.337	1.811	Junction	
S1.024	38.389	498.6	S1147	21.261	19.260	1.851	Junction	
S1.025	42.073	500.9	S1148	21.175	19.176	1.849	Junction	
S1.026	7.094	506.7	S1149	21.018	19.162	1.706	Junction	
S1.027	5.149	514.9	S1150	20.968	19.152	1.666	Junction	
S1.028	21.813	13.8	SMoorgreen Stream	17.630	17.570	-0.090	Open Manhole	0

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)
S1.028	SMoorgreen Stream	17.630	17.570	0.000	0	0

PFA Consulting		Page 19
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

Online Controls for Storm

Orifice Manhole: S1046-Basin A2, DS/PN: S1.017, Volume (m³): 18.1

Diameter (m) 0.300 Discharge Coefficient 0.600 Invert Level (m) 21.000

Hydro-Brake® Optimum Manhole: S1145-Con, DS/PN: S1.023, Volume (m³): 2.6

Unit Reference MD-SFF-0308-6200-1250-5580
Design Head (m) 1.250
Design Flow (l/s) 62.0
Flush-Flo™ User Defined
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 308
Invert Level (m) 19.350
Minimum Outlet Pipe Diameter (mm) 375
Suggested Manhole Diameter (mm) 1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.250	62.0	Kick-Flo®	0.795	49.8
Flush-Flo™	0.459	55.8	Mean Flow over Head Range	-	47.4

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	9.3	0.800	50.0	2.000	77.8	4.000	109.0	7.000	143.3
0.200	31.6	1.000	55.7	2.200	81.5	4.500	115.5	7.500	148.3
0.300	53.8	1.200	60.8	2.400	85.0	5.000	121.6	8.000	153.0
0.400	55.6	1.400	65.5	2.600	88.4	5.500	127.4	8.500	157.6
0.500	55.7	1.600	69.9	3.000	94.8	6.000	132.9	9.000	162.1
0.600	54.9	1.800	74.0	3.500	102.2	6.500	138.2	9.500	166.5

PFA Consulting		Page 20
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017 File M380-Catch A-V2.2 (RM	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

Storage Structures for Storm

Tank or Pond Manhole: S1046-Basin A2, DS/PN: S1.017

Invert Level (m) 21.000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	717.5	0.300	893.0	0.600	1077.9	0.900	1272.3	1.200	1476.1
0.100	775.0	0.400	953.6	0.700	1141.7	1.000	1339.1	1.300	1539.0
0.200	833.5	0.500	1015.2	0.800	1206.4	1.100	1407.1		

Tank or Pond Manhole: S1144-Basin A1, DS/PN: S1.022

Invert Level (m) 19.400

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	3151.7	0.300	3749.5	0.600	4356.5	0.900	4972.8	1.200	5577.3
0.100	3349.9	0.400	3950.8	0.700	4560.9	1.000	5180.3		
0.200	3549.2	0.500	4153.2	0.800	4766.4	1.100	5388.8		

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.350 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, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1
 Climate Change (%) 0

PN	US/MH		Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
	Name	Storm							(m)	(m)	(m³)
S1.000	S1001	15 Winter	1	+0%					26.175	-0.110	0.000
S1.001	S1002	15 Winter	1	+0%					26.072	-0.085	0.000
S1.002	S1003	15 Winter	1	+0%					25.117	-0.150	0.000
S2.000	S1004	15 Winter	1	+0%					25.678	-0.099	0.000
S2.001	S1005	15 Winter	1	+0%					25.281	-0.089	0.000
S3.000	S1006	15 Winter	1	+0%					25.117	-0.114	0.000
S2.002	S1007	15 Winter	1	+0%					24.833	-0.137	0.000
S1.003	S1008	15 Winter	1	+0%					24.713	-0.160	0.000
S1.004	S1009	15 Winter	1	+0%					24.606	-0.201	0.000
S4.000	S1010	15 Winter	1	+0%					24.605	-0.082	0.000
S5.000	S1011	15 Winter	1	+0%					24.570	-0.080	0.000
S4.001	S1012	15 Winter	1	+0%					24.409	-0.108	0.000
S4.002	S1013	15 Winter	1	+0%					24.271	-0.202	0.000
S6.000	S1014	15 Winter	1	+0%					23.545	-0.119	0.000
S4.003	S1015	15 Winter	1	+0%					23.316	-0.255	0.000
S1.005	S1016	15 Winter	1	+0%					23.115	-0.315	0.000
S7.000	S1017	15 Winter	1	+0%					23.642	-0.142	0.000
S7.001	S1018	15 Winter	1	+0%					23.511	-0.105	0.000
S7.002	S1019	15 Winter	1	+0%					23.454	-0.113	0.000
S7.003	S1020	15 Winter	1	+0%					23.170	-0.332	0.000
S7.004	S1021	15 Winter	1	+0%					23.050	-0.275	0.000
S1.006	S1022	15 Winter	1	+0%					23.043	-0.513	0.000
S8.000	S1023	15 Winter	1	+0%					24.514	-0.191	0.000
S1.007	S1024	15 Winter	1	+0%					22.946	-0.515	0.000
S9.000	S1025	15 Winter	1	+0%					27.435	-0.152	0.000
S9.001	S1026	15 Winter	1	+0%					26.169	-0.138	0.000
S9.002	S1027	15 Winter	1	+0%					25.917	-0.072	0.000
S9.003	S1028	15 Winter	1	+0%					25.792	-0.145	0.000
S9.004	S1029	15 Winter	1	+0%					25.338	-0.133	0.000
S9.005	S1030	15 Winter	1	+0%					24.662	-0.168	0.000
S9.006	S1031	15 Winter	1	+0%					24.514	-0.206	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Flow / Overflow		Pipe Flow	Status	Level Exceeded
		Cap.	(l/s)	(l/s)		
S1.000	S1001	0.16		2.5	OK	
S1.001	S1002	0.38		9.8	OK	
S1.002	S1003	0.24		14.1	OK	
S2.000	S1004	0.25		6.0	OK	
S2.001	S1005	0.34		8.5	OK	
S3.000	S1006	0.13		3.3	OK	
S2.002	S1007	0.32		13.3	OK	
S1.003	S1008	0.44		28.5	OK	
S1.004	S1009	0.24		36.1	OK	
S4.000	S1010	0.41		7.0	OK	
S5.000	S1011	0.43		8.3	OK	
S4.001	S1012	0.52		15.7	OK	
S4.002	S1013	0.23		28.3	OK	
S6.000	S1014	0.45		17.5	OK	
S4.003	S1015	0.38		61.0	OK	
S1.005	S1016	0.33		98.6	OK	
S7.000	S1017	0.28		11.7	OK	
S7.001	S1018	0.55		17.3	OK	
S7.002	S1019	0.50		18.0	OK	
S7.003	S1020	0.15		28.4	OK	
S7.004	S1021	0.17		28.8	OK	
S1.006	S1022	0.24		135.7	OK	
S8.000	S1023	0.28		41.6	OK	
S1.007	S1024	0.25		167.4	OK	
S9.000	S1025	0.23		21.2	OK	
S9.001	S1026	0.31		24.7	OK	
S9.002	S1027	0.78		25.3	OK	
S9.003	S1028	0.27		26.2	OK	
S9.004	S1029	0.35		32.5	OK	
S9.005	S1030	0.41		33.7	OK	
S9.006	S1031	0.21		37.1	OK	

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S1032	15 Winter	1	+0%					22.836
S10.000	S1033	15 Winter	1	+0%					25.683
S10.001	S1034	15 Winter	1	+0%					25.548
S10.002	S1035	15 Winter	1	+0%					25.306
S1.009	S1036	15 Winter	1	+0%					22.716
S1.010	S1037	15 Winter	1	+0%					22.702
S1.011	S1038	15 Winter	1	+0%					22.679
S1.012	S1039	15 Winter	1	+0%					22.654
S1.013	S1040	15 Winter	1	+0%					22.628
S1.014	S1041	15 Winter	1	+0%					22.362
S1.015	S1042	15 Winter	1	+0%					21.738
S11.000	S1043	15 Winter	1	+0%					22.613
S11.001	S1044	15 Winter	1	+0%					22.426
S1.016	S1045	15 Winter	1	+0%					21.587
S1.017	S1046-Basin A2	240 Winter	1	+0%	1/120 Winter				21.304
S1.018	S1047-Con	240 Summer	1	+0%					21.092
S1.019	S1048	240 Winter	1	+0%					21.047
S1.020	S1049-GR	240 Winter	1	+0%					20.946
S1.021	S1050	240 Winter	1	+0%					20.878
S12.000	S1051	15 Winter	1	+0%					22.375
S13.000	S1052	15 Winter	1	+0%					21.969
S12.001	S1053	15 Winter	1	+0%					21.795
S12.002	S1054	15 Winter	1	+0%					21.562
S12.003	S1055	15 Winter	1	+0%					21.267
S12.004	S1056	15 Winter	1	+0%					21.005
S12.005	S1057	15 Winter	1	+0%					19.983
S14.000	S1058	15 Winter	1	+0%					21.086
S14.001	S1059	15 Winter	1	+0%					20.830
S14.002	S1060	15 Winter	1	+0%					20.717
S14.003	S1061	15 Winter	1	+0%					20.674
S15.000	S1062	15 Winter	1	+0%					22.473
S16.000	S1063	15 Winter	1	+0%					22.598
S15.001	S1064	15 Winter	1	+0%					22.115
S17.000	S1065	15 Winter	1	+0%					21.528
S15.002	S1066	15 Winter	1	+0%					21.256
S15.003	S1067	15 Winter	1	+0%					21.186
S15.004	S1068	15 Winter	1	+0%					21.148
S15.005	S1069	15 Winter	1	+0%					21.102
S15.006	S1070	15 Winter	1	+0%					21.071
S18.000	S1071	15 Winter	1	+0%					21.750
S18.001	S1072	15 Winter	1	+0%					21.315
S15.007	S1073	15 Winter	1	+0%					21.025
S15.008	S1074	15 Winter	1	+0%					20.948
S15.009	S1075	15 Winter	1	+0%					20.593
S19.000	S1076	15 Winter	1	+0%					22.366
S19.001	S1077	15 Winter	1	+0%					22.098
S20.000	S1078	15 Winter	1	+0%					21.300
S20.001	S1079	15 Winter	1	+0%					21.118
S19.002	S1080	15 Winter	1	+0%					20.956
S14.004	S1081	15 Winter	1	+0%					20.448
S14.005	S1082	15 Winter	1	+0%					20.391
S14.006	S1083	15 Winter	1	+0%					20.357
S21.000	S1084	15 Winter	1	+0%					20.155
S22.000	S1085	15 Winter	1	+0%					20.188
S21.001	S1086	15 Winter	1	+0%					20.154
S21.002	S1087	15 Winter	1	+0%	1/15 Summer				20.146
S14.007	S1088	15 Winter	1	+0%					20.130

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(l/s)	(l/s)	Status	Exceeded
S1.008	S1032	-0.490	0.000	0.27		196.4		OK
S10.000	S1033	-0.102	0.000	0.22		4.5		OK
S10.001	S1034	-0.093	0.000	0.30		7.3		OK
S10.002	S1035	-0.161	0.000	0.18		21.2		OK
S1.009	S1036	-0.431	0.000	0.46		214.9		OK
S1.010	S1037	-0.432	0.000	0.52		214.0		OK
S1.011	S1038	-0.438	0.000	0.53		214.9		OK
S1.012	S1039	-0.447	0.000	0.52		216.3		OK
S1.013	S1040	-0.456	0.000	0.52		216.9		OK
S1.014	S1041	-0.706	0.000	0.10		216.7		OK
S1.015	S1042	-0.491	0.000	0.42		226.5		OK
S11.000	S1043	-0.101	0.000	0.23		3.7		OK
S11.001	S1044	-0.163	0.000	0.17		13.4		OK
S1.016	S1045	-0.601	0.000	0.24		231.9		OK
S1.017	S1046-Basin A2	0.004	0.000	0.64		50.3	SURCHARGED	
S1.018	S1047-Con	-0.108	0.000	0.67		47.7		OK
S1.019	S1048	-0.983	0.000	0.02		50.3		OK
S1.020	S1049-GR	-0.093	0.000	0.82		50.3	OK*	
S1.021	S1050	-0.578	0.000	0.03		50.3		OK
S12.000	S1051	-0.153	0.000	0.22		14.3		OK
S13.000	S1052	-0.088	0.000	0.35		5.7		OK
S12.001	S1053	-0.118	0.000	0.45		22.9		OK
S12.002	S1054	-0.132	0.000	0.36		25.2		OK
S12.003	S1055	-0.124	0.000	0.42		28.9		OK
S12.004	S1056	-0.118	0.000	0.46		35.2		OK
S12.005	S1057	-0.180	0.000	0.34		49.4		OK
S14.000	S1058	-0.127	0.000	0.06		1.0		OK
S14.001	S1059	-0.141	0.000	0.30		10.8		OK
S14.002	S1060	-0.132	0.000	0.36		11.9		OK
S14.003	S1061	-0.115	0.000	0.47		18.0		OK
S15.000	S1062	-0.070	0.000	0.54		9.1		OK
S16.000	S1063	-0.111	0.000	0.15		5.4		OK
S15.001	S1064	-0.132	0.000	0.36		23.2		OK
S17.000	S1065	-0.086	0.000	0.38		6.1		OK
S15.002	S1066	-0.236	0.000	0.28		31.8		OK
S15.003	S1067	-0.198	0.000	0.41		35.2		OK
S15.004	S1068	-0.191	0.000	0.42		38.4		OK
S15.005	S1069	-0.180	0.000	0.50		39.7		OK
S15.006	S1070	-0.179	0.000	0.44		41.0		OK
S18.000	S1071	-0.071	0.000	0.53		11.4		OK
S18.001	S1072	-0.164	0.000	0.16		12.4		OK
S15.007	S1073	-0.160	0.000	0.63		51.3		OK
S15.008	S1074	-0.200	0.000	0.44		66.2		OK
S15.009	S1075	-0.237	0.000	0.29		66.6		OK
S19.000	S1076	-0.093	0.000	0.30		5.9		OK
S19.001	S1077	-0.099	0.000	0.25		9.3		OK
S20.000	S1078	-0.075	0.000	0.49		7.8		OK
S20.001	S1079	-0.137	0.000	0.32		11.6		OK
S19.002	S1080	-0.177	0.000	0.34		32.4		OK
S14.004	S1081	-0.111	0.000	0.63		123.5		OK
S14.005	S1082	-0.090	0.000	0.92		120.1		OK
S14.006	S1083	-0.096	0.000	1.00		122.0		OK
S21.000	S1084	-0.121	0.000	0.07		2.5		OK
S22.000	S1085	-0.079	0.000	0.45		7.0		OK
S21.001	S1086	-0.042	0.000	0.34		11.7		OK
S21.002	S1087	0.022	0.000	0.39		15.1	SURCHARGED	

PFA Consulting		Page 5
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

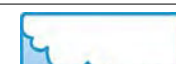
1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Flow (l/s)		
S14.007	S1088	-0.294	0.000	0.49		131.0	OK	

PFA Consulting		Page 6
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway		Network 2017.1.2

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S14.008	S1089	15 Winter	1	+0%					20.088
S14.009	S1090	15 Winter	1	+0%					20.037
S14.010	S1091	15 Winter	1	+0%					19.993
S23.000	S1092-GR	30 Winter	1	+0%					19.938
S14.011	S1093	15 Winter	1	+0%					19.934
S24.000	S1094	15 Winter	1	+0%					23.053
S24.001	S1095	15 Winter	1	+0%					22.027
S24.002	S1096	15 Winter	1	+0%					21.839
S24.003	S1097	15 Winter	1	+0%					21.360
S24.004	S1098	15 Winter	1	+0%					21.058
S25.000	S1099	15 Winter	1	+0%					20.757
S24.005	S1100	15 Winter	1	+0%					20.541
S24.006	S1101	15 Winter	1	+0%					20.354
S26.000	S1102	15 Winter	1	+0%					23.751
S26.001	S1103	15 Winter	1	+0%					23.552
S26.002	S1104	15 Winter	1	+0%					23.238
S27.000	S1105	15 Winter	1	+0%					23.284
S26.003	S1106	15 Winter	1	+0%					23.155
S26.004	S1107	15 Winter	1	+0%					22.472
S26.005	S1108	15 Winter	1	+0%					22.146
S28.000	S1109	15 Winter	1	+0%					22.199
S28.001	S1110	15 Winter	1	+0%					22.113
S26.006	S1111	15 Winter	1	+0%					21.617
S26.007	S1112	15 Winter	1	+0%					21.395
S26.008	S1113	15 Winter	1	+0%					21.296
S26.009	S1114	15 Winter	1	+0%					21.167
S26.010	S1115	15 Winter	1	+0%					20.962
S24.007	S1116	15 Winter	1	+0%					20.313
S24.008	S1117	15 Winter	1	+0%					20.177
S24.009	S1118	15 Winter	1	+0%					20.070
S24.010	S1119	15 Winter	1	+0%					20.033
S24.011	S1120	15 Winter	1	+0%					19.914
S29.000	S1121	15 Winter	1	+0%					24.226
S30.000	S1122	15 Winter	1	+0%					23.954
S29.001	S1123	15 Winter	1	+0%					23.760
S29.002	S1124	15 Winter	1	+0%					23.321
S29.003	S1125	15 Winter	1	+0%					23.078
S29.004	S1126	15 Winter	1	+0%					22.537
S31.000	S1127	15 Winter	1	+0%					22.757
S31.001	S1128	15 Winter	1	+0%					22.659
S29.005	S1129	15 Winter	1	+0%					22.426
S29.006	S1130	15 Winter	1	+0%					20.931
S29.007	S1131	15 Winter	1	+0%					20.577
S29.008	S1132	15 Winter	1	+0%					20.504
S29.009	S1133	15 Winter	1	+0%					20.360
S29.010	S1134	15 Winter	1	+0%					20.138
S29.011	S1135	15 Winter	1	+0%					20.010
S32.000	S1136	15 Winter	1	+0%					20.106
S29.012	S1137	15 Winter	1	+0%					19.934
S33.000	S1138	15 Winter	1	+0%					20.099
S29.013	S1139	15 Winter	1	+0%					19.829
S34.000	S1140	15 Winter	1	+0%					20.960
S34.001	S1141	15 Winter	1	+0%					20.455
S34.002	S1142	15 Winter	1	+0%					20.338
S34.003	S1143	15 Winter	1	+0%					19.945
S1.022	S1144-Basin A1	1440 Winter	1	+0%	1/960 Winter				19.709
S1.023	S1145-Con	1440 Winter	1	+0%					19.688

PFA Consulting		Page 7
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
	Name	Depth (m)	Volume (m³)			Flow (l/s)		Exceeded
S14.008	S1089	-0.297	0.000	0.60		131.8		OK
S14.009	S1090	-0.318	0.000	0.45		133.7		OK
S14.010	S1091	-0.317	0.000	0.36		129.2		OK
S23.000	S1092-GR	-0.011	0.000	0.12		4.5		OK
S14.011	S1093	-0.280	0.000	0.64		126.7		OK
S24.000	S1094	-0.162	0.000	0.17		13.2		OK
S24.001	S1095	-0.153	0.000	0.22		14.2		OK
S24.002	S1096	-0.130	0.000	0.37		21.7		OK
S24.003	S1097	-0.218	0.000	0.17		21.8		OK
S24.004	S1098	-0.221	0.000	0.16		21.8		OK
S25.000	S1099	-0.097	0.000	0.27		4.3		OK
S24.005	S1100	-0.186	0.000	0.31		25.5		OK
S24.006	S1101	-0.129	0.000	0.61		33.0		OK
S26.000	S1102	-0.093	0.000	0.30		5.0		OK
S26.001	S1103	-0.067	0.000	0.58		9.8		OK
S26.002	S1104	-0.135	0.000	0.34		12.2		OK
S27.000	S1105	-0.103	0.000	0.21		3.3		OK
S26.003	S1106	-0.150	0.000	0.24		19.5		OK
S26.004	S1107	-0.145	0.000	0.28		21.1		OK
S26.005	S1108	-0.142	0.000	0.29		23.3		OK
S28.000	S1109	-0.088	0.000	0.36		5.4		OK
S28.001	S1110	-0.100	0.000	0.24		7.6		OK
S26.006	S1111	-0.171	0.000	0.38		38.5		OK
S26.007	S1112	-0.147	0.000	0.51		41.6		OK
S26.008	S1113	-0.142	0.000	0.54		45.6		OK
S26.009	S1114	-0.156	0.000	0.46		48.5		OK
S26.010	S1115	-0.186	0.000	0.31		51.1		OK
S24.007	S1116	-0.134	0.000	0.84		84.9		OK
S24.008	S1117	-0.248	0.000	0.41		84.3		OK
S24.009	S1118	-0.223	0.000	0.50		85.0		OK
S24.010	S1119	-0.183	0.000	0.66		84.3		OK
S24.011	S1120	-0.253	0.000	0.39		90.9		OK
S29.000	S1121	-0.088	0.000	0.35		11.6		OK
S30.000	S1122	-0.099	0.000	0.25		4.0		OK
S29.001	S1123	-0.141	0.000	0.29		20.1		OK
S29.002	S1124	-0.139	0.000	0.31		21.9		OK
S29.003	S1125	-0.123	0.000	0.42		26.0		OK
S29.004	S1126	-0.173	0.000	0.38		29.2		OK
S31.000	S1127	-0.090	0.000	0.33		5.3		OK
S31.001	S1128	-0.070	0.000	0.54		8.7		OK
S29.005	S1129	-0.187	0.000	0.30		52.3		OK
S29.006	S1130	-0.158	0.000	0.45		57.5		OK
S29.007	S1131	-0.174	0.000	0.56		59.5		OK
S29.008	S1132	-0.184	0.000	0.51		61.7		OK
S29.009	S1133	-0.232	0.000	0.31		63.1		OK
S29.010	S1134	-0.182	0.000	0.53		63.4		OK
S29.011	S1135	-0.215	0.000	0.38		63.7		OK
S32.000	S1136	-0.086	0.000	0.37		6.1		OK
S29.012	S1137	-0.107	0.000	0.85		69.1		OK
S33.000	S1138	-0.102	0.000	0.22		3.6		OK
S29.013	S1139	-0.186	0.000	0.50		73.7		OK
S34.000	S1140	-0.090	0.000	0.33		5.7		OK
S34.001	S1141	-0.209	0.000	0.20		18.1		OK
S34.002	S1142	-0.192	0.000	0.28		27.5		OK
S34.003	S1143	-0.197	0.000	0.26		27.2		OK
S1.022	S1144-Basin A1	0.009	0.000	0.41		25.1	SURCHARGED	

PFA Consulting		Page 8
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)			
S1.023	S1145-Con	-1.455	0.000	0.00		25.1	OK	

PFA Consulting		Page 9
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

US/MH			Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded
PN	Name	Storm							Level (m)	Depth (m)	Volume (m³)
S1.024	S1146	1440 Winter	1	+0%					19.511	-1.787	0.000
S1.025	S1147	1440 Winter	1	+0%					19.432	-1.829	0.000
S1.026	S1148	1440 Winter	1	+0%					19.339	-1.836	0.000
S1.027	S1149	1440 Winter	1	+0%					19.319	-1.699	0.000
S1.028	S1150	1440 Winter	1	+0%					19.215	-1.753	0.000

US/MH			Pipe		Level Exceeded
PN	Name	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
S1.024	S1146	0.00		25.0	OK
S1.025	S1147	0.00		25.0	OK
S1.026	S1148	0.00		25.0	OK
S1.027	S1149	0.00		25.0	OK
S1.028	S1150	0.00		25.0	OK

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 450306 114752 SU 50306 14752 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) 60, 120, 240, 360, 480, 960, 1440, 2880
 Return Period(s) (years) 30
 Climate Change (%) 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	S1001	60 Summer	30	+0%					26.188	-0.097	0.000
S1.001	S1002	60 Summer	30	+0%					26.106	-0.051	0.000
S1.002	S1003	60 Summer	30	+0%					25.154	-0.113	0.000
S2.000	S1004	60 Summer	30	+0%					25.696	-0.081	0.000
S2.001	S1005	60 Summer	30	+0%					25.307	-0.063	0.000
S3.000	S1006	60 Summer	30	+0%					25.129	-0.102	0.000
S2.002	S1007	60 Summer	30	+0%					24.870	-0.101	0.000
S1.003	S1008	60 Summer	30	+0%					24.787	-0.086	0.000
S1.004	S1009	60 Summer	30	+0%					24.652	-0.155	0.000
S4.000	S1010	60 Summer	30	+0%					24.632	-0.055	0.000
S5.000	S1011	60 Summer	30	+0%					24.598	-0.053	0.000
S4.001	S1012	60 Summer	30	+0%					24.461	-0.056	0.000
S4.002	S1013	60 Summer	30	+0%					24.313	-0.160	0.000
S6.000	S1014	60 Summer	30	+0%					23.588	-0.075	0.000
S4.003	S1015	60 Summer	30	+0%					23.411	-0.161	0.000
S1.005	S1016	60 Summer	30	+0%					23.247	-0.183	0.000
S7.000	S1017	60 Summer	30	+0%					23.671	-0.112	0.000
S7.001	S1018	60 Summer	30	+0%					23.579	-0.038	0.000
S7.002	S1019	60 Summer	30	+0%					23.511	-0.056	0.000
S7.003	S1020	60 Summer	30	+0%					23.253	-0.248	0.000
S7.004	S1021	60 Summer	30	+0%					23.209	-0.115	0.000
S1.006	S1022	60 Summer	30	+0%					23.194	-0.362	0.000
S8.000	S1023	60 Summer	30	+0%					24.553	-0.152	0.000
S1.007	S1024	60 Summer	30	+0%					23.117	-0.344	0.000
S9.000	S1025	60 Summer	30	+0%					27.460	-0.126	0.000
S9.001	S1026	60 Summer	30	+0%					26.203	-0.104	0.000
S9.002	S1027	60 Summer	30	+0%	30/60 Summer				26.031	0.042	0.000
S9.003	S1028	60 Summer	30	+0%					25.822	-0.114	0.000
S9.004	S1029	60 Summer	30	+0%					25.378	-0.093	0.000
S9.005	S1030	60 Summer	30	+0%					24.725	-0.104	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

			Pipe		
	US/MH	Flow /	Overflow	Flow	Level
PN	Name	Cap.	(l/s)	(l/s)	Exceeded
S1.000	S1001	0.27		4.4	OK
S1.001	S1002	0.76		19.6	OK
S1.002	S1003	0.49		28.5	OK
S2.000	S1004	0.44		10.4	OK
S2.001	S1005	0.63		15.9	OK
S3.000	S1006	0.22		5.6	OK
S2.002	S1007	0.58		24.6	OK
S1.003	S1008	0.86		55.2	OK
S1.004	S1009	0.47		70.9	OK
S4.000	S1010	0.72		12.3	OK
S5.000	S1011	0.75		14.4	OK
S4.001	S1012	0.92		27.4	OK
S4.002	S1013	0.44		53.7	OK
S6.000	S1014	0.78		30.5	OK
S4.003	S1015	0.73		117.6	OK
S1.005	S1016	0.64		189.1	OK
S7.000	S1017	0.50		20.6	OK
S7.001	S1018	1.00		31.5	OK
S7.002	S1019	0.92		33.0	OK
S7.003	S1020	0.30		54.9	OK
S7.004	S1021	0.33		54.0	OK
S1.006	S1022	0.46		261.4	OK
S8.000	S1023	0.49		72.5	OK
S1.007	S1024	0.49		325.7	OK
S9.000	S1025	0.40		36.8	OK
S9.001	S1026	0.56		44.5	OK
S9.002	S1027	1.40		45.2	SURCHARGED
S9.003	S1028	0.49		46.9	OK
S9.004	S1029	0.65		59.9	OK
S9.005	S1030	0.75		62.4	OK

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S9.006	S1031	60 Summer	30	+0%					24.552
S1.008	S1032	60 Summer	30	+0%					23.034
S10.000	S1033	60 Summer	30	+0%					25.699
S10.001	S1034	60 Summer	30	+0%					25.572
S10.002	S1035	60 Summer	30	+0%					25.336
S1.009	S1036	60 Summer	30	+0%					22.943
S1.010	S1037	60 Summer	30	+0%					22.925
S1.011	S1038	60 Summer	30	+0%					22.901
S1.012	S1039	60 Summer	30	+0%					22.874
S1.013	S1040	60 Summer	30	+0%					22.848
S1.014	S1041	60 Summer	30	+0%					22.448
S1.015	S1042	60 Summer	30	+0%					21.972
S11.000	S1043	60 Summer	30	+0%					22.630
S11.001	S1044	60 Summer	30	+0%					22.455
S1.016	S1045	60 Summer	30	+0%					21.735
S1.017	S1046-Basin A2	60 Winter	30	+0%	30/60 Summer				21.586
S1.018	S1047-Con	60 Winter	30	+0%	30/60 Summer				21.288
S1.019	S1048	60 Winter	30	+0%					21.157
S1.020	S1049-GR	60 Winter	30	+0%	30/60 Summer				21.104
S1.021	S1050	60 Winter	30	+0%					20.937
S12.000	S1051	60 Summer	30	+0%					22.400
S13.000	S1052	60 Summer	30	+0%					21.992
S12.001	S1053	60 Summer	30	+0%					21.842
S12.002	S1054	60 Summer	30	+0%					21.600
S12.003	S1055	60 Summer	30	+0%					21.314
S12.004	S1056	60 Summer	30	+0%					21.061
S12.005	S1057	60 Summer	30	+0%					20.041
S14.000	S1058	60 Summer	30	+0%					21.095
S14.001	S1059	60 Summer	30	+0%					20.933
S14.002	S1060	60 Summer	30	+0%	30/60 Summer				20.893
S14.003	S1061	60 Summer	30	+0%	30/60 Summer				20.836
S15.000	S1062	60 Summer	30	+0%					22.508
S16.000	S1063	60 Summer	30	+0%					22.611
S15.001	S1064	60 Summer	30	+0%					22.156
S17.000	S1065	60 Summer	30	+0%					21.564
S15.002	S1066	60 Summer	30	+0%	30/60 Summer				21.531
S15.003	S1067	60 Summer	30	+0%	30/60 Summer				21.433
S15.004	S1068	60 Summer	30	+0%	30/60 Summer				21.396
S15.005	S1069	60 Summer	30	+0%	30/60 Summer				21.313
S15.006	S1070	60 Summer	30	+0%	30/60 Summer				21.278
S18.000	S1071	60 Summer	30	+0%					21.785
S18.001	S1072	60 Summer	30	+0%					21.336
S15.007	S1073	60 Summer	30	+0%	30/60 Summer				21.195
S15.008	S1074	60 Summer	30	+0%					21.043
S15.009	S1075	60 Summer	30	+0%	30/60 Summer				20.857
S19.000	S1076	60 Summer	30	+0%					22.387
S19.001	S1077	60 Summer	30	+0%					22.120
S20.000	S1078	60 Summer	30	+0%					21.331
S20.001	S1079	60 Summer	30	+0%					21.155
S19.002	S1080	60 Summer	30	+0%					21.016
S14.004	S1081	60 Summer	30	+0%	30/60 Summer				20.669
S14.005	S1082	60 Summer	30	+0%	30/60 Summer				20.560
S14.006	S1083	60 Summer	30	+0%	30/60 Summer				20.499
S21.000	S1084	60 Summer	30	+0%	30/60 Summer				20.582
S22.000	S1085	60 Summer	30	+0%	30/60 Summer				20.620
S21.001	S1086	60 Summer	30	+0%	30/60 Summer				20.576
S21.002	S1087	60 Summer	30	+0%	30/60 Summer				20.523

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)			
S9.006	S1031	-0.168	0.000	0.40		69.8	OK	
S1.008	S1032	-0.292	0.000	0.54		386.0	OK	
S10.000	S1033	-0.086	0.000	0.39		7.8	OK	
S10.001	S1034	-0.068	0.000	0.57		13.7	OK	
S10.002	S1035	-0.131	0.000	0.36		43.1	OK	
S1.009	S1036	-0.204	0.000	0.91		430.1	OK	
S1.010	S1037	-0.209	0.000	1.04		430.4	OK	
S1.011	S1038	-0.217	0.000	1.06		430.9	OK	
S1.012	S1039	-0.226	0.000	1.05		434.0	OK	
S1.013	S1040	-0.236	0.000	1.04		436.0	OK	
S1.014	S1041	-0.620	0.000	0.21		436.8	OK	
S1.015	S1042	-0.257	0.000	0.85		458.6	OK	
S11.000	S1043	-0.084	0.000	0.40		6.5	OK	
S11.001	S1044	-0.134	0.000	0.34		26.8	OK	
S1.016	S1045	-0.453	0.000	0.49		472.7	OK	
S1.017	S1046-Basin A2	0.286	0.000	1.14		90.7	SURCHARGED	
S1.018	S1047-Con	0.088	0.000	1.28		90.7	SURCHARGED	
S1.019	S1048	-0.873	0.000	0.03		90.7	OK	
S1.020	S1049-GR	0.065	0.000	1.47		90.4	SURCHARGED*	
S1.021	S1050	-0.519	0.000	0.05		90.4	OK	
S12.000	S1051	-0.129	0.000	0.38		25.0	OK	
S13.000	S1052	-0.065	0.000	0.61		10.0	OK	
S12.001	S1053	-0.072	0.000	0.80		40.9	OK	
S12.002	S1054	-0.094	0.000	0.64		45.1	OK	
S12.003	S1055	-0.077	0.000	0.77		52.7	OK	
S12.004	S1056	-0.063	0.000	0.86		66.2	OK	
S12.005	S1057	-0.122	0.000	0.65		96.2	OK	
S14.000	S1058	-0.118	0.000	0.10		1.7	OK	
S14.001	S1059	-0.038	0.000	0.61		22.1	OK	
S14.002	S1060	0.044	0.000	0.63		21.0	SURCHARGED	
S14.003	S1061	0.047	0.000	0.85		32.2	SURCHARGED	
S15.000	S1062	-0.035	0.000	0.94		15.9	OK	
S16.000	S1063	-0.098	0.000	0.26		9.3	OK	
S15.001	S1064	-0.090	0.000	0.66		42.8	OK	
S17.000	S1065	-0.049	0.000	0.66		10.6	OK	
S15.002	S1066	0.039	0.000	0.50		55.7	SURCHARGED	
S15.003	S1067	0.049	0.000	0.71		60.2	SURCHARGED	
S15.004	S1068	0.057	0.000	0.70		64.5	SURCHARGED	
S15.005	S1069	0.031	0.000	0.85		68.0	SURCHARGED	
S15.006	S1070	0.029	0.000	0.75		70.0	SURCHARGED	
S18.000	S1071	-0.037	0.000	0.93		19.9	OK	
S18.001	S1072	-0.143	0.000	0.29		22.0	OK	
S15.007	S1073	0.010	0.000	1.07		88.0	SURCHARGED	
S15.008	S1074	-0.105	0.000	0.80		121.7	OK	
S15.009	S1075	0.028	0.000	0.51		116.8	SURCHARGED	
S19.000	S1076	-0.073	0.000	0.53		10.4	OK	
S19.001	S1077	-0.077	0.000	0.47		17.4	OK	
S20.000	S1078	-0.044	0.000	0.85		13.6	OK	
S20.001	S1079	-0.100	0.000	0.59		21.4	OK	
S19.002	S1080	-0.117	0.000	0.67		63.3	OK	
S14.004	S1081	0.110	0.000	1.19		233.4	SURCHARGED	
S14.005	S1082	0.079	0.000	1.81		237.7	SURCHARGED	
S14.006	S1083	0.046	0.000	2.01		245.4	SURCHARGED	
S21.000	S1084	0.306	0.000	0.10		3.8	SURCHARGED	
S22.000	S1085	0.353	0.000	0.66		10.4	SURCHARGED	
S21.001	S1086	0.380	0.000	0.54		18.5	SURCHARGED	

PFA Consulting		Page 5
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Surcharged Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
S21.002	S1087	0.399	0.000	0.71		27.7	SURCHARGED

PFA Consulting		Page 6
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S14.007	S1088	60 Summer	30	+0%	30/60 Summer				20.432
S14.008	S1089	60 Summer	30	+0%	30/60 Summer				20.393
S14.009	S1090	60 Winter	30	+0%					20.355
S14.010	S1091	60 Summer	30	+0%					20.310
S23.000	S1092-GR	60 Winter	30	+0%	30/60 Summer				20.231
S14.011	S1093	60 Winter	30	+0%					20.214
S24.000	S1094	60 Summer	30	+0%					23.074
S24.001	S1095	60 Summer	30	+0%					22.052
S24.002	S1096	60 Summer	30	+0%					21.882
S24.003	S1097	60 Summer	30	+0%					21.392
S24.004	S1098	60 Summer	30	+0%					21.089
S25.000	S1099	60 Summer	30	+0%					20.775
S24.005	S1100	60 Summer	30	+0%					20.644
S24.006	S1101	60 Summer	30	+0%	30/60 Summer				20.569
S26.000	S1102	60 Summer	30	+0%					23.771
S26.001	S1103	60 Summer	30	+0%	30/60 Summer				23.647
S26.002	S1104	60 Summer	30	+0%					23.278
S27.000	S1105	60 Summer	30	+0%					23.299
S26.003	S1106	60 Summer	30	+0%					23.187
S26.004	S1107	60 Summer	30	+0%					22.508
S26.005	S1108	60 Summer	30	+0%					22.184
S28.000	S1109	60 Summer	30	+0%					22.222
S28.001	S1110	60 Summer	30	+0%					22.132
S26.006	S1111	60 Summer	30	+0%					21.683
S26.007	S1112	60 Summer	30	+0%	30/60 Summer				21.546
S26.008	S1113	60 Summer	30	+0%					21.436
S26.009	S1114	60 Summer	30	+0%					21.238
S26.010	S1115	60 Summer	30	+0%					21.012
S24.007	S1116	60 Summer	30	+0%	30/60 Summer				20.508
S24.008	S1117	60 Summer	30	+0%	30/60 Summer				20.460
S24.009	S1118	60 Summer	30	+0%	30/60 Summer				20.326
S24.010	S1119	60 Summer	30	+0%	30/60 Summer				20.216
S24.011	S1120	60 Summer	30	+0%					20.009
S29.000	S1121	60 Summer	30	+0%					24.248
S30.000	S1122	60 Summer	30	+0%					23.972
S29.001	S1123	60 Summer	30	+0%					23.793
S29.002	S1124	60 Summer	30	+0%					23.357
S29.003	S1125	60 Summer	30	+0%					23.127
S29.004	S1126	60 Summer	30	+0%					22.598
S31.000	S1127	60 Summer	30	+0%					22.779
S31.001	S1128	60 Summer	30	+0%					22.708
S29.005	S1129	60 Summer	30	+0%					22.480
S29.006	S1130	60 Summer	30	+0%					21.039
S29.007	S1131	60 Summer	30	+0%	30/60 Summer				20.765
S29.008	S1132	60 Summer	30	+0%					20.619
S29.009	S1133	60 Summer	30	+0%					20.476
S29.010	S1134	60 Summer	30	+0%	30/60 Summer				20.376
S29.011	S1135	60 Summer	30	+0%	30/60 Summer				20.269
S32.000	S1136	60 Summer	30	+0%					20.172
S29.012	S1137	60 Summer	30	+0%	30/60 Summer				20.120
S33.000	S1138	60 Summer	30	+0%					20.115
S29.013	S1139	60 Summer	30	+0%					19.937
S34.000	S1140	60 Summer	30	+0%					20.982
S34.001	S1141	60 Summer	30	+0%					20.495
S34.002	S1142	60 Summer	30	+0%					20.392
S34.003	S1143	60 Summer	30	+0%					19.996
S1.022	S1144-Basin A1	480 Winter	30	+0%	30/60 Summer				19.888

PFA Consulting		Page 7
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
	Name	Depth (m)	Volume (m³)			Flow (l/s)		Exceeded
S14.007	S1088	0.008	0.000	1.03		274.0	SURCHARGED	
S14.008	S1089	0.008	0.000	1.26		277.1	SURCHARGED	
S14.009	S1090	0.000	0.000	0.90		267.7	OK	
S14.010	S1091	0.000	0.000	0.78		277.1	OK	
S23.000	S1092-GR	0.282	0.000	0.21		7.8	SURCHARGED	
S14.011	S1093	0.000	0.000	1.37		270.6	OK	
S24.000	S1094	-0.141	0.000	0.30		23.2	OK	
S24.001	S1095	-0.128	0.000	0.39		25.1	OK	
S24.002	S1096	-0.087	0.000	0.69		40.6	OK	
S24.003	S1097	-0.186	0.000	0.31		40.6	OK	
S24.004	S1098	-0.190	0.000	0.29		40.5	OK	
S25.000	S1099	-0.078	0.000	0.47		7.5	OK	
S24.005	S1100	-0.083	0.000	0.57		47.1	OK	
S24.006	S1101	0.086	0.000	1.15		61.6	SURCHARGED	
S26.000	S1102	-0.073	0.000	0.52		8.8	OK	
S26.001	S1103	0.028	0.000	1.06		17.9	SURCHARGED	
S26.002	S1104	-0.095	0.000	0.62		22.5	OK	
S27.000	S1105	-0.087	0.000	0.37		5.7	OK	
S26.003	S1106	-0.118	0.000	0.45		36.5	OK	
S26.004	S1107	-0.109	0.000	0.52		39.8	OK	
S26.005	S1108	-0.104	0.000	0.56		44.6	OK	
S28.000	S1109	-0.064	0.000	0.62		9.5	OK	
S28.001	S1110	-0.080	0.000	0.44		14.1	OK	
S26.006	S1111	-0.105	0.000	0.74		74.8	OK	
S26.007	S1112	0.004	0.000	0.96		78.2	SURCHARGED	
S26.008	S1113	-0.001	0.000	1.00		85.0	OK	
S26.009	S1114	-0.085	0.000	0.86		90.4	OK	
S26.010	S1115	-0.135	0.000	0.58		96.3	OK	
S24.007	S1116	0.060	0.000	1.54		156.8	SURCHARGED	
S24.008	S1117	0.035	0.000	0.77		156.9	SURCHARGED	
S24.009	S1118	0.033	0.000	0.93		156.9	SURCHARGED	
S24.010	S1119	0.000	0.000	1.22		156.7	SURCHARGED	
S24.011	S1120	-0.158	0.000	0.74		171.9	OK	
S29.000	S1121	-0.066	0.000	0.61		20.0	OK	
S30.000	S1122	-0.081	0.000	0.43		7.0	OK	
S29.001	S1123	-0.107	0.000	0.54		36.7	OK	
S29.002	S1124	-0.104	0.000	0.56		40.3	OK	
S29.003	S1125	-0.073	0.000	0.79		48.5	OK	
S29.004	S1126	-0.112	0.000	0.71		55.2	OK	
S31.000	S1127	-0.068	0.000	0.58		9.3	OK	
S31.001	S1128	-0.021	0.000	1.00		16.0	OK	
S29.005	S1129	-0.133	0.000	0.59		102.0	OK	
S29.006	S1130	-0.049	0.000	0.89		113.1	OK	
S29.007	S1131	0.015	0.000	1.09		117.2	SURCHARGED	
S29.008	S1132	-0.070	0.000	1.00		120.7	OK	
S29.009	S1133	-0.116	0.000	0.60		122.4	OK	
S29.010	S1134	0.056	0.000	1.03		124.4	SURCHARGED	
S29.011	S1135	0.044	0.000	0.75		125.9	SURCHARGED	
S32.000	S1136	-0.020	0.000	0.64		10.4	OK	
S29.012	S1137	0.079	0.000	1.67		136.3	SURCHARGED	
S33.000	S1138	-0.086	0.000	0.38		6.4	OK	
S29.013	S1139	-0.078	0.000	0.98		144.1	OK	
S34.000	S1140	-0.069	0.000	0.57		9.8	OK	
S34.001	S1141	-0.169	0.000	0.39		35.7	OK	
S34.002	S1142	-0.139	0.000	0.56		55.6	OK	
S34.003	S1143	-0.146	0.000	0.52		55.4	OK	

PFA Consulting		Page 8
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Surcharged		Flooded		Pipe		Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	
S1.022	S1144-Basin A1	0.188	0.000	0.83		50.9	SURCHARGED	

PFA Consulting		Page 9
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.023	S1145-Con	360 Winter	30	+0%					19.854	-1.289
S1.024	S1146	360 Winter	30	+0%					19.566	-1.732
S1.025	S1147	360 Winter	30	+0%					19.487	-1.774
S1.026	S1148	360 Winter	30	+0%					19.392	-1.783
S1.027	S1149	360 Winter	30	+0%					19.370	-1.648
S1.028	S1150	360 Winter	30	+0%					19.246	-1.722

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.023	S1145-Con	0.000	0.01		51.1	OK	
S1.024	S1146	0.000	0.00		51.0	OK	
S1.025	S1147	0.000	0.00		51.0	OK	
S1.026	S1148	0.000	0.00		51.0	OK	
S1.027	S1149	0.000	0.00		51.0	OK	
S1.028	S1150	0.000	0.00		50.9	OK	

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0% Sensitivity 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 Return Period (years) 100 Cv (Summer) 0.750
 FEH Rainfall Version 2013 Cv (Winter) 0.840
 Site Location GB 450306 114752 SU 50306 14752

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

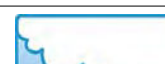
Profile(s) Summer and Winter
 Duration(s) (mins) 60, 120, 240, 360, 480, 960, 1440, 2880, 4320
 Sensitivity flows(s) (%) 0, +20, +40

								Water	Surcharged	Flooded
PN	US/MH Name	Storm	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m ³)
S1.000	S1001	60 Summer	+0%	+20%/60 Summer				26.196	-0.089	0.000
S1.001	S1002	60 Summer	+0%	+20%/60 Summer				26.125	-0.032	0.000
S1.002	S1003	60 Summer	+0%					25.172	-0.095	0.000
S2.000	S1004	60 Summer	+0%					25.707	-0.070	0.000
S2.001	S1005	60 Summer	+0%	+40%/60 Summer				25.323	-0.047	0.000
S3.000	S1006	60 Summer	+0%					25.135	-0.096	0.000
S2.002	S1007	60 Summer	+0%	+0%/60 Summer				24.977	0.007	0.000
S1.003	S1008	60 Summer	+0%	+0%/60 Summer				24.879	0.006	0.000
S1.004	S1009	60 Summer	+0%					24.672	-0.135	0.000
S4.000	S1010	60 Summer	+0%	+20%/60 Summer				24.666	-0.021	0.000
S5.000	S1011	60 Summer	+0%	+20%/60 Summer				24.644	-0.006	0.000
S4.001	S1012	60 Summer	+0%	+0%/60 Summer				24.522	0.006	0.000
S4.002	S1013	60 Summer	+0%					24.333	-0.139	0.000
S6.000	S1014	60 Summer	+0%	+20%/60 Summer				23.641	-0.022	0.000
S4.003	S1015	60 Summer	+0%	+0%/60 Summer				23.590	0.019	0.000
S1.005	S1016	60 Summer	+0%	+0%/60 Summer				23.490	0.059	0.000
S7.000	S1017	60 Summer	+0%	+20%/60 Summer				23.726	-0.058	0.000
S7.001	S1018	60 Summer	+0%	+0%/60 Summer				23.659	0.043	0.000
S7.002	S1019	60 Summer	+0%	+0%/60 Summer				23.578	0.012	0.000
S7.003	S1020	60 Summer	+0%	+20%/60 Summer				23.488	-0.014	0.000
S7.004	S1021	60 Summer	+0%	+0%/60 Summer				23.390	0.066	0.000
S1.006	S1022	60 Summer	+0%	+40%/60 Summer				23.362	-0.194	0.000
S8.000	S1023	60 Summer	+0%					24.576	-0.129	0.000
S1.007	S1024	60 Summer	+0%	+40%/60 Summer				23.305	-0.156	0.000
S9.000	S1025	60 Summer	+0%					27.475	-0.111	0.000
S9.001	S1026	60 Summer	+0%	+20%/60 Summer				26.252	-0.056	0.000
S9.002	S1027	60 Summer	+0%	+0%/60 Summer				26.091	0.102	0.000
S9.003	S1028	60 Summer	+0%	+40%/60 Summer				25.840	-0.097	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

			Pipe		
	US/MH	Flow /	Overflow	Flow	Level
PN	Name	Cap.	(l/s)	(l/s)	Exceeded
S1.000	S1001	0.35		5.6	OK
S1.001	S1002	0.97		24.9	OK
S1.002	S1003	0.63		36.2	OK
S2.000	S1004	0.56		13.2	OK
S2.001	S1005	0.81		20.2	OK
S3.000	S1006	0.29		7.2	OK
S2.002	S1007	0.71		30.1	SURCHARGED
S1.003	S1008	1.05		67.3	SURCHARGED
S1.004	S1009	0.57		87.3	OK
S4.000	S1010	0.91		15.5	OK
S5.000	S1011	0.95		18.2	OK
S4.001	S1012	1.15		34.5	SURCHARGED
S4.002	S1013	0.55		67.4	OK
S6.000	S1014	0.99		38.8	OK
S4.003	S1015	0.92		148.5	SURCHARGED
S1.005	S1016	0.78		231.9	SURCHARGED
S7.000	S1017	0.62		25.7	OK
S7.001	S1018	1.25		39.6	SURCHARGED
S7.002	S1019	1.15		41.6	SURCHARGED
S7.003	S1020	0.36		67.3	OK
S7.004	S1021	0.36		60.2	SURCHARGED
S1.006	S1022	0.54		310.9	OK
S8.000	S1023	0.62		92.2	OK
S1.007	S1024	0.57		384.1	OK
S9.000	S1025	0.51		46.8	OK
S9.001	S1026	0.71		56.4	OK
S9.002	S1027	1.77		57.0	SURCHARGED
S9.003	S1028	0.61		59.0	OK

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S9.004	S1029	60 Summer	+0%	+40%/60 Summer				25.402	-0.069
S9.005	S1030	60 Summer	+0%	+20%/60 Summer				24.762	-0.068
S9.006	S1031	60 Summer	+0%					24.571	-0.148
S1.008	S1032	60 Summer	+0%	+40%/60 Summer				23.230	-0.096
S10.000	S1033	60 Summer	+0%					25.709	-0.076
S10.001	S1034	60 Summer	+0%					25.586	-0.054
S10.002	S1035	60 Summer	+0%					25.350	-0.117
S1.009	S1036	60 Summer	+0%	+20%/60 Summer				23.118	-0.029
S1.010	S1037	60 Summer	+0%	+20%/60 Summer				23.082	-0.052
S1.011	S1038	60 Summer	+0%	+20%/60 Summer				23.053	-0.064
S1.012	S1039	60 Summer	+0%	+20%/60 Summer				22.999	-0.101
S1.013	S1040	60 Summer	+0%					22.941	-0.143
S1.014	S1041	60 Summer	+0%					22.463	-0.605
S1.015	S1042	60 Summer	+0%					22.040	-0.189
S11.000	S1043	60 Summer	+0%					22.640	-0.074
S11.001	S1044	60 Summer	+0%					22.468	-0.121
S1.016	S1045	60 Summer	+0%					21.777	-0.411
S1.017	S1046-Basin A2	60 Winter	+0%	+0%/60 Summer				21.723	0.423
S1.018	S1047-Con	60 Winter	+0%	+0%/60 Summer				21.348	0.148
S1.019	S1048	60 Winter	+0%					21.185	-0.845
S1.020	S1049-GR	60 Winter	+0%	+0%/60 Summer				21.137	0.098
S1.021	S1050	60 Winter	+0%					20.948	-0.508
S12.000	S1051	60 Summer	+0%	+40%/60 Summer				22.414	-0.115
S13.000	S1052	60 Summer	+0%	+20%/60 Summer				22.007	-0.050
S12.001	S1053	60 Summer	+0%	+20%/60 Summer				21.889	-0.025
S12.002	S1054	60 Summer	+0%	+20%/60 Summer				21.623	-0.072
S12.003	S1055	60 Summer	+0%	+0%/60 Summer				21.433	0.042
S12.004	S1056	60 Summer	+0%	+0%/60 Summer				21.199	0.075
S12.005	S1057	60 Summer	+0%	+40%/360 Winter				20.067	-0.096
S14.000	S1058	60 Summer	+0%	+0%/60 Summer				21.248	0.035
S14.001	S1059	60 Summer	+0%	+0%/60 Summer				21.240	0.269
S14.002	S1060	60 Summer	+0%	+0%/60 Summer				21.179	0.330
S14.003	S1061	60 Summer	+0%	+0%/60 Summer				21.116	0.327
S15.000	S1062	60 Summer	+0%	+0%/60 Summer				22.643	0.099
S16.000	S1063	60 Summer	+0%	+40%/60 Summer				22.619	-0.090
S15.001	S1064	60 Summer	+0%	+20%/60 Summer				22.191	-0.056
S17.000	S1065	60 Summer	+0%	+0%/60 Summer				21.870	0.257
S15.002	S1066	60 Summer	+0%	+0%/60 Summer				21.822	0.330
S15.003	S1067	60 Summer	+0%	+0%/60 Summer				21.728	0.344
S15.004	S1068	60 Summer	+0%	+0%/60 Summer				21.692	0.353
S15.005	S1069	60 Summer	+0%	+0%/60 Summer				21.613	0.331
S15.006	S1070	60 Summer	+0%	+0%/60 Summer				21.581	0.331
S18.000	S1071	60 Summer	+0%	+0%/60 Summer				21.922	0.101
S18.001	S1072	60 Summer	+0%	+0%/60 Summer				21.523	0.044
S15.007	S1073	60 Summer	+0%	+0%/60 Summer				21.500	0.315
S15.008	S1074	60 Summer	+0%	+0%/60 Summer				21.422	0.274
S15.009	S1075	60 Summer	+0%	+0%/60 Summer				21.116	0.286
S19.000	S1076	60 Summer	+0%	+40%/60 Summer				22.399	-0.060
S19.001	S1077	60 Summer	+0%	+40%/60 Summer				22.131	-0.066
S20.000	S1078	60 Summer	+0%	+0%/60 Summer				21.388	0.012
S20.001	S1079	60 Summer	+0%	+0%/60 Summer				21.269	0.014
S19.002	S1080	60 Summer	+0%	+0%/60 Summer				21.200	0.067
S14.004	S1081	60 Summer	+0%	+0%/60 Summer				20.917	0.358
S14.005	S1082	60 Summer	+0%	+0%/60 Summer				20.753	0.272
S14.006	S1083	60 Summer	+0%	+0%/60 Summer				20.612	0.159
S21.000	S1084	60 Summer	+0%	+0%/60 Summer				20.688	0.412

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S9.004	S1029	0.000	0.81		75.4	OK	
S9.005	S1030	0.000	0.94		78.5	OK	
S9.006	S1031	0.000	0.50		88.0	OK	
S1.008	S1032	0.000	0.62		443.7	OK	
S10.000	S1033	0.000	0.49		9.9	OK	
S10.001	S1034	0.000	0.72		17.4	OK	
S10.002	S1035	0.000	0.46		54.8	OK	
S1.009	S1036	0.000	1.04		486.8	OK	
S1.010	S1037	0.000	1.17		484.4	OK	
S1.011	S1038	0.000	1.19		482.8	OK	
S1.012	S1039	0.000	1.17		484.4	OK	
S1.013	S1040	0.000	1.15		486.2	OK	
S1.014	S1041	0.000	0.24		488.3	OK	
S1.015	S1042	0.000	0.98		525.1	OK	
S11.000	S1043	0.000	0.51		8.2	OK	
S11.001	S1044	0.000	0.43		34.1	OK	
S1.016	S1045	0.000	0.57		548.2	OK	
S1.017	S1046-Basin A2	0.000	1.28		101.4	SURCHARGED	
S1.018	S1047-Con	0.000	1.43		101.4	SURCHARGED	
S1.019	S1048	0.000	0.03		101.4	OK	
S1.020	S1049-GR	0.000	1.65		101.1	SURCHARGED*	
S1.021	S1050	0.000	0.06		101.1	OK	
S12.000	S1051	0.000	0.48		31.8	OK	
S13.000	S1052	0.000	0.78		12.7	OK	
S12.001	S1053	0.000	1.00		51.2	OK	
S12.002	S1054	0.000	0.80		56.7	OK	
S12.003	S1055	0.000	0.94		64.8	SURCHARGED	
S12.004	S1056	0.000	1.04		80.1	SURCHARGED	
S12.005	S1057	0.000	0.80		117.1	OK	
S14.000	S1058	0.000	0.15		2.4	SURCHARGED	
S14.001	S1059	0.000	0.63		23.0	SURCHARGED	
S14.002	S1060	0.000	0.71		23.6	SURCHARGED	
S14.003	S1061	0.000	0.99		37.4	SURCHARGED	
S15.000	S1062	0.000	1.16		19.6	SURCHARGED	
S16.000	S1063	0.000	0.34		11.9	OK	
S15.001	S1064	0.000	0.82		53.1	OK	
S17.000	S1065	0.000	0.77		12.3	SURCHARGED	
S15.002	S1066	0.000	0.58		64.8	SURCHARGED	
S15.003	S1067	0.000	0.86		73.2	SURCHARGED	
S15.004	S1068	0.000	0.88		81.2	SURCHARGED	
S15.005	S1069	0.000	1.03		82.3	SURCHARGED	
S15.006	S1070	0.000	0.90		84.3	SURCHARGED	
S18.000	S1071	0.000	1.14		24.5	SURCHARGED	
S18.001	S1072	0.000	0.34		26.1	SURCHARGED	
S15.007	S1073	0.000	1.35		110.9	SURCHARGED	
S15.008	S1074	0.000	0.97		147.4	SURCHARGED	
S15.009	S1075	0.000	0.65		148.8	SURCHARGED	
S19.000	S1076	0.000	0.67		13.2	OK	
S19.001	S1077	0.000	0.60		22.2	OK	
S20.000	S1078	0.000	1.06		17.0	SURCHARGED	
S20.001	S1079	0.000	0.72		26.0	SURCHARGED	
S19.002	S1080	0.000	0.78		74.5	SURCHARGED	
S14.004	S1081	0.000	1.45		283.9	SURCHARGED	
S14.005	S1082	0.000	2.20		288.5	SURCHARGED	
S14.006	S1083	0.000	2.42		294.7	SURCHARGED	

PFA Consulting		Page 5
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S21.000	S1084	0.000	0.14		5.2	SURCHARGED	

PFA Consulting		Page 6
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
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File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S22.000	S1085	60 Summer	+0%	+0%/60 Summer				20.760	0.493	0.000
S21.001	S1086	60 Summer	+0%	+0%/60 Summer				20.681	0.485	0.000
S21.002	S1087	60 Summer	+0%	+0%/60 Summer				20.607	0.483	0.000
S14.007	S1088	60 Summer	+0%	+0%/60 Summer				20.463	0.039	0.000
S14.008	S1089	60 Summer	+0%	+0%/60 Summer				20.414	0.029	0.000
S14.009	S1090	60 Summer	+0%	+0%/60 Summer				20.368	0.013	0.000
S14.010	S1091	60 Winter	+0%	+20%/60 Summer				20.310	0.000	0.000
S23.000	S1092-GR	60 Summer	+0%	+0%/60 Summer				20.251	0.302	0.000
S14.011	S1093	60 Summer	+0%	+20%/60 Summer				20.214	0.000	0.000
S24.000	S1094	60 Summer	+0%					23.086	-0.129	0.000
S24.001	S1095	60 Summer	+0%	+40%/60 Summer				22.067	-0.113	0.000
S24.002	S1096	60 Summer	+0%	+20%/60 Summer				21.908	-0.061	0.000
S24.003	S1097	60 Summer	+0%	+40%/60 Summer				21.409	-0.170	0.000
S24.004	S1098	60 Summer	+0%	+40%/60 Summer				21.105	-0.174	0.000
S25.000	S1099	60 Summer	+0%	+0%/60 Summer				20.865	0.012	0.000
S24.005	S1100	60 Summer	+0%	+0%/60 Summer				20.831	0.104	0.000
S24.006	S1101	60 Summer	+0%	+0%/60 Summer				20.720	0.238	0.000
S26.000	S1102	60 Summer	+0%	+0%/60 Summer				23.867	0.023	0.000
S26.001	S1103	60 Summer	+0%	+0%/60 Summer				23.778	0.159	0.000
S26.002	S1104	60 Summer	+0%	+40%/60 Summer				23.297	-0.076	0.000
S27.000	S1105	60 Summer	+0%					23.309	-0.078	0.000
S26.003	S1106	60 Summer	+0%	+40%/60 Summer				23.202	-0.104	0.000
S26.004	S1107	60 Summer	+0%	+20%/60 Summer				22.525	-0.092	0.000
S26.005	S1108	60 Summer	+0%	+20%/60 Summer				22.203	-0.086	0.000
S28.000	S1109	60 Summer	+0%	+20%/60 Summer				22.238	-0.049	0.000
S28.001	S1110	60 Summer	+0%	+20%/60 Summer				22.143	-0.069	0.000
S26.006	S1111	60 Summer	+0%	+0%/60 Summer				21.884	0.095	0.000
S26.007	S1112	60 Summer	+0%	+0%/60 Summer				21.688	0.146	0.000
S26.008	S1113	60 Summer	+0%	+0%/60 Summer				21.534	0.096	0.000
S26.009	S1114	60 Summer	+0%	+0%/60 Summer				21.345	0.022	0.000
S26.010	S1115	60 Summer	+0%	+20%/60 Summer				21.039	-0.108	0.000
S24.007	S1116	60 Summer	+0%	+0%/60 Summer				20.633	0.185	0.000
S24.008	S1117	60 Summer	+0%	+0%/60 Summer				20.509	0.085	0.000
S24.009	S1118	60 Summer	+0%	+0%/60 Summer				20.386	0.093	0.000
S24.010	S1119	60 Summer	+0%	+0%/60 Summer				20.266	0.050	0.000
S24.011	S1120	60 Summer	+0%	+20%/60 Summer				20.058	-0.109	0.000
S29.000	S1121	60 Summer	+0%	+40%/60 Summer				24.263	-0.051	0.000
S30.000	S1122	60 Summer	+0%	+40%/60 Summer				23.983	-0.071	0.000
S29.001	S1123	60 Summer	+0%	+40%/60 Summer				23.813	-0.087	0.000
S29.002	S1124	60 Summer	+0%	+20%/60 Summer				23.377	-0.083	0.000
S29.003	S1125	60 Summer	+0%	+20%/60 Summer				23.169	-0.031	0.000
S29.004	S1126	60 Summer	+0%	+20%/60 Summer				22.633	-0.078	0.000
S31.000	S1127	60 Summer	+0%	+0%/60 Summer				22.856	0.009	0.000
S31.001	S1128	60 Summer	+0%	+0%/60 Summer				22.793	0.063	0.000
S29.005	S1129	60 Summer	+0%	+20%/60 Summer				22.508	-0.104	0.000
S29.006	S1130	60 Summer	+0%	+0%/60 Summer				21.343	0.255	0.000
S29.007	S1131	60 Summer	+0%	+0%/60 Summer				20.951	0.200	0.000
S29.008	S1132	60 Summer	+0%	+0%/60 Summer				20.826	0.137	0.000
S29.009	S1133	60 Summer	+0%	+0%/60 Summer				20.692	0.099	0.000
S29.010	S1134	60 Summer	+0%	+0%/60 Summer				20.514	0.194	0.000
S29.011	S1135	60 Summer	+0%	+0%/60 Summer				20.370	0.145	0.000
S32.000	S1136	60 Summer	+0%	+0%/60 Summer				20.296	0.105	0.000
S29.012	S1137	60 Summer	+0%	+0%/60 Summer				20.223	0.183	0.000
S33.000	S1138	60 Summer	+0%	+40%/60 Summer				20.125	-0.076	0.000
S29.013	S1139	60 Summer	+0%	+0%/60 Summer				20.051	0.036	0.000
S34.000	S1140	60 Summer	+0%					20.996	-0.055	0.000

PFA Consulting		Page 7
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S22.000	S1085	0.91	14.3	SURCHARGED	
S21.001	S1086	0.75	25.5	SURCHARGED	
S21.002	S1087	1.00	39.2	SURCHARGED	
S14.007	S1088	1.24	332.6	SURCHARGED	
S14.008	S1089	1.54	336.9	SURCHARGED	
S14.009	S1090	1.18	351.7	SURCHARGED	
S14.010	S1091	0.90	321.9	OK	
S23.000	S1092-GR	0.31	11.6	SURCHARGED	
S14.011	S1093	1.81	357.4	OK	
S24.000	S1094	0.38	29.5	OK	
S24.001	S1095	0.49	31.9	OK	
S24.002	S1096	0.87	51.6	OK	
S24.003	S1097	0.39	51.7	OK	
S24.004	S1098	0.37	51.6	OK	
S25.000	S1099	0.59	9.4	SURCHARGED	
S24.005	S1100	0.68	56.3	SURCHARGED	
S24.006	S1101	1.35	72.8	SURCHARGED	
S26.000	S1102	0.63	10.5	SURCHARGED	
S26.001	S1103	1.29	21.7	SURCHARGED	
S26.002	S1104	0.76	27.6	OK	
S27.000	S1105	0.47	7.2	OK	
S26.003	S1106	0.56	45.3	OK	
S26.004	S1107	0.65	49.4	OK	
S26.005	S1108	0.70	55.3	OK	
S28.000	S1109	0.79	12.0	OK	
S28.001	S1110	0.56	17.9	OK	
S26.006	S1111	0.90	90.6	SURCHARGED	
S26.007	S1112	1.21	98.3	SURCHARGED	
S26.008	S1113	1.28	108.1	SURCHARGED	
S26.009	S1114	1.09	114.4	SURCHARGED	
S26.010	S1115	0.73	120.6	OK	
S24.007	S1116	1.93	196.2	SURCHARGED	
S24.008	S1117	0.96	196.1	SURCHARGED	
S24.009	S1118	1.16	195.8	SURCHARGED	
S24.010	S1119	1.53	195.6	SURCHARGED	
S24.011	S1120	0.92	213.0	OK	
S29.000	S1121	0.77	25.4	OK	
S30.000	S1122	0.55	8.9	OK	
S29.001	S1123	0.69	46.7	OK	
S29.002	S1124	0.71	51.2	OK	
S29.003	S1125	1.00	61.2	OK	
S29.004	S1126	0.90	69.9	OK	
S31.000	S1127	0.73	11.7	SURCHARGED	
S31.001	S1128	1.25	20.0	SURCHARGED	
S29.005	S1129	0.75	128.6	OK	
S29.006	S1130	1.08	137.8	SURCHARGED	
S29.007	S1131	1.31	140.3	SURCHARGED	
S29.008	S1132	1.19	144.4	SURCHARGED	
S29.009	S1133	0.72	147.2	SURCHARGED	
S29.010	S1134	1.22	147.6	SURCHARGED	
S29.011	S1135	0.89	149.3	SURCHARGED	
S32.000	S1136	0.74	12.1	SURCHARGED	
S29.012	S1137	1.99	161.9	SURCHARGED	
S33.000	S1138	0.49	8.1	OK	
S29.013	S1139	1.17	171.9	SURCHARGED	

PFA Consulting		Page 8
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Pipe	Status	Level Exceeded
			Flow (l/s)		
S34.000	S1140	0.73	12.4	OK	

PFA Consulting		Page 9
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
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File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S34.001	S1141	60 Summer	+0%					20.515	-0.149
S34.002	S1142	60 Summer	+0%					20.419	-0.111
S34.003	S1143	60 Summer	+0%	+40%/240 Winter				20.021	-0.121
S1.022	S1144-Basin A1	360 Winter	+0%	+0%/60 Summer				19.991	0.291
S1.023	S1145-Con	360 Winter	+0%					19.954	-1.189
S1.024	S1146	360 Winter	+0%					19.573	-1.725
S1.025	S1147	360 Winter	+0%					19.493	-1.768
S1.026	S1148	360 Winter	+0%					19.397	-1.778
S1.027	S1149	360 Winter	+0%					19.375	-1.643
S1.028	S1150	360 Winter	+0%					19.249	-1.719

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S34.001	S1141	0.000	0.50		45.4	OK	
S34.002	S1142	0.000	0.71		70.8	OK	
S34.003	S1143	0.000	0.66		70.5	OK	
S1.022	S1144-Basin A1	0.000	0.90		55.1	SURCHARGED	
S1.023	S1145-Con	0.000	0.01		55.1	OK	
S1.024	S1146	0.000	0.00		55.1	OK	
S1.025	S1147	0.000	0.00		55.1	OK	
S1.026	S1148	0.000	0.00		55.1	OK	
S1.027	S1149	0.000	0.00		55.1	OK	
S1.028	S1150	0.000	0.00		55.1	OK	

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
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Causeway	Network 2017.1.2	

+20% Sensitivity 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 Return Period (years) 100 Cv (Summer) 0.750
 FEH Rainfall Version 2013 Cv (Winter) 0.840
 Site Location GB 450306 114752 SU 50306 14752

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) 60, 120, 240, 360, 480, 960, 1440, 2880, 4320
 Sensitivity flows(s) (%) 0, +20, +40

								Water	Surcharged	Flooded
PN	US/MH Name	Storm	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m ³)
S1.000	S1001	60 Summer	+20%	+20%/60 Summer				26.302	0.017	0.000
S1.001	S1002	60 Summer	+20%	+20%/60 Summer				26.279	0.122	0.000
S1.002	S1003	60 Summer	+20%					25.182	-0.085	0.000
S2.000	S1004	60 Summer	+20%					25.717	-0.060	0.000
S2.001	S1005	60 Summer	+20%	+40%/60 Summer				25.369	-0.001	0.000
S3.000	S1006	60 Summer	+20%					25.141	-0.090	0.000
S2.002	S1007	60 Summer	+20%	+0%/60 Summer				25.001	0.030	0.000
S1.003	S1008	60 Summer	+20%	+0%/60 Summer				24.898	0.025	0.000
S1.004	S1009	60 Summer	+20%					24.692	-0.115	0.000
S4.000	S1010	60 Summer	+20%	+20%/60 Summer				24.753	0.065	0.000
S5.000	S1011	60 Summer	+20%	+20%/60 Summer				24.723	0.073	0.000
S4.001	S1012	60 Summer	+20%	+0%/60 Summer				24.548	0.031	0.000
S4.002	S1013	60 Summer	+20%					24.353	-0.120	0.000
S6.000	S1014	60 Summer	+20%	+20%/60 Summer				23.923	0.260	0.000
S4.003	S1015	60 Summer	+20%	+0%/60 Summer				23.818	0.246	0.000
S1.005	S1016	60 Winter	+20%	+0%/60 Summer				23.691	0.260	0.000
S7.000	S1017	60 Summer	+20%	+20%/60 Summer				24.021	0.237	0.000
S7.001	S1018	60 Summer	+20%	+0%/60 Summer				23.947	0.330	0.000
S7.002	S1019	60 Winter	+20%	+0%/60 Summer				23.865	0.298	0.000
S7.003	S1020	60 Winter	+20%	+20%/60 Summer				23.774	0.273	0.000
S7.004	S1021	60 Winter	+20%	+0%/60 Summer				23.660	0.336	0.000
S1.006	S1022	60 Winter	+20%	+40%/60 Summer				23.556	0.000	0.000
S8.000	S1023	60 Summer	+20%					24.599	-0.106	0.000
S1.007	S1024	60 Summer	+20%	+40%/60 Summer				23.461	0.000	0.000
S9.000	S1025	60 Summer	+20%					27.489	-0.098	0.000
S9.001	S1026	60 Summer	+20%	+20%/60 Summer				26.395	0.087	0.000
S9.002	S1027	60 Summer	+20%	+0%/60 Summer				26.163	0.174	0.000
S9.003	S1028	60 Summer	+20%	+40%/60 Summer				25.856	-0.080	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

			Pipe		
	US/MH	Flow /	Overflow	Flow	Level
PN	Name	Cap.	(l/s)	(l/s)	Status Exceeded
S1.000	S1001	0.44		7.0	SURCHARGED
S1.001	S1002	1.07		27.4	SURCHARGED
S1.002	S1003	0.70		40.4	OK
S2.000	S1004	0.67		15.8	OK
S2.001	S1005	0.96		23.9	OK
S3.000	S1006	0.34		8.6	OK
S2.002	S1007	0.88		37.0	SURCHARGED
S1.003	S1008	1.26		80.8	SURCHARGED
S1.004	S1009	0.69		104.7	OK
S4.000	S1010	1.08		18.4	SURCHARGED
S5.000	S1011	1.13		21.7	SURCHARGED
S4.001	S1012	1.38		41.2	SURCHARGED
S4.002	S1013	0.66		80.3	OK
S6.000	S1014	1.16		45.5	SURCHARGED
S4.003	S1015	1.04		169.0	SURCHARGED
S1.005	S1016	0.75		221.6	SURCHARGED
S7.000	S1017	0.73		30.3	SURCHARGED
S7.001	S1018	1.48		46.6	SURCHARGED
S7.002	S1019	1.13		40.8	SURCHARGED
S7.003	S1020	0.35		64.4	SURCHARGED
S7.004	S1021	0.36		59.1	SURCHARGED
S1.006	S1022	0.53		303.2	OK
S8.000	S1023	0.74		110.8	OK
S1.007	S1024	0.66		441.1	OK
S9.000	S1025	0.61		56.2	OK
S9.001	S1026	0.85		67.3	SURCHARGED
S9.002	S1027	2.12		68.3	SURCHARGED
S9.003	S1028	0.74		70.8	OK

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S9.004	S1029	60 Summer	+20%	+40%/60 Summer				25.454	-0.017
S9.005	S1030	60 Summer	+20%	+20%/60 Summer				24.845	0.015
S9.006	S1031	60 Summer	+20%					24.587	-0.132
S1.008	S1032	60 Summer	+20%	+40%/60 Summer				23.326	0.000
S10.000	S1033	60 Summer	+20%					25.718	-0.067
S10.001	S1034	60 Summer	+20%					25.600	-0.041
S10.002	S1035	60 Summer	+20%					25.363	-0.104
S1.009	S1036	60 Summer	+20%	+20%/60 Summer				23.218	0.071
S1.010	S1037	60 Summer	+20%	+20%/60 Summer				23.185	0.051
S1.011	S1038	60 Summer	+20%	+20%/60 Summer				23.152	0.035
S1.012	S1039	60 Summer	+20%	+20%/60 Summer				23.118	0.018
S1.013	S1040	60 Summer	+20%					23.084	0.000
S1.014	S1041	60 Summer	+20%					22.508	-0.560
S1.015	S1042	60 Summer	+20%					22.229	0.000
S11.000	S1043	60 Summer	+20%					22.649	-0.065
S11.001	S1044	60 Summer	+20%					22.480	-0.109
S1.016	S1045	60 Winter	+20%					21.881	-0.307
S1.017	S1046-Basin A2	60 Winter	+20%	+0%/60 Summer				21.846	0.546
S1.018	S1047-Con	60 Winter	+20%	+0%/60 Summer				21.401	0.201
S1.019	S1048	60 Winter	+20%					21.207	-0.823
S1.020	S1049-GR	60 Winter	+20%	+0%/60 Summer				21.166	0.127
S1.021	S1050	60 Winter	+20%					20.958	-0.498
S12.000	S1051	60 Summer	+20%	+40%/60 Summer				22.427	-0.102
S13.000	S1052	60 Summer	+20%	+20%/60 Summer				22.217	0.161
S12.001	S1053	60 Summer	+20%	+20%/60 Summer				22.122	0.208
S12.002	S1054	60 Summer	+20%	+20%/60 Summer				21.865	0.170
S12.003	S1055	60 Summer	+20%	+0%/60 Summer				21.647	0.257
S12.004	S1056	60 Summer	+20%	+0%/60 Summer				21.378	0.254
S12.005	S1057	480 Winter	+20%	+40%/360 Winter				20.116	-0.047
S14.000	S1058	60 Summer	+20%	+0%/60 Summer				21.597	0.384
S14.001	S1059	60 Summer	+20%	+0%/60 Summer				21.587	0.616
S14.002	S1060	60 Summer	+20%	+0%/60 Summer				21.513	0.664
S14.003	S1061	60 Summer	+20%	+0%/60 Summer				21.435	0.646
S15.000	S1062	60 Summer	+20%	+0%/60 Summer				23.007	0.464
S16.000	S1063	60 Summer	+20%	+40%/60 Summer				22.663	-0.046
S15.001	S1064	60 Summer	+20%	+20%/60 Summer				22.616	0.369
S17.000	S1065	60 Summer	+20%	+0%/60 Summer				22.238	0.625
S15.002	S1066	60 Summer	+20%	+0%/60 Summer				22.161	0.669
S15.003	S1067	60 Summer	+20%	+0%/60 Summer				22.063	0.680
S15.004	S1068	60 Summer	+20%	+0%/60 Summer				22.018	0.679
S15.005	S1069	60 Summer	+20%	+0%/60 Summer				21.938	0.656
S15.006	S1070	60 Summer	+20%	+0%/60 Summer				21.900	0.651
S18.000	S1071	60 Summer	+20%	+0%/60 Summer				22.319	0.497
S18.001	S1072	60 Summer	+20%	+0%/60 Summer				21.868	0.389
S15.007	S1073	60 Summer	+20%	+0%/60 Summer				21.819	0.634
S15.008	S1074	60 Summer	+20%	+0%/60 Summer				21.728	0.580
S15.009	S1075	60 Summer	+20%	+0%/60 Summer				21.359	0.529
S19.000	S1076	60 Summer	+20%	+40%/60 Summer				22.412	-0.048
S19.001	S1077	60 Summer	+20%	+40%/60 Summer				22.142	-0.055
S20.000	S1078	60 Summer	+20%	+0%/60 Summer				21.783	0.408
S20.001	S1079	60 Summer	+20%	+0%/60 Summer				21.639	0.384
S19.002	S1080	60 Summer	+20%	+0%/60 Summer				21.561	0.428
S14.004	S1081	60 Summer	+20%	+0%/60 Summer				21.159	0.600
S14.005	S1082	60 Summer	+20%	+0%/60 Summer				20.938	0.457
S14.006	S1083	60 Summer	+20%	+0%/60 Summer				20.746	0.293
S21.000	S1084	60 Summer	+20%	+0%/60 Summer				20.817	0.541

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S9.004	S1029	0.000	0.97		89.8	OK	
S9.005	S1030	0.000	1.12		93.5	SURCHARGED	
S9.006	S1031	0.000	0.60		104.3	OK	
S1.008	S1032	0.000	0.75		537.7	OK	
S10.000	S1033	0.000	0.59		11.9	OK	
S10.001	S1034	0.000	0.87		20.9	OK	
S10.002	S1035	0.000	0.55		65.8	OK	
S1.009	S1036	0.000	1.31		614.8	SURCHARGED	
S1.010	S1037	0.000	1.49		615.0	SURCHARGED	
S1.011	S1038	0.000	1.52		618.9	SURCHARGED	
S1.012	S1039	0.000	1.51		625.3	SURCHARGED	
S1.013	S1040	0.000	1.49		629.5	OK	
S1.014	S1041	0.000	0.31		631.8	OK	
S1.015	S1042	0.000	1.22		655.0	OK	
S11.000	S1043	0.000	0.61		9.9	OK	
S11.001	S1044	0.000	0.52		40.9	OK	
S1.016	S1045	0.000	0.59		568.6	OK	
S1.017	S1046-Basin A2	0.000	1.40		110.6	SURCHARGED	
S1.018	S1047-Con	0.000	1.56		110.6	SURCHARGED	
S1.019	S1048	0.000	0.03		110.6	OK	
S1.020	S1049-GR	0.000	1.79		109.8	SURCHARGED*	
S1.021	S1050	0.000	0.06		109.8	OK	
S12.000	S1051	0.000	0.58		38.2	OK	
S13.000	S1052	0.000	0.83		13.6	SURCHARGED	
S12.001	S1053	0.000	1.09		55.8	SURCHARGED	
S12.002	S1054	0.000	0.86		60.6	SURCHARGED	
S12.003	S1055	0.000	1.02		70.1	SURCHARGED	
S12.004	S1056	0.000	1.13		86.7	SURCHARGED	
S12.005	S1057	0.000	0.15		22.7	OK	
S14.000	S1058	0.000	0.21		3.5	SURCHARGED	
S14.001	S1059	0.000	0.71		25.8	SURCHARGED	
S14.002	S1060	0.000	0.80		26.7	SURCHARGED	
S14.003	S1061	0.000	1.11		42.3	SURCHARGED	
S15.000	S1062	0.000	1.25		21.1	SURCHARGED	
S16.000	S1063	0.000	0.40		14.2	OK	
S15.001	S1064	0.000	0.88		56.8	SURCHARGED	
S17.000	S1065	0.000	0.82		13.1	SURCHARGED	
S15.002	S1066	0.000	0.61		68.2	SURCHARGED	
S15.003	S1067	0.000	0.92		77.9	SURCHARGED	
S15.004	S1068	0.000	0.94		86.9	SURCHARGED	
S15.005	S1069	0.000	1.15		91.5	SURCHARGED	
S15.006	S1070	0.000	1.02		95.9	SURCHARGED	
S18.000	S1071	0.000	1.24		26.6	SURCHARGED	
S18.001	S1072	0.000	0.35		27.0	SURCHARGED	
S15.007	S1073	0.000	1.54		126.0	SURCHARGED	
S15.008	S1074	0.000	1.07		163.4	SURCHARGED	
S15.009	S1075	0.000	0.72		165.3	SURCHARGED	
S19.000	S1076	0.000	0.80		15.9	OK	
S19.001	S1077	0.000	0.72		26.6	OK	
S20.000	S1078	0.000	1.11		17.8	SURCHARGED	
S20.001	S1079	0.000	0.75		27.0	SURCHARGED	
S19.002	S1080	0.000	0.88		83.4	SURCHARGED	
S14.004	S1081	0.000	1.68		329.6	SURCHARGED	
S14.005	S1082	0.000	2.55		334.9	SURCHARGED	
S14.006	S1083	0.000	2.82		344.5	SURCHARGED	

PFA Consulting		Page 5
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S21.000	S1084	0.000	0.16		6.1	SURCHARGED	

PFA Consulting		Page 6
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S22.000	S1085	60 Summer	+20%	+0%/60 Summer				20.921	0.654	0.000
S21.001	S1086	60 Summer	+20%	+0%/60 Summer				20.809	0.613	0.000
S21.002	S1087	60 Summer	+20%	+0%/60 Summer				20.733	0.609	0.000
S14.007	S1088	60 Summer	+20%	+0%/60 Summer				20.548	0.124	0.000
S14.008	S1089	60 Summer	+20%	+0%/60 Summer				20.484	0.099	0.000
S14.009	S1090	60 Summer	+20%	+0%/60 Summer				20.426	0.071	0.000
S14.010	S1091	60 Summer	+20%	+20%/60 Summer				20.346	0.036	0.000
S23.000	S1092-GR	60 Summer	+20%	+0%/60 Summer				20.256	0.307	0.000
S14.011	S1093	60 Summer	+20%	+20%/60 Summer				20.217	0.003	0.000
S24.000	S1094	60 Summer	+20%					23.096	-0.119	0.000
S24.001	S1095	60 Summer	+20%	+40%/60 Summer				22.080	-0.100	0.000
S24.002	S1096	60 Summer	+20%	+20%/60 Summer				21.997	0.028	0.000
S24.003	S1097	60 Summer	+20%	+40%/60 Summer				21.423	-0.156	0.000
S24.004	S1098	60 Summer	+20%	+40%/60 Summer				21.130	-0.149	0.000
S25.000	S1099	60 Summer	+20%	+0%/60 Summer				21.094	0.240	0.000
S24.005	S1100	60 Summer	+20%	+0%/60 Summer				21.052	0.326	0.000
S24.006	S1101	60 Summer	+20%	+0%/60 Summer				20.898	0.416	0.000
S26.000	S1102	60 Summer	+20%	+0%/60 Summer				24.066	0.222	0.000
S26.001	S1103	60 Summer	+20%	+0%/60 Summer				23.940	0.321	0.000
S26.002	S1104	60 Summer	+20%	+40%/60 Summer				23.316	-0.057	0.000
S27.000	S1105	60 Summer	+20%					23.317	-0.069	0.000
S26.003	S1106	60 Summer	+20%	+40%/60 Summer				23.216	-0.090	0.000
S26.004	S1107	60 Summer	+20%	+20%/60 Summer				22.620	0.003	0.000
S26.005	S1108	60 Summer	+20%	+20%/60 Summer				22.445	0.157	0.000
S28.000	S1109	60 Summer	+20%	+20%/60 Summer				22.329	0.042	0.000
S28.001	S1110	60 Summer	+20%	+20%/60 Summer				22.278	0.066	0.000
S26.006	S1111	60 Summer	+20%	+0%/60 Summer				22.143	0.355	0.000
S26.007	S1112	60 Summer	+20%	+0%/60 Summer				21.898	0.355	0.000
S26.008	S1113	60 Summer	+20%	+0%/60 Summer				21.709	0.271	0.000
S26.009	S1114	60 Summer	+20%	+0%/60 Summer				21.478	0.155	0.000
S26.010	S1115	60 Summer	+20%	+20%/60 Summer				21.225	0.078	0.000
S24.007	S1116	60 Summer	+20%	+0%/60 Summer				20.782	0.334	0.000
S24.008	S1117	60 Summer	+20%	+0%/60 Summer				20.629	0.204	0.000
S24.009	S1118	60 Summer	+20%	+0%/60 Summer				20.476	0.183	0.000
S24.010	S1119	60 Summer	+20%	+0%/60 Summer				20.324	0.108	0.000
S24.011	S1120	60 Summer	+20%	+20%/60 Summer				20.171	0.005	0.000
S29.000	S1121	60 Summer	+20%	+40%/60 Summer				24.278	-0.036	0.000
S30.000	S1122	60 Summer	+20%	+40%/60 Summer				23.992	-0.061	0.000
S29.001	S1123	60 Summer	+20%	+40%/60 Summer				23.832	-0.068	0.000
S29.002	S1124	60 Summer	+20%	+20%/60 Summer				23.542	0.082	0.000
S29.003	S1125	60 Summer	+20%	+20%/60 Summer				23.374	0.174	0.000
S29.004	S1126	60 Summer	+20%	+20%/60 Summer				22.759	0.049	0.000
S31.000	S1127	60 Summer	+20%	+0%/60 Summer				22.963	0.116	0.000
S31.001	S1128	60 Summer	+20%	+0%/60 Summer				22.880	0.150	0.000
S29.005	S1129	60 Summer	+20%	+20%/60 Summer				22.659	0.046	0.000
S29.006	S1130	60 Summer	+20%	+0%/60 Summer				21.672	0.584	0.000
S29.007	S1131	60 Summer	+20%	+0%/60 Summer				21.195	0.444	0.000
S29.008	S1132	60 Summer	+20%	+0%/60 Summer				21.035	0.347	0.000
S29.009	S1133	60 Summer	+20%	+0%/60 Summer				20.865	0.272	0.000
S29.010	S1134	60 Summer	+20%	+0%/60 Summer				20.686	0.366	0.000
S29.011	S1135	60 Summer	+20%	+0%/60 Summer				20.506	0.281	0.000
S32.000	S1136	60 Summer	+20%	+0%/60 Summer				20.440	0.248	0.000
S29.012	S1137	60 Summer	+20%	+0%/60 Summer				20.323	0.283	0.000
S33.000	S1138	60 Summer	+20%	+40%/60 Summer				20.157	-0.044	0.000
S29.013	S1139	480 Winter	+20%	+0%/60 Summer				20.116	0.101	0.000
S34.000	S1140	60 Summer	+20%					21.009	-0.041	0.000

PFA Consulting		Page 7
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S22.000	S1085	1.10		17.2	SURCHARGED	
S21.001	S1086	0.90		30.8	SURCHARGED	
S21.002	S1087	1.22		47.6	SURCHARGED	
S14.007	S1088	1.46		391.2	SURCHARGED	
S14.008	S1089	1.80		394.5	SURCHARGED	
S14.009	S1090	1.39		413.2	SURCHARGED	
S14.010	S1091	1.15		409.9	SURCHARGED	
S23.000	S1092-GR	0.42		15.6	SURCHARGED	
S14.011	S1093	2.14		421.1	SURCHARGED	
S24.000	S1094	0.45		35.4	OK	
S24.001	S1095	0.59		38.4	OK	
S24.002	S1096	1.03		61.0	SURCHARGED	
S24.003	S1097	0.47		61.3	OK	
S24.004	S1098	0.44		61.0	OK	
S25.000	S1099	0.62		10.0	SURCHARGED	
S24.005	S1100	0.80		66.8	SURCHARGED	
S24.006	S1101	1.59		85.6	SURCHARGED	
S26.000	S1102	0.75		12.5	SURCHARGED	
S26.001	S1103	1.52		25.5	SURCHARGED	
S26.002	S1104	0.90		32.6	OK	
S27.000	S1105	0.56		8.7	OK	
S26.003	S1106	0.66		53.5	OK	
S26.004	S1107	0.74		56.7	SURCHARGED	
S26.005	S1108	0.78		62.0	SURCHARGED	
S28.000	S1109	0.93		14.2	SURCHARGED	
S28.001	S1110	0.63		20.2	SURCHARGED	
S26.006	S1111	1.00		100.3	SURCHARGED	
S26.007	S1112	1.35		109.3	SURCHARGED	
S26.008	S1113	1.42		120.6	SURCHARGED	
S26.009	S1114	1.21		127.5	SURCHARGED	
S26.010	S1115	0.81		133.7	SURCHARGED	
S24.007	S1116	2.18		221.0	SURCHARGED	
S24.008	S1117	1.08		220.4	SURCHARGED	
S24.009	S1118	1.30		220.2	SURCHARGED	
S24.010	S1119	1.71		219.9	SURCHARGED	
S24.011	S1120	1.04		240.4	SURCHARGED	
S29.000	S1121	0.93		30.6	OK	
S30.000	S1122	0.66		10.7	OK	
S29.001	S1123	0.83		56.1	OK	
S29.002	S1124	0.82		58.9	SURCHARGED	
S29.003	S1125	1.14		70.1	SURCHARGED	
S29.004	S1126	0.99		77.2	SURCHARGED	
S31.000	S1127	0.86		13.8	SURCHARGED	
S31.001	S1128	1.48		23.7	SURCHARGED	
S29.005	S1129	0.83		142.5	SURCHARGED	
S29.006	S1130	1.19		151.6	SURCHARGED	
S29.007	S1131	1.46		156.4	SURCHARGED	
S29.008	S1132	1.33		161.0	SURCHARGED	
S29.009	S1133	0.80		164.4	SURCHARGED	
S29.010	S1134	1.37		165.8	SURCHARGED	
S29.011	S1135	1.00		167.5	SURCHARGED	
S32.000	S1136	0.88		14.4	SURCHARGED	
S29.012	S1137	2.24		182.5	SURCHARGED	
S33.000	S1138	0.58		9.6	OK	
S29.013	S1139	0.24		34.8	SURCHARGED	

PFA Consulting		Page 8
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Pipe	Status	Level Exceeded
			Flow (l/s)		
S34.000	S1140	0.87	14.9	OK	

PFA Consulting		Page 9
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S34.001	S1141	60 Summer	+20%					20.533	-0.132
S34.002	S1142	60 Summer	+20%					20.446	-0.084
S34.003	S1143	480 Winter	+20%	+40%/240 Winter				20.116	-0.026
S1.022	S1144-Basin A1	480 Winter	+20%	+0%/60 Summer				20.114	0.414
S1.023	S1145-Con	480 Winter	+20%					20.074	-1.069
S1.024	S1146	480 Winter	+20%					19.574	-1.724
S1.025	S1147	480 Winter	+20%					19.493	-1.768
S1.026	S1148	480 Winter	+20%					19.398	-1.777
S1.027	S1149	480 Winter	+20%					19.376	-1.642
S1.028	S1150	480 Winter	+20%					19.249	-1.719

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S34.001	S1141	0.000	0.60		54.6	OK	
S34.002	S1142	0.000	0.85		85.1	OK	
S34.003	S1143	0.000	0.12		12.9	OK	
S1.022	S1144-Basin A1	0.000	0.91		56.0	SURCHARGED	
S1.023	S1145-Con	0.000	0.01		55.6	OK	
S1.024	S1146	0.000	0.00		55.6	OK	
S1.025	S1147	0.000	0.00		55.6	OK	
S1.026	S1148	0.000	0.00		55.6	OK	
S1.027	S1149	0.000	0.00		55.6	OK	
S1.028	S1150	0.000	0.00		55.6	OK	

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40% Sensitivity 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 Return Period (years) 100 Cv (Summer) 0.750
 FEH Rainfall Version 2013 Cv (Winter) 0.840
 Site Location GB 450306 114752 SU 50306 14752

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) 60, 120, 240, 360, 480, 960, 1440, 2880, 4320
 Sensitivity flows(s) (%) 0, +20, +40

										Water Surcharged Flooded	
PN	US/MH Name	Storm	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m ³)	
S1.000	S1001	60 Summer	+40%	+20%/60 Summer				26.552	0.267	0.000	
S1.001	S1002	60 Summer	+40%	+20%/60 Summer				26.526	0.369	0.000	
S1.002	S1003	60 Summer	+40%					25.194	-0.073	0.000	
S2.000	S1004	60 Summer	+40%					25.742	-0.035	0.000	
S2.001	S1005	60 Summer	+40%	+40%/60 Summer				25.507	0.137	0.000	
S3.000	S1006	60 Summer	+40%					25.147	-0.084	0.000	
S2.002	S1007	60 Summer	+40%	+0%/60 Summer				25.029	0.058	0.000	
S1.003	S1008	60 Summer	+40%	+0%/60 Summer				24.926	0.053	0.000	
S1.004	S1009	60 Summer	+40%					24.709	-0.098	0.000	
S4.000	S1010	60 Summer	+40%	+20%/60 Summer				24.853	0.166	0.000	
S5.000	S1011	60 Summer	+40%	+20%/60 Summer				24.814	0.164	0.000	
S4.001	S1012	60 Summer	+40%	+0%/60 Summer				24.578	0.061	0.000	
S4.002	S1013	60 Summer	+40%					24.424	-0.049	0.000	
S6.000	S1014	60 Summer	+40%	+20%/60 Summer				24.093	0.429	0.000	
S4.003	S1015	60 Summer	+40%	+0%/60 Summer				23.940	0.368	0.000	
S1.005	S1016	60 Summer	+40%	+0%/60 Summer				23.750	0.320	0.000	
S7.000	S1017	60 Summer	+40%	+20%/60 Summer				24.145	0.361	0.000	
S7.001	S1018	60 Summer	+40%	+0%/60 Summer				24.039	0.422	0.000	
S7.002	S1019	60 Summer	+40%	+0%/60 Summer				23.923	0.357	0.000	
S7.003	S1020	60 Summer	+40%	+20%/60 Summer				23.801	0.300	0.000	
S7.004	S1021	60 Summer	+40%	+0%/60 Summer				23.691	0.367	0.000	
S1.006	S1022	60 Summer	+40%	+40%/60 Summer				23.592	0.036	0.000	
S8.000	S1023	60 Summer	+40%					24.621	-0.084	0.000	
S1.007	S1024	60 Summer	+40%	+40%/60 Summer				23.538	0.077	0.000	
S9.000	S1025	60 Summer	+40%					27.503	-0.084	0.000	
S9.001	S1026	60 Summer	+40%	+20%/60 Summer				26.582	0.275	0.000	
S9.002	S1027	60 Summer	+40%	+0%/60 Summer				26.282	0.294	0.000	
S9.003	S1028	60 Summer	+40%	+40%/60 Summer				25.981	0.044	0.000	

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

				Pipe		
	US/MH	Flow /	Overflow	Flow		Level
PN	Name	Cap.	(l/s)	(l/s)	Status	Exceeded
S1.000	S1001	0.51		8.2	SURCHARGED	
S1.001	S1002	1.18		30.4	SURCHARGED	
S1.002	S1003	0.78		45.0	OK	
S2.000	S1004	0.77		18.3	OK	
S2.001	S1005	1.09		27.3	SURCHARGED	
S3.000	S1006	0.40		10.1	OK	
S2.002	S1007	1.00		42.2	SURCHARGED	
S1.003	S1008	1.42		91.1	SURCHARGED	
S1.004	S1009	0.78		118.9	OK	
S4.000	S1010	1.26		21.4	SURCHARGED	
S5.000	S1011	1.31		25.2	SURCHARGED	
S4.001	S1012	1.60		47.9	SURCHARGED	
S4.002	S1013	0.75		92.2	OK	
S6.000	S1014	1.29		50.5	SURCHARGED	
S4.003	S1015	1.18		190.7	SURCHARGED	
S1.005	S1016	1.05		311.3	SURCHARGED	
S7.000	S1017	0.80		33.0	SURCHARGED	
S7.001	S1018	1.62		51.1	SURCHARGED	
S7.002	S1019	1.46		52.5	SURCHARGED	
S7.003	S1020	0.45		83.5	SURCHARGED	
S7.004	S1021	0.53		87.7	SURCHARGED	
S1.006	S1022	0.76		434.3	SURCHARGED	
S8.000	S1023	0.87		129.1	OK	
S1.007	S1024	0.82		549.3	SURCHARGED	
S9.000	S1025	0.71		65.7	OK	
S9.001	S1026	0.98		77.6	SURCHARGED	
S9.002	S1027	2.41		77.6	SURCHARGED	
S9.003	S1028	0.84		80.4	SURCHARGED	

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S9.004	S1029	60 Summer	+40%	+40%/60 Summer				25.660	0.190
S9.005	S1030	60 Summer	+40%	+20%/60 Summer				24.883	0.054
S9.006	S1031	60 Summer	+40%					24.601	-0.118
S1.008	S1032	60 Summer	+40%	+40%/60 Summer				23.446	0.120
S10.000	S1033	60 Summer	+40%					25.726	-0.058
S10.001	S1034	60 Summer	+40%					25.626	-0.014
S10.002	S1035	60 Summer	+40%					25.374	-0.093
S1.009	S1036	60 Summer	+40%	+20%/60 Summer				23.288	0.141
S1.010	S1037	60 Summer	+40%	+20%/60 Summer				23.239	0.105
S1.011	S1038	60 Summer	+40%	+20%/60 Summer				23.188	0.070
S1.012	S1039	60 Summer	+40%	+20%/60 Summer				23.136	0.035
S1.013	S1040	60 Summer	+40%					23.084	0.000
S1.014	S1041	60 Summer	+40%					22.551	-0.517
S1.015	S1042	60 Summer	+40%					22.229	0.000
S11.000	S1043	60 Summer	+40%					22.658	-0.056
S11.001	S1044	60 Summer	+40%					22.491	-0.098
S1.016	S1045	60 Winter	+40%					22.015	-0.173
S1.017	S1046-Basin A2	60 Winter	+40%	+0%/60 Summer				21.962	0.662
S1.018	S1047-Con	60 Winter	+40%	+0%/60 Summer				21.453	0.253
S1.019	S1048	60 Winter	+40%					21.231	-0.799
S1.020	S1049-GR	60 Winter	+40%	+0%/60 Summer				21.197	0.158
S1.021	S1050	60 Winter	+40%					20.966	-0.490
S12.000	S1051	60 Summer	+40%	+40%/60 Summer				22.689	0.160
S13.000	S1052	60 Summer	+40%	+20%/60 Summer				22.608	0.551
S12.001	S1053	60 Summer	+40%	+20%/60 Summer				22.489	0.575
S12.002	S1054	60 Summer	+40%	+20%/60 Summer				22.189	0.494
S12.003	S1055	60 Summer	+40%	+0%/60 Summer				21.927	0.536
S12.004	S1056	60 Summer	+40%	+0%/60 Summer				21.611	0.487
S12.005	S1057	480 Winter	+40%	+40%/360 Winter				20.232	0.069
S14.000	S1058	60 Summer	+40%	+0%/60 Summer				21.962	0.749
S14.001	S1059	60 Summer	+40%	+0%/60 Summer				21.951	0.980
S14.002	S1060	60 Summer	+40%	+0%/60 Summer				21.869	1.020
S14.003	S1061	60 Summer	+40%	+0%/60 Summer				21.788	0.999
S15.000	S1062	60 Summer	+40%	+0%/60 Summer				23.559	1.015
S16.000	S1063	60 Summer	+40%	+40%/60 Summer				23.152	0.443
S15.001	S1064	60 Summer	+40%	+20%/60 Summer				23.099	0.853
S17.000	S1065	60 Summer	+40%	+0%/60 Summer				22.658	1.044
S15.002	S1066	60 Summer	+40%	+0%/60 Summer				22.576	1.085
S15.003	S1067	60 Summer	+40%	+0%/60 Summer				22.481	1.097
S15.004	S1068	60 Summer	+40%	+0%/60 Summer				22.436	1.096
S15.005	S1069	60 Summer	+40%	+0%/60 Summer				22.356	1.074
S15.006	S1070	60 Summer	+40%	+0%/60 Summer				22.309	1.059
S18.000	S1071	60 Summer	+40%	+0%/60 Summer				22.830	1.009
S18.001	S1072	60 Summer	+40%	+0%/60 Summer				22.287	0.808
S15.007	S1073	60 Summer	+40%	+0%/60 Summer				22.227	1.042
S15.008	S1074	60 Summer	+40%	+0%/60 Summer				22.107	0.959
S15.009	S1075	60 Summer	+40%	+0%/60 Summer				21.648	0.818
S19.000	S1076	60 Summer	+40%	+40%/60 Summer				22.546	0.086
S19.001	S1077	60 Summer	+40%	+40%/60 Summer				22.388	0.191
S20.000	S1078	60 Summer	+40%	+0%/60 Summer				22.199	0.824
S20.001	S1079	60 Summer	+40%	+0%/60 Summer				22.012	0.756
S19.002	S1080	60 Summer	+40%	+0%/60 Summer				21.927	0.794
S14.004	S1081	60 Summer	+40%	+0%/60 Summer				21.428	0.869
S14.005	S1082	60 Summer	+40%	+0%/60 Summer				21.163	0.682
S14.006	S1083	60 Summer	+40%	+0%/60 Summer				20.931	0.478
S21.000	S1084	60 Summer	+40%	+0%/60 Summer				20.989	0.713

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

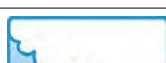
+40% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S9.004	S1029	0.000	1.10		101.5	SURCHARGED	
S9.005	S1030	0.000	1.27		105.6	SURCHARGED	
S9.006	S1031	0.000	0.68		117.9	OK	
S1.008	S1032	0.000	0.93		670.3	SURCHARGED	
S10.000	S1033	0.000	0.69		13.9	OK	
S10.001	S1034	0.000	1.00		24.1	OK	
S10.002	S1035	0.000	0.64		76.8	OK	
S1.009	S1036	0.000	1.62		762.8	SURCHARGED	
S1.010	S1037	0.000	1.86		766.6	SURCHARGED	
S1.011	S1038	0.000	1.89		768.5	SURCHARGED	
S1.012	S1039	0.000	1.87		772.1	SURCHARGED	
S1.013	S1040	0.000	1.84		775.1	OK	
S1.014	S1041	0.000	0.38		779.7	OK	
S1.015	S1042	0.000	1.54		825.2	OK	
S11.000	S1043	0.000	0.72		11.5	OK	
S11.001	S1044	0.000	0.60		47.8	OK	
S1.016	S1045	0.000	0.81		775.1	OK	
S1.017	S1046-Basin A2	0.000	1.50		118.5	SURCHARGED	
S1.018	S1047-Con	0.000	1.67		118.5	SURCHARGED	
S1.019	S1048	0.000	0.04		118.4	OK	
S1.020	S1049-GR	0.000	1.91		117.3	SURCHARGED*	
S1.021	S1050	0.000	0.07		117.3	OK	
S12.000	S1051	0.000	0.66		43.3	SURCHARGED	
S13.000	S1052	0.000	0.89		14.5	SURCHARGED	
S12.001	S1053	0.000	1.17		59.8	SURCHARGED	
S12.002	S1054	0.000	0.93		65.9	SURCHARGED	
S12.003	S1055	0.000	1.10		76.1	SURCHARGED	
S12.004	S1056	0.000	1.23		94.6	SURCHARGED	
S12.005	S1057	0.000	0.18		26.5	SURCHARGED	
S14.000	S1058	0.000	0.26		4.4	SURCHARGED	
S14.001	S1059	0.000	0.79		28.5	SURCHARGED	
S14.002	S1060	0.000	0.91		30.4	SURCHARGED	
S14.003	S1061	0.000	1.26		48.0	SURCHARGED	
S15.000	S1062	0.000	1.25		21.2	SURCHARGED	
S16.000	S1063	0.000	0.44		15.7	SURCHARGED	
S15.001	S1064	0.000	0.89		57.6	SURCHARGED	
S17.000	S1065	0.000	0.85		13.6	SURCHARGED	
S15.002	S1066	0.000	0.67		74.4	SURCHARGED	
S15.003	S1067	0.000	1.00		85.3	SURCHARGED	
S15.004	S1068	0.000	1.03		95.2	SURCHARGED	
S15.005	S1069	0.000	1.26		100.1	SURCHARGED	
S15.006	S1070	0.000	1.12		105.1	SURCHARGED	
S18.000	S1071	0.000	1.28		27.5	SURCHARGED	
S18.001	S1072	0.000	0.38		29.3	SURCHARGED	
S15.007	S1073	0.000	1.69		138.4	SURCHARGED	
S15.008	S1074	0.000	1.19		181.5	SURCHARGED	
S15.009	S1075	0.000	0.80		183.5	SURCHARGED	
S19.000	S1076	0.000	0.92		18.2	SURCHARGED	
S19.001	S1077	0.000	0.77		28.7	SURCHARGED	
S20.000	S1078	0.000	1.25		20.1	SURCHARGED	
S20.001	S1079	0.000	0.84		30.3	SURCHARGED	
S19.002	S1080	0.000	0.96		91.0	SURCHARGED	
S14.004	S1081	0.000	1.87		366.4	SURCHARGED	
S14.005	S1082	0.000	2.84		372.8	SURCHARGED	
S14.006	S1083	0.000	3.14		382.7	SURCHARGED	

PFA Consulting		Page 5
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S21.000	S1084	0.000	0.18		6.7	FLOOD RISK	

PFA Consulting		Page 6
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S22.000	S1085	60 Summer	+40%	+0%/60 Summer				21.119	0.852	0.000
S21.001	S1086	60 Summer	+40%	+0%/60 Summer				20.980	0.784	0.000
S21.002	S1087	60 Summer	+40%	+0%/60 Summer				20.905	0.781	0.000
S14.007	S1088	60 Summer	+40%	+0%/60 Summer				20.695	0.271	0.000
S14.008	S1089	60 Summer	+40%	+0%/60 Summer				20.619	0.234	0.000
S14.009	S1090	60 Summer	+40%	+0%/60 Summer				20.550	0.195	0.000
S14.010	S1091	60 Summer	+40%	+20%/60 Summer				20.455	0.145	0.000
S23.000	S1092-GR	60 Summer	+40%	+0%/60 Summer				20.330	0.381	0.000
S14.011	S1093	60 Summer	+40%	+20%/60 Summer				20.299	0.085	0.000
S24.000	S1094	60 Summer	+40%					23.107	-0.108	0.000
S24.001	S1095	60 Summer	+40%	+40%/60 Summer				22.273	0.093	0.000
S24.002	S1096	60 Summer	+40%	+20%/60 Summer				22.121	0.152	0.000
S24.003	S1097	60 Summer	+40%	+40%/60 Summer				21.597	0.019	0.000
S24.004	S1098	60 Summer	+40%	+40%/60 Summer				21.421	0.142	0.000
S25.000	S1099	60 Summer	+40%	+0%/60 Summer				21.300	0.446	0.000
S24.005	S1100	60 Summer	+40%	+0%/60 Summer				21.242	0.516	0.000
S24.006	S1101	60 Summer	+40%	+0%/60 Summer				21.057	0.574	0.000
S26.000	S1102	60 Summer	+40%	+0%/60 Summer				24.290	0.446	0.000
S26.001	S1103	60 Summer	+40%	+0%/60 Summer				24.126	0.507	0.000
S26.002	S1104	60 Summer	+40%	+40%/60 Summer				23.403	0.030	0.000
S27.000	S1105	60 Summer	+40%					23.343	-0.043	0.000
S26.003	S1106	60 Summer	+40%	+40%/60 Summer				23.318	0.013	0.000
S26.004	S1107	60 Summer	+40%	+20%/60 Summer				23.003	0.386	0.000
S26.005	S1108	60 Summer	+40%	+20%/60 Summer				22.809	0.521	0.000
S28.000	S1109	60 Summer	+40%	+20%/60 Summer				22.695	0.409	0.000
S28.001	S1110	60 Summer	+40%	+20%/60 Summer				22.633	0.421	0.000
S26.006	S1111	60 Summer	+40%	+0%/60 Summer				22.472	0.684	0.000
S26.007	S1112	60 Summer	+40%	+0%/60 Summer				22.195	0.653	0.000
S26.008	S1113	60 Summer	+40%	+0%/60 Summer				21.982	0.545	0.000
S26.009	S1114	60 Summer	+40%	+0%/60 Summer				21.723	0.400	0.000
S26.010	S1115	60 Summer	+40%	+20%/60 Summer				21.432	0.285	0.000
S24.007	S1116	60 Summer	+40%	+0%/60 Summer				20.912	0.465	0.000
S24.008	S1117	60 Summer	+40%	+0%/60 Summer				20.731	0.307	0.000
S24.009	S1118	60 Summer	+40%	+0%/60 Summer				20.551	0.258	0.000
S24.010	S1119	60 Summer	+40%	+0%/60 Summer				20.372	0.156	0.000
S24.011	S1120	480 Winter	+40%	+20%/60 Summer				20.232	0.066	0.000
S29.000	S1121	60 Summer	+40%	+40%/60 Summer				24.507	0.193	0.000
S30.000	S1122	60 Summer	+40%	+40%/60 Summer				24.214	0.161	0.000
S29.001	S1123	60 Summer	+40%	+40%/60 Summer				24.153	0.253	0.000
S29.002	S1124	60 Summer	+40%	+20%/60 Summer				23.881	0.420	0.000
S29.003	S1125	60 Summer	+40%	+20%/60 Summer				23.707	0.506	0.000
S29.004	S1126	60 Summer	+40%	+20%/60 Summer				23.079	0.369	0.000
S31.000	S1127	60 Summer	+40%	+0%/60 Summer				23.306	0.459	0.000
S31.001	S1128	60 Summer	+40%	+0%/60 Summer				23.218	0.488	0.000
S29.005	S1129	60 Summer	+40%	+20%/60 Summer				22.978	0.366	0.000
S29.006	S1130	60 Summer	+40%	+0%/60 Summer				21.903	0.815	0.000
S29.007	S1131	60 Summer	+40%	+0%/60 Summer				21.372	0.621	0.000
S29.008	S1132	60 Summer	+40%	+0%/60 Summer				21.193	0.505	0.000
S29.009	S1133	60 Summer	+40%	+0%/60 Summer				21.003	0.410	0.000
S29.010	S1134	60 Summer	+40%	+0%/60 Summer				20.803	0.483	0.000
S29.011	S1135	60 Summer	+40%	+0%/60 Summer				20.601	0.376	0.000
S32.000	S1136	60 Summer	+40%	+0%/60 Summer				20.561	0.370	0.000
S29.012	S1137	60 Summer	+40%	+0%/60 Summer				20.395	0.354	0.000
S33.000	S1138	480 Winter	+40%	+40%/60 Summer				20.233	0.032	0.000
S29.013	S1139	480 Winter	+40%	+0%/60 Summer				20.233	0.218	0.000
S34.000	S1140	60 Summer	+40%					21.043	-0.008	0.000

PFA Consulting		Page 7
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S22.000	S1085	1.24		19.4	SURCHARGED	
S21.001	S1086	1.00		34.3	SURCHARGED	
S21.002	S1087	1.37		53.7	SURCHARGED	
S14.007	S1088	1.63		436.7	SURCHARGED	
S14.008	S1089	2.01		442.0	SURCHARGED	
S14.009	S1090	1.57		465.3	SURCHARGED	
S14.010	S1091	1.29		459.9	SURCHARGED	
S23.000	S1092-GR	0.50		18.8	SURCHARGED	
S14.011	S1093	2.38		469.2	SURCHARGED	
S24.000	S1094	0.53		41.4	OK	
S24.001	S1095	0.68		43.9	SURCHARGED	
S24.002	S1096	1.18		69.7	SURCHARGED	
S24.003	S1097	0.52		68.8	SURCHARGED	
S24.004	S1098	0.46		63.9	SURCHARGED	
S25.000	S1099	0.67		10.8	SURCHARGED	
S24.005	S1100	0.87		72.8	SURCHARGED	
S24.006	S1101	1.73		92.9	SURCHARGED	
S26.000	S1102	0.85		14.3	SURCHARGED	
S26.001	S1103	1.73		29.1	SURCHARGED	
S26.002	S1104	1.00		36.2	SURCHARGED	
S27.000	S1105	0.66		10.1	OK	
S26.003	S1106	0.75		60.6	SURCHARGED	
S26.004	S1107	0.79		60.2	SURCHARGED	
S26.005	S1108	0.84		66.5	SURCHARGED	
S28.000	S1109	0.97		14.7	SURCHARGED	
S28.001	S1110	0.64		20.3	SURCHARGED	
S26.006	S1111	1.05		105.9	SURCHARGED	
S26.007	S1112	1.42		115.6	SURCHARGED	
S26.008	S1113	1.51		127.9	SURCHARGED	
S26.009	S1114	1.29		135.6	SURCHARGED	
S26.010	S1115	0.87		143.4	SURCHARGED	
S24.007	S1116	2.35		238.9	SURCHARGED	
S24.008	S1117	1.17		239.1	SURCHARGED	
S24.009	S1118	1.41		238.9	SURCHARGED	
S24.010	S1119	1.86		238.7	SURCHARGED	
S24.011	S1120	0.22		51.4	SURCHARGED	
S29.000	S1121	1.01		33.1	SURCHARGED	
S30.000	S1122	0.73		12.0	SURCHARGED	
S29.001	S1123	0.86		58.4	SURCHARGED	
S29.002	S1124	0.83		59.4	SURCHARGED	
S29.003	S1125	1.16		70.9	SURCHARGED	
S29.004	S1126	1.06		82.6	SURCHARGED	
S31.000	S1127	0.88		14.1	SURCHARGED	
S31.001	S1128	1.51		24.2	SURCHARGED	
S29.005	S1129	0.84		144.8	SURCHARGED	
S29.006	S1130	1.25		159.6	SURCHARGED	
S29.007	S1131	1.54		165.0	SURCHARGED	
S29.008	S1132	1.41		170.4	SURCHARGED	
S29.009	S1133	0.85		174.5	SURCHARGED	
S29.010	S1134	1.46		175.9	SURCHARGED	
S29.011	S1135	1.06		177.8	SURCHARGED	
S32.000	S1136	1.07		17.4	SURCHARGED	
S29.012	S1137	2.40		195.4	SURCHARGED	
S33.000	S1138	0.11		1.7	SURCHARGED	
S29.013	S1139	0.28		40.5	SURCHARGED	

PFA Consulting		Page 8
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Pipe	Status	Level Exceeded
			Flow (l/s)		
S34.000	S1140	1.00	17.1	OK	

PFA Consulting		Page 9
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land North West of Boorley Green Catchment A - RM Submission	
Date 01/09/2017	Designed by BF	
File M380-Catch A-V2.2 (RM)	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S34.001	S1141	60 Summer	+40%					20.550	-0.114
S34.002	S1142	60 Summer	+40%					20.474	-0.057
S34.003	S1143	480 Winter	+40%	+40%/240 Winter				20.232	0.090
S1.022	S1144-Basin A1	480 Winter	+40%	+0%/60 Summer				20.232	0.532
S1.023	S1145-Con	480 Winter	+40%					20.193	-0.950
S1.024	S1146	960 Winter	+40%					19.574	-1.724
S1.025	S1147	960 Winter	+40%					19.494	-1.767
S1.026	S1148	960 Winter	+40%					19.398	-1.777
S1.027	S1149	960 Winter	+40%					19.376	-1.642
S1.028	S1150	960 Winter	+40%					19.249	-1.719

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S34.001	S1141	0.000	0.69		63.4	OK	
S34.002	S1142	0.000	0.99		99.1	OK	
S34.003	S1143	0.000	0.14		15.0	SURCHARGED	
S1.022	S1144-Basin A1	0.000	0.93		57.2	SURCHARGED	
S1.023	S1145-Con	0.000	0.01		55.7	OK	
S1.024	S1146	0.000	0.00		55.7	OK	
S1.025	S1147	0.000	0.00		55.7	OK	
S1.026	S1148	0.000	0.00		55.7	OK	
S1.027	S1149	0.000	0.00		55.7	OK	
S1.028	S1150	0.000	0.00		55.7	OK	

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

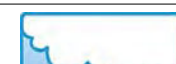
- Indicates pipe length does not match coordinates

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	12.687	0.967	13.1	0.031	5.00	0.0	0.600		o	150	Pipe/Conduit	
S2.000	15.120	0.193	78.4	0.026	5.00	0.0	0.600		o	150	Pipe/Conduit	
S2.001	23.340	0.237	98.3	0.038	0.00	0.0	0.600		o	150	Pipe/Conduit	
S2.002	21.958	0.228	96.5	0.028	0.00	0.0	0.600		o	225	Pipe/Conduit	
S2.003	16.625	0.099	167.9	0.021	0.00	0.0	0.600		o	225	Pipe/Conduit	
S3.000	22.596	0.264	85.5	0.046	5.00	0.0	0.600		o	150	Pipe/Conduit	
S3.001	9.492	0.330	28.8	0.012	0.00	0.0	0.600		o	150	Pipe/Conduit	
S2.004	21.782	0.159	137.2	0.018	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.001	39.840	0.537	74.2	0.041	0.00	0.0	0.600		o	225	Pipe/Conduit	
S4.000	20.174	0.200	100.9	0.038	5.00	0.0	0.600		o	150	Pipe/Conduit	
S4.001	13.998	0.085	164.7	0.036	0.00	0.0	0.600		o	225	Pipe/Conduit	
S4.002	12.756	0.075	170.1	0.019	0.00	0.0	0.600		o	225	Pipe/Conduit	
S4.003	12.002	0.071	169.0	0.010	0.00	0.0	0.600		o	225	Pipe/Conduit	
S4.004	7.666	0.028	273.8	0.077	0.00	0.0	0.600		o	375	Pipe/Conduit	
S4.005	8.778	0.031	283.2	0.008	0.00	0.0	0.600		o	375	Pipe/Conduit	
S1.002	8.485	0.021	404.0	0.009	0.00	0.0	0.600		o	450	Pipe/Conduit	
S1.003	23.206	0.057	407.1	0.041	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)
S1.000	96.01	5.08	21.781	0.031	0.0	0.0	0.0	2.80	49.4	8.1
S2.000	94.94	5.22	21.729	0.026	0.0	0.0	0.0	1.14	20.1	6.6
S2.001	92.27	5.61	21.536	0.064	0.0	0.0	0.0	1.01	17.9	15.9
S2.002	90.47	5.88	21.224	0.092	0.0	0.0	0.0	1.33	52.9	22.4
S2.003	88.74	6.16	20.996	0.112	0.0	0.0	0.0	1.01	40.0	27.0
S3.000	94.05	5.35	21.566	0.046	0.0	0.0	0.0	1.09	19.2	11.6
S3.001	93.47	5.43	21.302	0.058	0.0	0.0	0.0	1.88	33.3	14.6
S2.004	86.81	6.48	20.897	0.188	0.0	0.0	0.0	1.11	44.3	44.2
S1.001	84.36	6.92	20.739	0.261	0.0	0.0	0.0	1.52	60.4	59.6
S4.000	94.12	5.34	20.767	0.038	0.0	0.0	0.0	1.00	17.7	9.8
S4.001	92.54	5.57	20.492	0.075	0.0	0.0	0.0	1.02	40.4	18.7
S4.002	91.13	5.78	20.407	0.093	0.0	0.0	0.0	1.00	39.7	23.0
S4.003	89.85	5.98	20.332	0.103	0.0	0.0	0.0	1.00	39.9	25.1
S4.004	89.12	6.10	20.111	0.180	0.0	0.0	0.0	1.09	120.4	43.5
S4.005	88.28	6.23	20.083	0.188	0.0	0.0	0.0	1.07	118.4	45.1
S1.002	83.61	7.06	19.977	0.458	0.0	0.0	0.0	1.01	159.9	103.7
S1.003	81.63	7.45	19.956	0.499	0.0	0.0	0.0	1.00	159.3	110.3

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.004	22.879	0.056	408.6	0.068	0.00	0.0	0.600		o	450	Pipe/Conduit	
S5.000	20.308	0.201	100.9	0.047	5.00	0.0	0.600		o	150	Pipe/Conduit	
S5.001	39.194	0.233	167.9	0.079	0.00	0.0	0.600		o	225	Pipe/Conduit	
S5.002	18.055	0.108	167.9	0.038	0.00	0.0	0.600		o	225	Pipe/Conduit	
S5.003	14.551	0.094	154.9	0.012	0.00	0.0	0.600		o	225	Pipe/Conduit	
S5.004	5.164	0.021	241.9	0.026	0.00	0.0	0.600		o	300	Pipe/Conduit	
S5.005	42.023	0.174	241.9	0.071	0.00	0.0	0.600		o	300	Pipe/Conduit	
S5.006	10.849	0.045	241.9	0.010	0.00	0.0	0.600		o	300	Pipe/Conduit	
S6.000	14.515	0.300	48.4	0.094	5.00	0.0	0.600		o	150	Pipe/Conduit	
S6.001	7.036	0.533	13.2	0.024	0.00	0.0	0.600		o	225	Pipe/Conduit	
S5.007	7.036	0.022	321.0	0.026	0.00	0.0	0.600		o	375	Pipe/Conduit	
S5.008	32.439	0.372	87.2	0.089	0.00	0.0	0.600		o	375	Pipe/Conduit	
S1.005	33.796	0.060	563.3	0.040	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.006	13.413	0.023	583.2	0.034	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.007	11.054	0.019	581.8	0.038	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.008	7.265	0.013	558.8	0.020	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.009	33.038	0.057	579.6	0.066	0.00	0.0	0.600		o	600	Pipe/Conduit	
S1.010	18.012	0.031	581.0	0.033	0.00	0.0	0.600		o	600	Pipe/Conduit	
S7.000	12.069	0.138	87.6	0.073	5.00	0.0	0.600		o	150	Pipe/Conduit	
S7.001	25.509	0.152	167.9	0.034	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)
S1.004	79.78	7.83	19.899	0.568	0.0	0.0	0.0	1.00	159.0	122.6
S5.000	94.11	5.34	21.413	0.047	0.0	0.0	0.0	1.00	17.7	12.1
S5.001	89.79	5.99	21.137	0.127	0.0	0.0	0.0	1.01	40.0	30.8
S5.002	87.95	6.29	20.904	0.165	0.0	0.0	0.0	1.01	40.0	39.3
S5.003	86.59	6.52	20.796	0.177	0.0	0.0	0.0	1.05	41.7	41.6
S5.004	86.11	6.60	20.627	0.203	0.0	0.0	0.0	1.01	71.1	47.3
S5.005	82.36	7.30	20.606	0.274	0.0	0.0	0.0	1.01	71.1	61.1
S5.006	81.46	7.48	20.432	0.283	0.0	0.0	0.0	1.01	71.1	62.5
S6.000	95.34	5.17	21.370	0.094	0.0	0.0	0.0	1.45	25.6	24.2
S6.001	95.10	5.20	20.995	0.118	0.0	0.0	0.0	3.62	144.0	30.4
S5.007	80.89	7.60	20.312	0.428	0.0	0.0	0.0	1.01	111.1	93.7
S5.008	79.56	7.87	20.290	0.516	0.0	0.0	0.0	1.94	214.4	111.2
S1.005	77.07	8.43	19.693	1.124	0.0	0.0	0.0	1.02	288.1	234.7
S1.006	76.11	8.65	19.633	1.158	0.0	0.0	0.0	1.00	283.1	238.8
S1.007	75.35	8.83	19.610	1.196	0.0	0.0	0.0	1.00	283.4	244.2
S1.008	74.87	8.95	19.591	1.216	0.0	0.0	0.0	1.02	289.2	246.6
S1.009	72.73	9.50	19.578	1.282	0.0	0.0	0.0	1.00	284.0	252.5
S1.010	71.63	9.80	19.521	1.315	0.0	0.0	0.0	1.00	283.6	255.0
S7.000	95.19	5.19	20.412	0.073	0.0	0.0	0.0	1.07	19.0	18.9
S7.001	92.24	5.61	20.200	0.107	0.0	0.0	0.0	1.01	40.0	26.7

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S8.000	17.872	0.197	90.6	0.095	5.00	0.0	0.600		o	225	Pipe/Conduit	
S7.002	7.003	0.183	38.3	0.011	0.00	0.0	0.600		o	225	Pipe/Conduit	
S1.011	19.325#	0.036	536.8	0.000	0.00	0.0	0.600		o	600	Pipe/Conduit	
S9.000	15.512	0.154	100.9	0.059	5.00	0.0	0.600		o	150	Pipe/Conduit	
S9.001	42.465	0.253	167.7	0.086	0.00	0.0	0.600		o	225	Pipe/Conduit	
S9.002	29.575	0.324	91.3	0.030	0.00	0.0	0.600		o	225	Pipe/Conduit	
S10.000	23.661	0.141	167.8	0.094	5.00	0.0	0.600		o	300	Pipe/Conduit	
S10.001	34.054	0.203	167.8	0.065	0.00	0.0	0.600		o	300	Pipe/Conduit	
S11.000	8.764	1.847	4.7	0.032	5.00	0.0	0.600		o	150	Pipe/Conduit	
S10.002	31.167	0.129	241.6	0.087	0.00	0.0	0.600		o	300	Pipe/Conduit	
S10.003	13.590	0.058	234.3	0.048	0.00	0.0	0.600		o	375	Pipe/Conduit	
S9.003	25.777	0.064	402.8	0.086	0.00	0.0	0.600		o	450	Pipe/Conduit	
S9.004	26.187	0.064	409.2	0.087	0.00	0.0	0.600		o	450	Pipe/Conduit	
S9.005	54.491	0.110	495.4	0.117	0.00	0.0	0.600		o	525	Pipe/Conduit	
S9.006	8.301	0.017	488.3	0.029	0.00	0.0	0.600		o	525	Pipe/Conduit	
S9.007	8.673	0.018	481.8	0.027	0.00	0.0	0.600		o	525	Pipe/Conduit	
S9.008	28.772	0.059	487.7	0.075	0.00	0.0	0.600		o	525	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)
S8.000	94.97	5.22	20.245	0.095	0.0	0.0	0.0	1.37	54.6	24.5
S7.002	91.87	5.66	20.048	0.213	0.0	0.0	0.0	2.12	84.3	52.9
S1.011	70.53	10.11	19.490	1.527	0.0	0.0	0.0	1.04	295.2	291.7
S9.000	94.67	5.26	21.043	0.059	0.0	0.0	0.0	1.00	17.7	15.2
S9.001	89.95	5.96	20.815	0.145	0.0	0.0	0.0	1.01	40.0	35.4
S9.002	87.74	6.32	20.561	0.176	0.0	0.0	0.0	1.37	54.4	41.7
S10.000	94.20	5.33	20.693	0.094	0.0	0.0	0.0	1.21	85.6	24.1
S10.001	91.02	5.79	20.552	0.160	0.0	0.0	0.0	1.21	85.6	39.4
S11.000	96.33	5.03	22.346	0.032	0.0	0.0	0.0	4.66	82.3	8.4
S10.002	87.81	6.31	20.349	0.279	0.0	0.0	0.0	1.01	71.2	66.3
S10.003	86.69	6.50	20.145	0.327	0.0	0.0	0.0	1.18	130.3	76.7
S9.003	84.31	6.93	20.012	0.588	0.0	0.0	0.0	1.01	160.1	134.3
S9.004	82.03	7.37	19.948	0.675	0.0	0.0	0.0	1.00	158.9	150.0
S9.005	77.74	8.27	19.809	0.793	0.0	0.0	0.0	1.00	216.4	166.9
S9.006	77.13	8.41	19.699	0.821	0.0	0.0	0.0	1.01	218.0	171.6
S9.007	76.52	8.55	19.682	0.848	0.0	0.0	0.0	1.01	219.4	175.8
S9.008	74.56	9.03	19.664	0.923	0.0	0.0	0.0	1.01	218.1	186.4

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
S12.000	29.986	0.465	64.5	0.068	5.00	0.0	0.600		o	150	Pipe/Conduit	
S9.009	34.372	0.071	484.1	0.028	0.00	0.0	0.600		o	525	Pipe/Conduit	
S9.010	19.096	0.039	489.6	0.058	0.00	0.0	0.600		o	525	Pipe/Conduit	
S9.011	22.002#	0.045	488.9	0.000	0.00	0.0	0.600		o	525	Pipe/Conduit	
S1.012	8.570	0.200	42.9	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.013	6.880	0.083	82.9	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
S1.014	16.406	0.057	287.8	0.000	0.00	0.0		0.045 3 \=/		150	1:3 Swale	

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)
S12.000	93.69	5.40	20.445	0.068	0.0	0.0	0.0	1.25	22.2	17.2
S9.009	72.37	9.60	19.605	1.018	0.0	0.0	0.0	1.01	218.9	199.6
S9.010	71.22	9.91	19.534	1.076	0.0	0.0	0.0	1.01	217.7	207.5
S9.011	69.93	10.28	19.495	1.076	0.0	0.0	0.0	1.01	217.8	207.5
S1.012	69.73	10.34	19.300	2.603	0.0	0.0	0.0	2.41	170.3«	491.5
S1.013	69.50	10.40	19.100	2.603	0.0	0.0	0.0	1.73	122.2«	491.5
S1.014	65.94	11.51	19.017	2.603	0.0	0.0	0.0	0.25	22.2«	491.5

PFA Consulting		Page 5
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

PIPELINE SCHEDULES for Storm

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	150	S2001	23.131	21.781	1.200	Open Manhole	1200
S2.000	o	150	S2002	23.079	21.729	1.200	Open Manhole	1200
S2.001	o	150	S2003	22.886	21.536	1.200	Open Manhole	1200
S2.002	o	225	S2004	22.649	21.224	1.200	Open Manhole	1200
S2.003	o	225	S2005	22.421	20.996	1.200	Open Manhole	1200
S3.000	o	150	S2006	22.916	21.566	1.200	Open Manhole	1200
S3.001	o	150	S2007	22.652	21.302	1.200	Open Manhole	1200
S2.004	o	225	S2008	22.537	20.897	1.415	Open Manhole	1200
S1.001	o	225	S2009	22.490	20.739	1.526	Open Manhole	1200
S4.000	o	150	S2010	22.200	20.767	1.283	Open Manhole	1200
S4.001	o	225	S2011	21.905	20.492	1.188	Open Manhole	1200
S4.002	o	225	S2012	21.899	20.407	1.267	Open Manhole	1200
S4.003	o	225	S2013	22.111	20.332	1.554	Open Manhole	1200
S4.004	o	375	S2014	22.224	20.111	1.738	Open Manhole	1350
S4.005	o	375	S2015	22.198	20.083	1.740	Open Manhole	1350
S1.002	o	450	S2016	22.343	19.977	1.916	Open Manhole	1350
S1.003	o	450	S2017	22.419	19.956	2.013	Open Manhole	1350
S1.004	o	450	S2018	22.656	19.899	2.307	Open Manhole	1350

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)
S1.000	12.687	13.1	S2009	22.490	20.814	1.526	Open Manhole	1200
S2.000	15.120	78.4	S2003	22.886	21.536	1.200	Open Manhole	1200
S2.001	23.340	98.3	S2004	22.649	21.299	1.200	Open Manhole	1200
S2.002	21.958	96.5	S2005	22.421	20.996	1.200	Open Manhole	1200
S2.003	16.625	167.9	S2008	22.537	20.897	1.415	Open Manhole	1200
S3.000	22.596	85.5	S2007	22.652	21.302	1.200	Open Manhole	1200
S3.001	9.492	28.8	S2008	22.537	20.972	1.415	Open Manhole	1200
S2.004	21.782	137.2	S2009	22.490	20.739	1.526	Open Manhole	1200
S1.001	39.840	74.2	S2016	22.343	20.202	1.916	Open Manhole	1350
S4.000	20.174	100.9	S2011	21.905	20.567	1.188	Open Manhole	1200
S4.001	13.998	164.7	S2012	21.899	20.407	1.267	Open Manhole	1200
S4.002	12.756	170.1	S2013	22.111	20.332	1.554	Open Manhole	1200
S4.003	12.002	169.0	S2014	22.224	20.261	1.738	Open Manhole	1350
S4.004	7.666	273.8	S2015	22.198	20.083	1.740	Open Manhole	1350
S4.005	8.778	283.2	S2016	22.343	20.052	1.916	Open Manhole	1350
S1.002	8.485	404.0	S2017	22.419	19.956	2.013	Open Manhole	1350
S1.003	23.206	407.1	S2018	22.656	19.899	2.307	Open Manhole	1350
S1.004	22.879	408.6	S2030	22.881	19.843	2.588	Open Manhole	1500

PFA Consulting		Page 6
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017 File M380 -Catch B V2.1 (RM)	Designed by BF Checked by DB/MS	
Causeway	Network 2017.1.2	

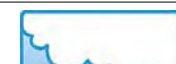
PIPELINE SCHEDULES for Storm

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)
S5.000	o	150	S2019	22.763	21.413	1.200	Open Manhole	1200
S5.001	o	225	S2020	22.969	21.137	1.607	Open Manhole	1200
S5.002	o	225	S2021	23.089	20.904	1.960	Open Manhole	1200
S5.003	o	225	S2022	22.896	20.796	1.875	Open Manhole	1200
S5.004	o	300	S2023	22.765	20.627	1.837	Open Manhole	1200
S5.005	o	300	S2024	22.708	20.606	1.802	Open Manhole	1200
S5.006	o	300	S2025	22.801	20.432	2.069	Open Manhole	1200
S6.000	o	150	S2026	22.720	21.370	1.200	Open Manhole	1200
S6.001	o	225	S2027	22.861	20.995	1.641	Open Manhole	1200
S5.007	o	375	S2028	22.945	20.312	2.258	Open Manhole	1350
S5.008	o	375	S2029	22.999	20.290	2.334	Open Manhole	1350
S1.005	o	600	S2030	22.881	19.693	2.588	Open Manhole	1500
S1.006	o	600	S2031	22.114	19.633	1.881	Open Manhole	1500
S1.007	o	600	S2032	21.951	19.610	1.741	Open Manhole	1500
S1.008	o	600	S2033	21.833	19.591	1.642	Open Manhole	1500
S1.009	o	600	S2034	21.754	19.578	1.576	Open Manhole	1500
S1.010	o	600	S2035	21.783	19.521	1.662	Open Manhole	1500
S7.000	o	150	S2036	21.762	20.412	1.200	Open Manhole	1200
S7.001	o	225	S2037	21.785	20.200	1.361	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)
S5.000	20.308	100.9	S2020	22.969	21.212	1.607	Open Manhole	1200
S5.001	39.194	167.9	S2021	23.089	20.904	1.960	Open Manhole	1200
S5.002	18.055	167.9	S2022	22.896	20.796	1.875	Open Manhole	1200
S5.003	14.551	154.9	S2023	22.765	20.702	1.837	Open Manhole	1200
S5.004	5.164	241.9	S2024	22.708	20.606	1.802	Open Manhole	1200
S5.005	42.023	241.9	S2025	22.801	20.432	2.069	Open Manhole	1200
S5.006	10.849	241.9	S2028	22.945	20.387	2.258	Open Manhole	1350
S6.000	14.515	48.4	S2027	22.861	21.070	1.641	Open Manhole	1200
S6.001	7.036	13.2	S2028	22.945	20.462	2.258	Open Manhole	1350
S5.007	7.036	321.0	S2029	22.999	20.290	2.334	Open Manhole	1350
S5.008	32.439	87.2	S2030	22.881	19.918	2.588	Open Manhole	1500
S1.005	33.796	563.3	S2031	22.114	19.633	1.881	Open Manhole	1500
S1.006	13.413	583.2	S2032	21.951	19.610	1.741	Open Manhole	1500
S1.007	11.054	581.8	S2033	21.833	19.591	1.642	Open Manhole	1500
S1.008	7.265	558.8	S2034	21.754	19.578	1.576	Open Manhole	1500
S1.009	33.038	579.6	S2035	21.783	19.521	1.662	Open Manhole	1500
S1.010	18.012	581.0	S2040	21.872	19.490	1.782	Open Manhole	1500
S7.000	12.069	87.6	S2037	21.785	20.275	1.361	Open Manhole	1200
S7.001	25.509	167.9	S2039	21.822	20.048	1.549	Open Manhole	1200

PFA Consulting		Page 7
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S8.000	o	225	S2038	21.670	20.245	1.200	Open Manhole	1200
S7.002	o	225	S2039	21.822	20.048	1.549	Open Manhole	1200
S1.011	o	600	S2040	21.872	19.490	1.782	Open Manhole	1500
S9.000	o	150	S2041	22.393	21.043	1.200	Open Manhole	1200
S9.001	o	225	S2042	22.517	20.815	1.478	Open Manhole	1200
S9.002	o	225	S2043	22.867	20.561	2.081	Open Manhole	1200
S10.000	o	300	S2044	22.193	20.693	1.200	Open Manhole	1200
S10.001	o	300	S2045	22.434	20.552	1.582	Open Manhole	1200
S11.000	o	150	S2046	23.696	22.346	1.200	Open Manhole	1200
S10.002	o	300	S2047	23.521	20.349	2.872	Open Manhole	1200
S10.003	o	375	S2048	22.899	20.145	2.379	Open Manhole	1350
S9.003	o	450	S2049	22.632	20.012	2.170	Open Manhole	1350
S9.004	o	450	S2050	22.271	19.948	1.873	Open Manhole	1350
S9.005	o	525	S2051	22.516	19.809	2.182	Open Manhole	1500
S9.006	o	525	S2052	22.270	19.699	2.046	Open Manhole	1500
S9.007	o	525	S2053	22.250	19.682	2.043	Open Manhole	1500
S9.008	o	525	S2054	22.154	19.664	1.965	Open Manhole	1500

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)
S8.000	17.872	90.6	S2039	21.822	20.048	1.549	Open Manhole	1200
S7.002	7.003	38.3	S2040	21.872	19.865	1.782	Open Manhole	1500
S1.011	19.325#	536.8	S2059-Basin B	20.900	19.454	0.846	Open Manhole	1500
S9.000	15.512	100.9	S2042	22.517	20.890	1.478	Open Manhole	1200
S9.001	42.465	167.7	S2043	22.867	20.561	2.081	Open Manhole	1200
S9.002	29.575	91.3	S2049	22.632	20.237	2.170	Open Manhole	1350
S10.000	23.661	167.8	S2045	22.434	20.552	1.582	Open Manhole	1200
S10.001	34.054	167.8	S2047	23.521	20.349	2.872	Open Manhole	1200
S11.000	8.764	4.7	S2047	23.521	20.499	2.872	Open Manhole	1200
S10.002	31.167	241.6	S2048	22.899	20.220	2.379	Open Manhole	1350
S10.003	13.590	234.3	S2049	22.632	20.087	2.170	Open Manhole	1350
S9.003	25.777	402.8	S2050	22.271	19.948	1.873	Open Manhole	1350
S9.004	26.187	409.2	S2051	22.516	19.884	2.182	Open Manhole	1500
S9.005	54.491	495.4	S2052	22.270	19.699	2.046	Open Manhole	1500
S9.006	8.301	488.3	S2053	22.250	19.682	2.043	Open Manhole	1500
S9.007	8.673	481.8	S2054	22.154	19.664	1.965	Open Manhole	1500
S9.008	28.772	487.7	S2056	21.744	19.605	1.614	Open Manhole	1500

PFA Consulting		Page 8
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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)
S12.000	o	150	S2055	21.795	20.445	1.200	Open Manhole	1200
S9.009	o	525	S2056	21.744	19.605	1.614	Open Manhole	1500
S9.010	o	525	S2057	21.518	19.534	1.459	Open Manhole	1500
S9.011	o	525	S2058	21.259	19.495	1.239	Open Manhole	1500
S1.012	o	300	S2059-Basin B	20.900	19.300	1.300	Open Manhole	1500
S1.013	o	300	S2060-CON	20.509	19.100	1.109	Open Manhole	1200
S1.014	3 \=/	150	S2061	20.317	19.017	1.150	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)
S12.000	29.986	64.5	S2056	21.744	19.980	1.614	Open Manhole	1500
S9.009	34.372	484.1	S2057	21.518	19.534	1.459	Open Manhole	1500
S9.010	19.096	489.6	S2058	21.259	19.495	1.239	Open Manhole	1500
S9.011	22.002#	488.9	S2059-Basin B	20.900	19.450	0.925	Open Manhole	1500
S1.012	8.570	42.9	S2060-CON	20.509	19.100	1.109	Open Manhole	1200
S1.013	6.880	82.9	S2061	20.317	19.017	1.000	Open Manhole	1200
S1.014	16.406	287.8	SStream	19.695	18.960	0.585	Open Manhole	0

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S1.014 SStream 19.695 18.960 18.960 0 0

Datum (m) 0.000 Offset (mins) 0

Time Depth
(mins) (m)

1 0.000

PFA Consulting		Page 9
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S2060-CON, DS/PN: S1.013, Volume (m³): 2.1

Unit Reference	MD-SHE-0205-2250-1300-2250
Design Head (m)	1.300
Design Flow (l/s)	22.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	205
Invert Level (m)	19.100
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	22.5	Kick-Flo®	0.888	18.8
Flush-Flo™	0.404	22.5	Mean Flow over Head Range	-	19.2

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	7.0	0.800	20.5	2.000	27.6	4.000	38.6	7.000	50.6
0.200	19.6	1.000	19.9	2.200	28.9	4.500	40.8	7.500	52.3
0.300	22.2	1.200	21.7	2.400	30.2	5.000	43.0	8.000	53.9
0.400	22.5	1.400	23.3	2.600	31.3	5.500	45.0	8.500	55.6
0.500	22.3	1.600	24.8	3.000	33.6	6.000	46.9	9.000	57.1
0.600	22.0	1.800	26.3	3.500	36.2	6.500	48.8	9.500	58.6

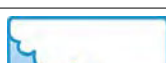
PFA Consulting		Page 10
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -Catch B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

Storage Structures for Storm

Tank or Pond Manhole: S2059-Basin B, DS/PN: S1.012

Invert Level (m) 19.300

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1076.1	0.400	1358.6	0.800	1657.1	1.200	1971.7	1.600	2302.5
0.100	1145.2	0.500	1431.7	0.900	1734.3	1.300	2052.9		
0.200	1215.3	0.600	1505.8	1.000	1812.4	1.400	2135.1		
0.300	1286.4	0.700	1581.0	1.100	1891.6	1.500	2218.3		

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

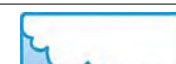
Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.350 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, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1
 Climate Change (%) 0

PN	US/MH		Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
	Name	Storm							(m)	(m)	(m ³)
S1.000	S2001	15 Winter	1	+0%					21.812	-0.119	0.000
S2.000	S2002	15 Winter	1	+0%					21.773	-0.106	0.000
S2.001	S2003	15 Winter	1	+0%					21.608	-0.079	0.000
S2.002	S2004	15 Winter	1	+0%					21.296	-0.153	0.000
S2.003	S2005	15 Winter	1	+0%					21.091	-0.131	0.000
S3.000	S2006	15 Winter	1	+0%					21.626	-0.090	0.000
S3.001	S2007	15 Winter	1	+0%					21.353	-0.099	0.000
S2.004	S2008	15 Winter	1	+0%					21.017	-0.105	0.000
S1.001	S2009	15 Winter	1	+0%					20.856	-0.108	0.000
S4.000	S2010	15 Winter	1	+0%					20.824	-0.093	0.000
S4.001	S2011	15 Winter	1	+0%					20.570	-0.147	0.000
S4.002	S2012	15 Winter	1	+0%					20.496	-0.136	0.000
S4.003	S2013	15 Winter	1	+0%					20.425	-0.132	0.000
S4.004	S2014	15 Winter	1	+0%					20.253	-0.233	0.000
S4.005	S2015	15 Winter	1	+0%					20.236	-0.222	0.000
S1.002	S2016	15 Winter	1	+0%					20.221	-0.206	0.000
S1.003	S2017	15 Winter	1	+0%					20.183	-0.223	0.000
S1.004	S2018	15 Winter	1	+0%					20.136	-0.213	0.000
S5.000	S2019	15 Winter	1	+0%					21.477	-0.086	0.000
S5.001	S2020	15 Winter	1	+0%					21.236	-0.126	0.000
S5.002	S2021	15 Winter	1	+0%					21.021	-0.108	0.000
S5.003	S2022	15 Winter	1	+0%					20.916	-0.105	0.000
S5.004	S2023	15 Winter	1	+0%					20.774	-0.153	0.000
S5.005	S2024	15 Winter	1	+0%					20.748	-0.158	0.000
S5.006	S2025	15 Winter	1	+0%					20.589	-0.143	0.000
S6.000	S2026	15 Winter	1	+0%					21.448	-0.072	0.000
S6.001	S2027	15 Winter	1	+0%					21.053	-0.167	0.000
S5.007	S2028	15 Winter	1	+0%					20.527	-0.160	0.000
S5.008	S2029	15 Winter	1	+0%					20.426	-0.239	0.000
S1.005	S2030	15 Winter	1	+0%					20.092	-0.201	0.000
S1.006	S2031	15 Winter	1	+0%					20.054	-0.179	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

				Pipe		
US/MH		Flow /	Overflow	Flow	Level	
PN	Name	Cap.	(l/s)	(l/s)	Status	Exceeded
S1.000	S2001	0.09		4.2	OK	
S2.000	S2002	0.18		3.4	OK	
S2.001	S2003	0.45		7.7	OK	
S2.002	S2004	0.22		10.8	OK	
S2.003	S2005	0.37		13.0	OK	
S3.000	S2006	0.33		6.0	OK	
S3.001	S2007	0.25		7.4	OK	
S2.004	S2008	0.55		22.1	OK	
S1.001	S2009	0.53		30.4	OK	
S4.000	S2010	0.30		5.0	OK	
S4.001	S2011	0.26		9.2	OK	
S4.002	S2012	0.33		11.3	OK	
S4.003	S2013	0.36		12.4	OK	
S4.004	S2014	0.25		20.6	OK	
S4.005	S2015	0.25		21.1	OK	
S1.002	S2016	0.57		52.4	OK	
S1.003	S2017	0.42		55.1	OK	
S1.004	S2018	0.45		59.0	OK	
S5.000	S2019	0.37		6.2	OK	
S5.001	S2020	0.39		15.0	OK	
S5.002	S2021	0.53		18.9	OK	
S5.003	S2022	0.56		20.3	OK	
S5.004	S2023	0.48		22.9	OK	
S5.005	S2024	0.44		29.4	OK	
S5.006	S2025	0.54		30.4	OK	
S6.000	S2026	0.53		12.4	OK	
S6.001	S2027	0.15		15.0	OK	
S5.007	S2028	0.62		45.2	OK	
S5.008	S2029	0.28		53.8	OK	
S1.005	S2030	0.46		109.8	OK	
S1.006	S2031	0.78		108.6	OK	

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

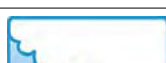
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
									Level (m)	Depth (m)
S1.007	S2032	15 Winter	1	+0%					20.015	-0.195
S1.008	S2033	15 Winter	1	+0%					19.962	-0.229
S1.009	S2034	15 Winter	1	+0%					19.945	-0.233
S1.010	S2035	15 Winter	1	+0%					19.893	-0.228
S7.000	S2036	15 Winter	1	+0%					20.494	-0.068
S7.001	S2037	15 Winter	1	+0%					20.294	-0.130
S8.000	S2038	15 Winter	1	+0%					20.323	-0.147
S7.002	S2039	15 Winter	1	+0%					20.154	-0.119
S1.011	S2040	30 Winter	1	+0%					19.837	-0.253
S9.000	S2041	15 Winter	1	+0%					21.117	-0.076
S9.001	S2042	15 Winter	1	+0%					20.923	-0.117
S9.002	S2043	15 Winter	1	+0%					20.660	-0.126
S10.000	S2044	15 Winter	1	+0%					20.775	-0.218
S10.001	S2045	15 Winter	1	+0%					20.654	-0.198
S11.000	S2046	15 Winter	1	+0%					22.370	-0.126
S10.002	S2047	15 Winter	1	+0%					20.501	-0.148
S10.003	S2048	15 Winter	1	+0%					20.303	-0.217
S9.003	S2049	15 Winter	1	+0%					20.253	-0.209
S9.004	S2050	15 Winter	1	+0%					20.188	-0.210
S9.005	S2051	15 Winter	1	+0%					20.081	-0.253
S9.006	S2052	15 Winter	1	+0%					20.016	-0.208
S9.007	S2053	15 Winter	1	+0%					19.992	-0.215
S9.008	S2054	15 Winter	1	+0%					19.949	-0.240
S12.000	S2055	15 Winter	1	+0%					20.513	-0.082
S9.009	S2056	15 Winter	1	+0%					19.890	-0.240
S9.010	S2057	15 Winter	1	+0%					19.823	-0.236
S9.011	S2058	15 Winter	1	+0%					19.762	-0.258
S1.012	S2059-Basin B	240 Winter	1	+0%					19.529	-0.071
S1.013	S2060-CON	240 Winter	1	+0%	1/15 Winter				19.515	0.115
S1.014	S2061	240 Winter	1	+0%					19.162	-1.155

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)		
S1.007	S2032	0.000	0.80		111.0	OK	
S1.008	S2033	0.000	0.59		110.3	OK	
S1.009	S2034	0.000	0.48		112.6	OK	
S1.010	S2035	0.000	0.68		112.2	OK	
S7.000	S2036	0.000	0.56		9.7	OK	
S7.001	S2037	0.000	0.36		13.5	OK	
S8.000	S2038	0.000	0.26		12.6	OK	
S7.002	S2039	0.000	0.45		27.2	OK	
S1.011	S2040	0.000	0.63		118.6	OK	
S9.000	S2041	0.000	0.47		7.8	OK	
S9.001	S2042	0.000	0.45		17.3	OK	
S9.002	S2043	0.000	0.40		20.4	OK	
S10.000	S2044	0.000	0.16		12.3	OK	
S10.001	S2045	0.000	0.25		19.7	OK	
S11.000	S2046	0.000	0.06		4.3	OK	
S10.002	S2047	0.000	0.50		32.7	OK	
S10.003	S2048	0.000	0.37		37.9	OK	
S9.003	S2049	0.000	0.49		66.0	OK	
S9.004	S2050	0.000	0.55		73.8	OK	
S9.005	S2051	0.000	0.41		79.6	OK	
S9.006	S2052	0.000	0.62		78.0	OK	

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
S9.007	S2053	0.000	0.65		79.3	OK	
S9.008	S2054	0.000	0.46		82.7	OK	
S12.000	S2055	0.000	0.42		8.9	OK	
S9.009	S2056	0.000	0.45		84.0	OK	
S9.010	S2057	0.000	0.57		84.5	OK	
S9.011	S2058	0.000	0.51		84.5	OK	
S1.012	S2059-Basin B	0.000	0.20		22.3	OK	
S1.013	S2060-CON	0.000	0.31		22.3	SURCHARGED	
S1.014	S2061	0.000	0.01		22.3	OK	

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 0.750
 Site Location GB 450306 114752 SU 50306 14752 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) 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 30
 Climate Change (%) 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	S2001	60 Summer	30	+0%					21.821	-0.110	0.000
S2.000	S2002	60 Summer	30	+0%					21.787	-0.092	0.000
S2.001	S2003	60 Summer	30	+0%					21.646	-0.041	0.000
S2.002	S2004	60 Summer	30	+0%					21.329	-0.120	0.000
S2.003	S2005	60 Summer	30	+0%					21.170	-0.052	0.000
S3.000	S2006	60 Summer	30	+0%					21.648	-0.068	0.000
S3.001	S2007	60 Summer	30	+0%					21.373	-0.079	0.000
S2.004	S2008	60 Summer	30	+0%	30/60 Summer				21.122	0.000	0.000
S1.001	S2009	60 Summer	30	+0%					20.949	-0.015	0.000
S4.000	S2010	60 Summer	30	+0%					20.845	-0.072	0.000
S4.001	S2011	60 Summer	30	+0%					20.680	-0.037	0.000
S4.002	S2012	60 Summer	30	+0%	30/60 Summer				20.653	0.021	0.000
S4.003	S2013	60 Summer	30	+0%	30/60 Summer				20.603	0.046	0.000
S4.004	S2014	60 Summer	30	+0%	30/60 Summer				20.551	0.065	0.000
S4.005	S2015	60 Summer	30	+0%	30/60 Summer				20.512	0.054	0.000
S1.002	S2016	60 Summer	30	+0%	30/60 Summer				20.446	0.019	0.000
S1.003	S2017	60 Summer	30	+0%	30/60 Summer				20.424	0.018	0.000
S1.004	S2018	60 Summer	30	+0%	30/60 Summer				20.384	0.035	0.000
S5.000	S2019	60 Summer	30	+0%					21.502	-0.061	0.000
S5.001	S2020	60 Summer	30	+0%					21.288	-0.074	0.000
S5.002	S2021	60 Summer	30	+0%	30/60 Summer				21.149	0.020	0.000
S5.003	S2022	60 Summer	30	+0%	30/60 Summer				21.054	0.033	0.000
S5.004	S2023	60 Summer	30	+0%	30/60 Summer				20.961	0.034	0.000
S5.005	S2024	60 Summer	30	+0%					20.884	-0.021	0.000
S5.006	S2025	60 Summer	30	+0%	30/60 Summer				20.776	0.044	0.000
S6.000	S2026	60 Summer	30	+0%					21.482	-0.038	0.000
S6.001	S2027	60 Summer	30	+0%					21.074	-0.146	0.000
S5.007	S2028	60 Summer	30	+0%					20.687	0.000	0.000
S5.008	S2029	60 Summer	30	+0%					20.489	-0.176	0.000
S1.005	S2030	60 Summer	30	+0%	30/60 Summer				20.340	0.047	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

			Pipe		
	US/MH	Flow /	Overflow	Flow	Level
PN	Name	Cap.	(l/s)	(l/s)	Exceeded
S1.000	S2001	0.16		7.2	OK
S2.000	S2002	0.32		5.9	OK
S2.001	S2003	0.87		14.8	OK
S2.002	S2004	0.44		21.3	OK
S2.003	S2005	0.70		24.7	OK
S3.000	S2006	0.58		10.5	OK
S3.001	S2007	0.45		13.3	OK
S2.004	S2008	1.01		41.0	SURCHARGED
S1.001	S2009	0.98		56.0	OK
S4.000	S2010	0.53		8.8	OK
S4.001	S2011	0.48		17.0	OK
S4.002	S2012	0.61		21.0	SURCHARGED
S4.003	S2013	0.64		21.7	SURCHARGED
S4.004	S2014	0.43		35.6	SURCHARGED
S4.005	S2015	0.42		35.7	SURCHARGED
S1.002	S2016	1.01		92.3	SURCHARGED
S1.003	S2017	0.75		99.1	SURCHARGED
S1.004	S2018	0.84		110.1	SURCHARGED
S5.000	S2019	0.65		10.9	OK
S5.001	S2020	0.77		29.2	OK
S5.002	S2021	0.99		35.4	SURCHARGED
S5.003	S2022	1.00		36.5	SURCHARGED
S5.004	S2023	0.86		40.8	SURCHARGED
S5.005	S2024	0.81		53.8	OK
S5.006	S2025	0.99		56.1	SURCHARGED
S6.000	S2026	0.91		21.6	OK
S6.001	S2027	0.26		27.3	OK
S5.007	S2028	1.21		87.8	OK
S5.008	S2029	0.55		105.3	OK
S1.005	S2030	0.90		215.4	SURCHARGED

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.006	S2031	60 Summer	30	+0%	30/60 Summer				20.290
S1.007	S2032	60 Summer	30	+0%	30/60 Summer				20.254
S1.008	S2033	60 Summer	30	+0%	30/60 Summer				20.221
S1.009	S2034	60 Summer	30	+0%	30/60 Summer				20.195
S1.010	S2035	60 Summer	30	+0%	30/60 Summer				20.136
S7.000	S2036	60 Summer	30	+0%					20.531
S7.001	S2037	60 Summer	30	+0%					20.335
S8.000	S2038	60 Summer	30	+0%					20.350
S7.002	S2039	60 Summer	30	+0%					20.203
S1.011	S2040	60 Winter	30	+0%					20.090
S9.000	S2041	60 Summer	30	+0%					21.148
S9.001	S2042	60 Summer	30	+0%					20.981
S9.002	S2043	60 Summer	30	+0%					20.714
S10.000	S2044	60 Summer	30	+0%					20.802
S10.001	S2045	60 Summer	30	+0%					20.697
S11.000	S2046	60 Summer	30	+0%					22.378
S10.002	S2047	60 Winter	30	+0%					20.640
S10.003	S2048	60 Winter	30	+0%	30/60 Summer				20.574
S9.003	S2049	60 Winter	30	+0%	30/60 Winter				20.471
S9.004	S2050	60 Winter	30	+0%					20.398
S9.005	S2051	60 Summer	30	+0%					20.334
S9.006	S2052	60 Summer	30	+0%	30/60 Summer				20.239
S9.007	S2053	60 Winter	30	+0%	30/60 Summer				20.215
S9.008	S2054	60 Winter	30	+0%					20.189
S12.000	S2055	60 Summer	30	+0%					20.541
S9.009	S2056	60 Summer	30	+0%	30/60 Summer				20.133
S9.010	S2057	60 Summer	30	+0%	30/60 Summer				20.070
S9.011	S2058	60 Summer	30	+0%					20.020
S1.012	S2059-Basin B	240 Winter	30	+0%	30/60 Summer				19.831
S1.013	S2060-CON	120 Winter	30	+0%	30/60 Summer				19.827
S1.014	S2061	960 Summer	30	+0%					19.162

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.006	S2031	0.057	0.000	1.59		221.1	SURCHARGED	
S1.007	S2032	0.044	0.000	1.63		227.1	SURCHARGED	
S1.008	S2033	0.030	0.000	1.24		230.0	SURCHARGED	
S1.009	S2034	0.017	0.000	1.01		237.9	SURCHARGED	
S1.010	S2035	0.015	0.000	1.47		242.0	SURCHARGED	
S7.000	S2036	-0.032	0.000	0.98		16.8	OK	
S7.001	S2037	-0.090	0.000	0.67		24.7	OK	
S8.000	S2038	-0.120	0.000	0.45		21.9	OK	
S7.002	S2039	-0.070	0.000	0.81		48.8	OK	
S1.011	S2040	0.000	0.000	1.37		255.9	OK	
S9.000	S2041	-0.045	0.000	0.83		13.6	OK	
S9.001	S2042	-0.059	0.000	0.88		33.5	OK	
S9.002	S2043	-0.072	0.000	0.79		40.0	OK	
S10.000	S2044	-0.191	0.000	0.29		21.7	OK	
S10.001	S2045	-0.155	0.000	0.47		36.7	OK	
S11.000	S2046	-0.118	0.000	0.10		7.4	OK	
S10.002	S2047	-0.009	0.000	0.79		51.6	OK	
S10.003	S2048	0.054	0.000	0.58		58.9	SURCHARGED	
S9.003	S2049	0.009	0.000	0.78		105.7	SURCHARGED	
S9.004	S2050	0.000	0.000	0.88		118.4	OK	

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

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

PN	US/MH Name	Surcharged Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
S9.005	S2051	0.000	0.000	0.75		145.7	OK
S9.006	S2052	0.015	0.000	1.19		150.0	SURCHARGED
S9.007	S2053	0.008	0.000	1.07		130.8	SURCHARGED
S9.008	S2054	0.000	0.000	0.77		139.8	OK
S12.000	S2055	-0.054	0.000	0.73		15.6	OK
S9.009	S2056	0.003	0.000	0.94		176.5	SURCHARGED
S9.010	S2057	0.011	0.000	1.22		181.0	SURCHARGED
S9.011	S2058	0.000	0.000	1.08		176.9	OK
S1.012	S2059-Basin B	0.231	0.000	0.22		24.9	SURCHARGED
S1.013	S2060-CON	0.427	0.000	0.31		22.5	SURCHARGED
S1.014	S2061	-1.155	0.000	0.01		22.5	OK

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0% Sensitivity 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

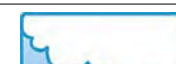
Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
Return Period (years) 100 Cv (Summer) 0.750
FEH Rainfall Version 2013 Cv (Winter) 0.840
Site Location GB 450306 114752 SU 50306 14752

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) 60, 120, 240, 360, 480, 960, 1440, 2880
Sensitivity flows(s) (%) 0, +20, +40

								Water	Surcharged	Flooded
	US/MH		Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
PN	Name	Storm	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)
S1.000	S2001	60	Summer	+0%				21.827	-0.104	0.000
S2.000	S2002	60	Summer	+0%	+20%/60	Summer		21.796	-0.084	0.000
S2.001	S2003	60	Summer	+0%	+0%/60	Summer		21.728	0.041	0.000
S2.002	S2004	60	Summer	+0%	+0%/60	Summer		21.526	0.077	0.000
S2.003	S2005	60	Summer	+0%	+0%/60	Summer		21.473	0.251	0.000
S3.000	S2006	60	Summer	+0%	+20%/60	Summer		21.662	-0.054	0.000
S3.001	S2007	60	Summer	+0%	+0%/60	Summer		21.467	0.015	0.000
S2.004	S2008	60	Summer	+0%	+0%/60	Summer		21.392	0.270	0.000
S1.001	S2009	60	Summer	+0%	+0%/60	Summer		21.202	0.238	0.000
S4.000	S2010	60	Summer	+0%	+20%/60	Summer		20.916	-0.001	0.000
S4.001	S2011	60	Summer	+0%	+0%/60	Summer		20.836	0.119	0.000
S4.002	S2012	60	Summer	+0%	+0%/60	Summer		20.777	0.145	0.000
S4.003	S2013	60	Summer	+0%	+0%/60	Summer		20.704	0.147	0.000
S4.004	S2014	60	Summer	+0%	+0%/60	Summer		20.629	0.143	0.000
S4.005	S2015	60	Summer	+0%	+0%/60	Summer		20.615	0.157	0.000
S1.002	S2016	60	Summer	+0%	+0%/60	Summer		20.599	0.172	0.000
S1.003	S2017	60	Summer	+0%	+0%/60	Summer		20.575	0.169	0.000
S1.004	S2018	60	Summer	+0%	+0%/60	Summer		20.530	0.181	0.000
S5.000	S2019	60	Summer	+0%	+0%/60	Summer		21.605	0.042	0.000
S5.001	S2020	60	Summer	+0%	+0%/60	Summer		21.492	0.130	0.000
S5.002	S2021	60	Summer	+0%	+0%/60	Summer		21.323	0.195	0.000
S5.003	S2022	60	Summer	+0%	+0%/60	Summer		21.178	0.157	0.000
S5.004	S2023	60	Summer	+0%	+0%/60	Summer		21.038	0.111	0.000
S5.005	S2024	60	Summer	+0%	+0%/60	Summer		20.973	0.067	0.000
S5.006	S2025	60	Summer	+0%	+0%/60	Summer		20.790	0.058	0.000
S6.000	S2026	60	Summer	+0%	+0%/60	Summer		21.603	0.083	0.000
S6.001	S2027	60	Summer	+0%	+40%/60	Summer		21.084	-0.136	0.000
S5.007	S2028	60	Summer	+0%	+0%/60	Summer		20.715	0.028	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

US/MH			Flow / Overflow	Pipe Flow	Level	
PN	Name	Cap.	(l/s)	(l/s)	Status	Exceeded
S1.000	S2001	0.20		9.2	OK	
S2.000	S2002	0.41		7.5	OK	
S2.001	S2003	1.06		18.0	SURCHARGED	
S2.002	S2004	0.52		25.2	SURCHARGED	
S2.003	S2005	0.77		27.3	SURCHARGED	
S3.000	S2006	0.73		13.3	OK	
S3.001	S2007	0.56		16.5	SURCHARGED	
S2.004	S2008	1.10		44.6	SURCHARGED	
S1.001	S2009	1.07		61.3	SURCHARGED	
S4.000	S2010	0.66		10.9	OK	
S4.001	S2011	0.56		19.6	SURCHARGED	
S4.002	S2012	0.71		24.3	SURCHARGED	
S4.003	S2013	0.78		26.8	SURCHARGED	
S4.004	S2014	0.57		47.0	SURCHARGED	
S4.005	S2015	0.57		48.3	SURCHARGED	
S1.002	S2016	1.19		109.4	SURCHARGED	
S1.003	S2017	0.90		118.2	SURCHARGED	
S1.004	S2018	1.01		132.7	SURCHARGED	
S5.000	S2019	0.81		13.4	SURCHARGED	
S5.001	S2020	0.87		33.1	SURCHARGED	
S5.002	S2021	1.16		41.6	SURCHARGED	
S5.003	S2022	1.22		44.5	SURCHARGED	
S5.004	S2023	1.06		50.6	SURCHARGED	
S5.005	S2024	1.02		67.5	SURCHARGED	
S5.006	S2025	1.25		70.7	SURCHARGED	
S6.000	S2026	1.13		26.7	SURCHARGED	
S6.001	S2027	0.32		33.4	OK	
S5.007	S2028	1.48		107.2	SURCHARGED	

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+0% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

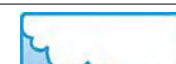
PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S5.008	S2029	60 Summer	+0%	+20%/60 Summer				20.634	-0.031
S1.005	S2030	60 Summer	+0%	+0%/60 Summer				20.478	0.185
S1.006	S2031	60 Summer	+0%	+0%/60 Summer				20.406	0.173
S1.007	S2032	60 Summer	+0%	+0%/60 Summer				20.361	0.151
S1.008	S2033	60 Summer	+0%	+0%/60 Summer				20.318	0.127
S1.009	S2034	60 Summer	+0%	+0%/60 Summer				20.279	0.101
S1.010	S2035	60 Summer	+0%	+0%/60 Summer				20.189	0.068
S7.000	S2036	60 Summer	+0%	+0%/60 Summer				20.630	0.068
S7.001	S2037	60 Summer	+0%	+20%/60 Summer				20.379	-0.045
S8.000	S2038	60 Summer	+0%	+20%/60 Summer				20.367	-0.103
S7.002	S2039	60 Summer	+0%	+0%/60 Summer				20.278	0.005
S1.011	S2040	60 Summer	+0%	+0%/60 Summer				20.125	0.035
S9.000	S2041	60 Summer	+0%	+0%/60 Summer				21.240	0.047
S9.001	S2042	60 Summer	+0%	+0%/60 Summer				21.080	0.040
S9.002	S2043	60 Summer	+0%	+0%/60 Summer				20.838	0.052
S10.000	S2044	60 Summer	+0%	+20%/60 Summer				20.962	-0.031
S10.001	S2045	60 Summer	+0%	+0%/60 Summer				20.914	0.062
S11.000	S2046	60 Summer	+0%					22.382	-0.114
S10.002	S2047	60 Summer	+0%	+0%/60 Summer				20.813	0.164
S10.003	S2048	60 Summer	+0%	+0%/60 Summer				20.688	0.168
S9.003	S2049	60 Summer	+0%	+0%/60 Summer				20.602	0.140
S9.004	S2050	60 Summer	+0%	+0%/60 Summer				20.538	0.140
S9.005	S2051	60 Summer	+0%	+0%/60 Summer				20.451	0.117
S9.006	S2052	60 Summer	+0%	+0%/60 Summer				20.357	0.133
S9.007	S2053	60 Summer	+0%	+0%/60 Summer				20.326	0.119
S9.008	S2054	60 Summer	+0%	+0%/60 Summer				20.292	0.103
S12.000	S2055	60 Summer	+0%	+20%/60 Summer				20.559	-0.036
S9.009	S2056	60 Summer	+0%	+0%/60 Summer				20.215	0.085
S9.010	S2057	60 Summer	+0%	+0%/60 Summer				20.110	0.051
S9.011	S2058	60 Summer	+0%	+0%/60 Summer				20.032	0.012
S1.012	S2059-Basin B	240 Winter	+0%	+0%/60 Summer				19.953	0.353
S1.013	S2060-CON	240 Winter	+0%	+0%/60 Summer				19.952	0.552
S1.014	S2061	960 Winter	+0%					19.162	-1.155

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S5.008	S2029	0.000	0.67		128.2	OK	
S1.005	S2030	0.000	1.11		264.9	SURCHARGED	
S1.006	S2031	0.000	1.95		271.6	SURCHARGED	
S1.007	S2032	0.000	2.01		278.8	SURCHARGED	
S1.008	S2033	0.000	1.52		282.3	SURCHARGED	
S1.009	S2034	0.000	1.25		293.5	SURCHARGED	
S1.010	S2035	0.000	1.82		299.8	SURCHARGED	
S7.000	S2036	0.000	1.23		21.2	SURCHARGED	
S7.001	S2037	0.000	0.82		30.3	OK	
S8.000	S2038	0.000	0.57		27.8	OK	
S7.002	S2039	0.000	0.99		59.5	SURCHARGED	
S1.011	S2040	0.000	1.85		347.1	SURCHARGED	
S9.000	S2041	0.000	1.02		16.7	SURCHARGED	
S9.001	S2042	0.000	1.06		40.4	SURCHARGED	
S9.002	S2043	0.000	0.89		45.4	SURCHARGED	
S10.000	S2044	0.000	0.35		26.9	OK	
S10.001	S2045	0.000	0.53		41.7	SURCHARGED	

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
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Causeway	Network 2017.1.2	

+0%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S11.000	S2046	0.000	0.13		9.4	OK	
S10.002	S2047	0.000	1.04		67.4	SURCHARGED	
S10.003	S2048	0.000	0.77		78.7	SURCHARGED	
S9.003	S2049	0.000	1.05		141.8	SURCHARGED	
S9.004	S2050	0.000	1.21		161.7	SURCHARGED	
S9.005	S2051	0.000	0.94		183.9	SURCHARGED	
S9.006	S2052	0.000	1.50		188.8	SURCHARGED	
S9.007	S2053	0.000	1.59		194.2	SURCHARGED	
S9.008	S2054	0.000	1.15		208.4	SURCHARGED	
S12.000	S2055	0.000	0.93		19.7	OK	
S9.009	S2056	0.000	1.21		226.5	SURCHARGED	
S9.010	S2057	0.000	1.59		236.1	SURCHARGED	
S9.011	S2058	0.000	1.43		235.0	SURCHARGED	
S1.012	S2059-Basin B	0.000	0.22		25.0	SURCHARGED	
S1.013	S2060-CON	0.000	0.31		22.5	SURCHARGED	
S1.014	S2061	0.000	0.01		22.5	OK	

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
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Causeway	Network 2017.1.2	

+20% Sensitivity 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
Return Period (years) 100 Cv (Summer) 0.750
FEH Rainfall Version 2013 Cv (Winter) 0.840
Site Location GB 450306 114752 SU 50306 14752

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) 60, 120, 240, 360, 480, 960, 1440, 2880
Sensitivity flows(s) (%) 0, +20, +40

								Water	Surcharged	Flooded
	US/MH		Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
PN	Name	Storm	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)
S1.000	S2001	60	Summer	+20%				21.831	-0.100	0.000
S2.000	S2002	60	Summer	+20%	+20%/60	Summer		22.087	0.207	0.000
S2.001	S2003	60	Summer	+20%	+0%/60	Summer		22.059	0.373	0.000
S2.002	S2004	60	Summer	+20%	+0%/60	Summer		21.850	0.401	0.000
S2.003	S2005	60	Summer	+20%	+0%/60	Summer		21.792	0.571	0.000
S3.000	S2006	60	Summer	+20%	+20%/60	Summer		21.915	0.199	0.000
S3.001	S2007	60	Summer	+20%	+0%/60	Summer		21.793	0.341	0.000
S2.004	S2008	60	Summer	+20%	+0%/60	Summer		21.710	0.587	0.000
S1.001	S2009	60	Summer	+20%	+0%/60	Summer		21.501	0.537	0.000
S4.000	S2010	60	Summer	+20%	+20%/60	Summer		21.127	0.210	0.000
S4.001	S2011	60	Summer	+20%	+0%/60	Summer		21.042	0.325	0.000
S4.002	S2012	60	Summer	+20%	+0%/60	Summer		20.985	0.353	0.000
S4.003	S2013	60	Summer	+20%	+0%/60	Summer		20.913	0.356	0.000
S4.004	S2014	60	Summer	+20%	+0%/60	Summer		20.833	0.347	0.000
S4.005	S2015	60	Summer	+20%	+0%/60	Summer		20.818	0.360	0.000
S1.002	S2016	60	Summer	+20%	+0%/60	Summer		20.800	0.373	0.000
S1.003	S2017	60	Summer	+20%	+0%/60	Summer		20.774	0.368	0.000
S1.004	S2018	60	Summer	+20%	+0%/60	Summer		20.721	0.372	0.000
S5.000	S2019	60	Summer	+20%	+0%/60	Summer		21.999	0.435	0.000
S5.001	S2020	60	Summer	+20%	+0%/60	Summer		21.864	0.502	0.000
S5.002	S2021	60	Summer	+20%	+0%/60	Summer		21.666	0.537	0.000
S5.003	S2022	60	Summer	+20%	+0%/60	Summer		21.496	0.475	0.000
S5.004	S2023	60	Summer	+20%	+0%/60	Summer		21.331	0.404	0.000
S5.005	S2024	60	Summer	+20%	+0%/60	Summer		21.268	0.362	0.000
S5.006	S2025	60	Summer	+20%	+0%/60	Summer		21.051	0.319	0.000
S6.000	S2026	60	Summer	+20%	+0%/60	Summer		21.764	0.244	0.000
S6.001	S2027	60	Summer	+20%	+40%/60	Summer		21.093	-0.127	0.000
S5.007	S2028	60	Summer	+20%	+0%/60	Summer		20.958	0.271	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

				Pipe		
	US/MH	Flow /	Overflow	Flow		Level
PN	Name	Cap.	(l/s)	(l/s)	Status	Exceeded
S1.000	S2001	0.24		11.0	OK	
S2.000	S2002	0.45		8.3	SURCHARGED	
S2.001	S2003	1.11		18.9	SURCHARGED	
S2.002	S2004	0.52		25.0	SURCHARGED	
S2.003	S2005	0.84		29.9	SURCHARGED	
S3.000	S2006	0.85		15.4	SURCHARGED	
S3.001	S2007	0.60		17.6	SURCHARGED	
S2.004	S2008	1.20		48.4	SURCHARGED	
S1.001	S2009	1.14		65.4	SURCHARGED	
S4.000	S2010	0.72		11.9	SURCHARGED	
S4.001	S2011	0.64		22.4	SURCHARGED	
S4.002	S2012	0.80		27.4	SURCHARGED	
S4.003	S2013	0.86		29.5	SURCHARGED	
S4.004	S2014	0.66		54.6	SURCHARGED	
S4.005	S2015	0.66		55.8	SURCHARGED	
S1.002	S2016	1.28		117.4	SURCHARGED	
S1.003	S2017	0.97		127.7	SURCHARGED	
S1.004	S2018	1.11		146.1	SURCHARGED	
S5.000	S2019	0.83		13.8	SURCHARGED	
S5.001	S2020	0.94		35.5	SURCHARGED	
S5.002	S2021	1.27		45.6	SURCHARGED	
S5.003	S2022	1.33		48.5	SURCHARGED	
S5.004	S2023	1.17		55.5	SURCHARGED	
S5.005	S2024	1.11		73.9	SURCHARGED	
S5.006	S2025	1.36		76.6	SURCHARGED	
S6.000	S2026	1.35		31.8	SURCHARGED	
S6.001	S2027	0.39		39.7	OK	
S5.007	S2028	1.68		121.4	SURCHARGED	

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
								Level (m)	Depth (m)
S5.008	S2029	60 Summer	+20%	+20%/60 Summer				20.864	0.199
S1.005	S2030	60 Summer	+20%	+0%/60 Summer				20.652	0.359
S1.006	S2031	60 Summer	+20%	+0%/60 Summer				20.557	0.324
S1.007	S2032	60 Summer	+20%	+0%/60 Summer				20.498	0.288
S1.008	S2033	60 Summer	+20%	+0%/60 Summer				20.440	0.249
S1.009	S2034	60 Summer	+20%	+0%/60 Summer				20.391	0.213
S1.010	S2035	60 Summer	+20%	+0%/60 Summer				20.273	0.152
S7.000	S2036	60 Summer	+20%	+0%/60 Summer				20.777	0.215
S7.001	S2037	60 Summer	+20%	+20%/60 Summer				20.516	0.091
S8.000	S2038	60 Summer	+20%	+20%/60 Summer				20.493	0.023
S7.002	S2039	60 Summer	+20%	+0%/60 Summer				20.392	0.119
S1.011	S2040	60 Summer	+20%	+0%/60 Summer				20.188	0.098
S9.000	S2041	60 Summer	+20%	+0%/60 Summer				21.613	0.420
S9.001	S2042	60 Summer	+20%	+0%/60 Summer				21.452	0.412
S9.002	S2043	60 Summer	+20%	+0%/60 Summer				21.182	0.396
S10.000	S2044	60 Summer	+20%	+20%/60 Summer				21.360	0.367
S10.001	S2045	60 Summer	+20%	+0%/60 Summer				21.268	0.416
S11.000	S2046	60 Summer	+20%					22.386	-0.111
S10.002	S2047	60 Summer	+20%	+0%/60 Summer				21.165	0.516
S10.003	S2048	60 Summer	+20%	+0%/60 Summer				20.986	0.466
S9.003	S2049	60 Summer	+20%	+0%/60 Summer				20.898	0.436
S9.004	S2050	60 Summer	+20%	+0%/60 Summer				20.808	0.410
S9.005	S2051	60 Summer	+20%	+0%/60 Summer				20.688	0.354
S9.006	S2052	60 Summer	+20%	+0%/60 Summer				20.556	0.332
S9.007	S2053	60 Summer	+20%	+0%/60 Summer				20.513	0.306
S9.008	S2054	60 Summer	+20%	+0%/60 Summer				20.467	0.278
S12.000	S2055	60 Summer	+20%	+20%/60 Summer				20.754	0.159
S9.009	S2056	60 Summer	+20%	+0%/60 Summer				20.361	0.231
S9.010	S2057	60 Summer	+20%	+0%/60 Summer				20.215	0.156
S9.011	S2058	60 Summer	+20%	+0%/60 Summer				20.081	0.061
S1.012	S2059-Basin B	240 Winter	+20%	+0%/60 Summer				20.076	0.476
S1.013	S2060-CON	240 Winter	+20%	+0%/60 Summer				20.067	0.667
S1.014	S2061	1440 Winter	+20%					19.162	-1.155

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
S5.008	S2029	0.000	0.76		145.8	SURCHARGED	
S1.005	S2030	0.000	1.25		299.9	SURCHARGED	
S1.006	S2031	0.000	2.22		308.7	SURCHARGED	
S1.007	S2032	0.000	2.29		318.1	SURCHARGED	
S1.008	S2033	0.000	1.74		322.9	SURCHARGED	
S1.009	S2034	0.000	1.43		336.8	SURCHARGED	
S1.010	S2035	0.000	2.09		343.7	SURCHARGED	
S7.000	S2036	0.000	1.40		24.1	SURCHARGED	
S7.001	S2037	0.000	0.93		34.4	SURCHARGED	
S8.000	S2038	0.000	0.65		32.0	SURCHARGED	
S7.002	S2039	0.000	1.10		66.0	SURCHARGED	
S1.011	S2040	0.000	2.16		404.8	SURCHARGED	
S9.000	S2041	0.000	1.06		17.3	SURCHARGED	
S9.001	S2042	0.000	1.15		44.0	SURCHARGED	
S9.002	S2043	0.000	0.95		48.0	SURCHARGED	
S10.000	S2044	0.000	0.38		29.2	SURCHARGED	
S10.001	S2045	0.000	0.56		44.4	SURCHARGED	

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+20%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S11.000	S2046	0.000	0.16		11.3	OK	
S10.002	S2047	0.000	1.22		79.3	SURCHARGED	
S10.003	S2048	0.000	0.90		92.0	SURCHARGED	
S9.003	S2049	0.000	1.20		161.8	SURCHARGED	
S9.004	S2050	0.000	1.37		184.0	SURCHARGED	
S9.005	S2051	0.000	1.09		212.4	SURCHARGED	
S9.006	S2052	0.000	1.74		219.4	SURCHARGED	
S9.007	S2053	0.000	1.85		225.7	SURCHARGED	
S9.008	S2054	0.000	1.34		242.8	SURCHARGED	
S12.000	S2055	0.000	1.01		21.6	SURCHARGED	
S9.009	S2056	0.000	1.43		266.8	SURCHARGED	
S9.010	S2057	0.000	1.88		279.1	SURCHARGED	
S9.011	S2058	0.000	1.69		278.0	SURCHARGED	
S1.012	S2059-Basin B	0.000	0.22		25.1	SURCHARGED	
S1.013	S2060-CON	0.000	0.31		22.5	SURCHARGED	
S1.014	S2061	0.000	0.01		22.5	OK	

PFA Consulting		Page 1
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
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+40% Sensitivity 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 Return Period (years) 100 Cv (Summer) 0.750
 FEH Rainfall Version 2013 Cv (Winter) 0.840
 Site Location GB 450306 114752 SU 50306 14752

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) 60, 120, 240, 360, 480, 960, 1440, 2880
 Sensitivity flows(s) (%) 0, +20, +40

							Water Surcharged Flooded			
PN	US/MH Name	Storm	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m ³)
S1.000	S2001	60 Summer	+40%					21.902	-0.029	0.000
S2.000	S2002	60 Summer	+40%	+20%/60 Summer				22.517	0.638	0.000
S2.001	S2003	60 Summer	+40%	+0%/60 Summer				22.488	0.801	0.000
S2.002	S2004	60 Summer	+40%	+0%/60 Summer				22.254	0.806	0.000
S2.003	S2005	60 Summer	+40%	+0%/60 Summer				22.189	0.968	0.000
S3.000	S2006	60 Summer	+40%	+20%/60 Summer				22.343	0.626	0.000
S3.001	S2007	60 Summer	+40%	+0%/60 Summer				22.204	0.752	0.000
S2.004	S2008	60 Summer	+40%	+0%/60 Summer				22.104	0.981	0.000
S1.001	S2009	60 Summer	+40%	+0%/60 Summer				21.861	0.897	0.000
S4.000	S2010	60 Summer	+40%	+20%/60 Summer				21.441	0.524	0.000
S4.001	S2011	60 Summer	+40%	+0%/60 Summer				21.346	0.629	0.000
S4.002	S2012	60 Summer	+40%	+0%/60 Summer				21.280	0.648	0.000
S4.003	S2013	60 Summer	+40%	+0%/60 Summer				21.200	0.643	0.000
S4.004	S2014	60 Summer	+40%	+0%/60 Summer				21.120	0.634	0.000
S4.005	S2015	60 Summer	+40%	+0%/60 Summer				21.103	0.645	0.000
S1.002	S2016	60 Summer	+40%	+0%/60 Summer				21.084	0.657	0.000
S1.003	S2017	60 Summer	+40%	+0%/60 Summer				21.055	0.649	0.000
S1.004	S2018	60 Summer	+40%	+0%/60 Summer				20.995	0.646	0.000
S5.000	S2019	60 Summer	+40%	+0%/60 Summer				22.485	0.922	0.000
S5.001	S2020	60 Summer	+40%	+0%/60 Summer				22.329	0.967	0.000
S5.002	S2021	60 Summer	+40%	+0%/60 Summer				22.093	0.965	0.000
S5.003	S2022	60 Summer	+40%	+0%/60 Summer				21.893	0.872	0.000
S5.004	S2023	60 Summer	+40%	+0%/60 Summer				21.703	0.776	0.000
S5.005	S2024	60 Summer	+40%	+0%/60 Summer				21.640	0.734	0.000
S5.006	S2025	60 Summer	+40%	+0%/60 Summer				21.385	0.653	0.000
S6.000	S2026	60 Summer	+40%	+0%/60 Summer				21.960	0.440	0.000
S6.001	S2027	60 Summer	+40%	+40%/60 Summer				21.360	0.140	0.000
S5.007	S2028	60 Summer	+40%	+0%/60 Summer				21.277	0.590	0.000

PFA Consulting		Page 2
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
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+40%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
				Flow (l/s)		Exceeded
S1.000	S2001	0.29		12.8	OK	
S2.000	S2002	0.46		8.6	SURCHARGED	
S2.001	S2003	1.12		19.0	SURCHARGED	
S2.002	S2004	0.52		25.1	SURCHARGED	
S2.003	S2005	0.86		30.7	FLOOD RISK	
S3.000	S2006	0.87		15.9	SURCHARGED	
S3.001	S2007	0.60		17.7	SURCHARGED	
S2.004	S2008	1.31		53.0	SURCHARGED	
S1.001	S2009	1.23		70.4	SURCHARGED	
S4.000	S2010	0.77		12.8	SURCHARGED	
S4.001	S2011	0.70		24.8	SURCHARGED	
S4.002	S2012	0.87		29.9	SURCHARGED	
S4.003	S2013	0.93		31.6	SURCHARGED	
S4.004	S2014	0.72		59.7	SURCHARGED	
S4.005	S2015	0.71		60.0	SURCHARGED	
S1.002	S2016	1.37		125.8	SURCHARGED	
S1.003	S2017	1.04		137.3	SURCHARGED	
S1.004	S2018	1.21		158.7	SURCHARGED	
S5.000	S2019	0.91		15.1	FLOOD RISK	
S5.001	S2020	1.00		38.1	SURCHARGED	
S5.002	S2021	1.37		49.1	SURCHARGED	
S5.003	S2022	1.45		52.9	SURCHARGED	
S5.004	S2023	1.28		60.7	SURCHARGED	
S5.005	S2024	1.21		80.0	SURCHARGED	
S5.006	S2025	1.48		83.6	SURCHARGED	
S6.000	S2026	1.53		36.1	SURCHARGED	
S6.001	S2027	0.42		43.5	SURCHARGED	
S5.007	S2028	1.81		131.1	SURCHARGED	

PFA Consulting		Page 3
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
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+40% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

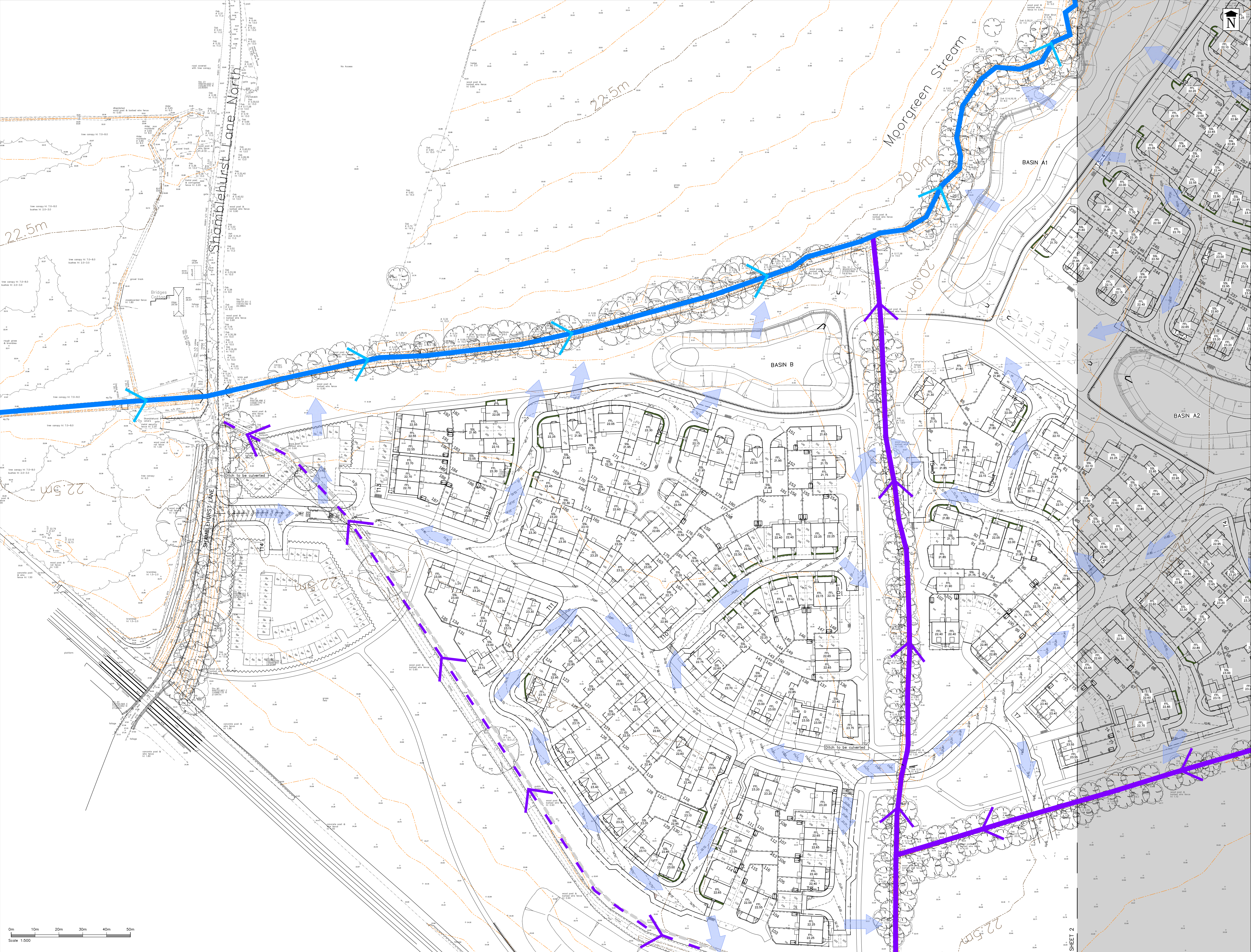
PN	US/MH Name	Storm	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S5.008	S2029	60 Summer	+40%	+20%/60 Summer				21.167	0.502
S1.005	S2030	60 Summer	+40%	+0%/60 Summer				20.916	0.623
S1.006	S2031	60 Summer	+40%	+0%/60 Summer				20.806	0.573
S1.007	S2032	60 Summer	+40%	+0%/60 Summer				20.737	0.527
S1.008	S2033	60 Summer	+40%	+0%/60 Summer				20.640	0.449
S1.009	S2034	60 Summer	+40%	+0%/60 Summer				20.516	0.338
S1.010	S2035	60 Summer	+40%	+0%/60 Summer				20.372	0.251
S7.000	S2036	60 Summer	+40%	+0%/60 Summer				21.038	0.476
S7.001	S2037	60 Summer	+40%	+20%/60 Summer				20.695	0.270
S8.000	S2038	60 Summer	+40%	+20%/60 Summer				20.641	0.171
S7.002	S2039	60 Summer	+40%	+0%/60 Summer				20.527	0.254
S1.011	S2040	60 Summer	+40%	+0%/60 Summer				20.228	0.138
S9.000	S2041	60 Summer	+40%	+0%/60 Summer				22.135	0.942
S9.001	S2042	60 Summer	+40%	+0%/60 Summer				21.943	0.904
S9.002	S2043	60 Summer	+40%	+0%/60 Summer				21.616	0.830
S10.000	S2044	60 Summer	+40%	+20%/60 Summer				21.790	0.797
S10.001	S2045	60 Summer	+40%	+0%/60 Summer				21.699	0.847
S11.000	S2046	60 Summer	+40%					22.389	-0.107
S10.002	S2047	60 Summer	+40%	+0%/60 Summer				21.597	0.948
S10.003	S2048	60 Summer	+40%	+0%/60 Summer				21.366	0.846
S9.003	S2049	60 Summer	+40%	+0%/60 Summer				21.281	0.819
S9.004	S2050	60 Summer	+40%	+0%/60 Summer				21.167	0.769
S9.005	S2051	60 Summer	+40%	+0%/60 Summer				21.015	0.681
S9.006	S2052	60 Summer	+40%	+0%/60 Summer				20.843	0.619
S9.007	S2053	60 Summer	+40%	+0%/60 Summer				20.739	0.532
S9.008	S2054	60 Summer	+40%	+0%/60 Summer				20.628	0.439
S12.000	S2055	60 Summer	+40%	+20%/60 Summer				21.032	0.437
S9.009	S2056	60 Summer	+40%	+0%/60 Summer				20.490	0.360
S9.010	S2057	60 Summer	+40%	+0%/60 Summer				20.299	0.240
S9.011	S2058	360 Winter	+40%	+0%/60 Summer				20.211	0.191
S1.012	S2059-Basin B	360 Winter	+40%	+0%/60 Summer				20.209	0.609
S1.013	S2060-CON	360 Winter	+40%	+0%/60 Summer				20.203	0.803
S1.014	S2061	1440 Winter	+40%					19.162	-1.155

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S5.008	S2029	0.000	0.83		158.9	SURCHARGED	
S1.005	S2030	0.000	1.36		326.4	SURCHARGED	
S1.006	S2031	0.000	2.41		335.5	SURCHARGED	
S1.007	S2032	0.000	2.50		347.0	SURCHARGED	
S1.008	S2033	0.000	1.90		352.5	SURCHARGED	
S1.009	S2034	0.000	1.58		370.4	SURCHARGED	
S1.010	S2035	0.000	2.30		378.7	SURCHARGED	
S7.000	S2036	0.000	1.57		27.0	SURCHARGED	
S7.001	S2037	0.000	1.05		38.7	SURCHARGED	
S8.000	S2038	0.000	0.73		35.9	SURCHARGED	
S7.002	S2039	0.000	1.29		77.5	SURCHARGED	
S1.011	S2040	0.000	2.41		451.4	SURCHARGED	
S9.000	S2041	0.000	1.15		18.8	FLOOD RISK	
S9.001	S2042	0.000	1.19		45.4	SURCHARGED	
S9.002	S2043	0.000	1.03		52.4	SURCHARGED	
S10.000	S2044	0.000	0.40		30.4	SURCHARGED	
S10.001	S2045	0.000	0.64		50.4	SURCHARGED	

PFA Consulting		Page 4
Stratton Park House Wanborough Road Swindon SN3 4HG	M380: Land at north west of Boorley Green Catchment B - RM Submission	
Date 01/09/2017	Designed by BF	
File M380 -CATCH B V2.1 (RM	Checked by DB/MS	
Causeway	Network 2017.1.2	

+40%% Sensitivity 100 year Return Period
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S11.000	S2046	0.000	0.18		13.2	OK	
S10.002	S2047	0.000	1.40		91.2	SURCHARGED	
S10.003	S2048	0.000	1.03		105.2	SURCHARGED	
S9.003	S2049	0.000	1.36		182.8	SURCHARGED	
S9.004	S2050	0.000	1.56		208.6	SURCHARGED	
S9.005	S2051	0.000	1.24		241.3	SURCHARGED	
S9.006	S2052	0.000	1.98		249.5	SURCHARGED	
S9.007	S2053	0.000	2.10		256.8	SURCHARGED	
S9.008	S2054	0.000	1.53		276.9	SURCHARGED	
S12.000	S2055	0.000	1.10		23.4	SURCHARGED	
S9.009	S2056	0.000	1.63		305.4	SURCHARGED	
S9.010	S2057	0.000	2.15		319.9	SURCHARGED	
S9.011	S2058	0.000	0.49		80.5	SURCHARGED	
S1.012	S2059-Basin B	0.000	0.22		25.0	SURCHARGED	
S1.013	S2060-CON	0.000	0.31		22.5	SURCHARGED	
S1.014	S2061	0.000	0.01		22.5	OK	



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.

- NOTES**
1. Drawing based on Topographical Survey by Anthony Brooks Surveys Ltd, drawing number A258/7834/1 dated June 2014.
 2. On-site road layout based on AAP Architecture's Drawing Numbers P1388.01 & P1388.04 Revision V issued 19 September 2017.
 3. Subject to detailed design.

- KEY**
- BA Existing Major Contours
 - BA Existing Minor Contours
 - BA Proposed Major Contours
 - BA Proposed Minor Contours
 - BA Indicative Exceedance Flow Route
 - Watercourse/Ditch
 - Main River

Rev	Date	Description	Drawn	Check
#	22/09/17	First Issue	BF	C

Status

FOR PLANNING

Client

millerhomes
gleeson

Project

Boorley Gardens
Winchester Road
Hedge End
Phase 1

Drawing Title

Phase 1
Exceedance Flow Routes
Sheet 1 of 2

Drawing No. **M380/14**

Date: September 2017 Scale: 1:500 @ A0
E-Mail: bfox@pfapl.com



Stratton Park House, Wanborough Road
Swindon, SN3 4HG
Telephone
01793 828000
Website
www.plapl.com

For Planning
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NOTES

1. Drawing based on Topographical Survey by Anthony Brooks Surveys Ltd, drawing number A256/7834/1 dated June 2014.
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3. Subject to detailed design.

KEY

- Existing Major Contours
- - - Existing Minor Contours
- Proposed Major Contours
- - - Proposed Minor Contours
- Indicative Exceedance Flow Route
- Watercourse/Ditch
- Main River

Rev	Date	Description	Drawn	Check
#	22/09/17	First Issue	BF	DMB

Status **FOR PLANNING**

Client

millerhomes
gleson

Project

Boorley Gardens
Winchester Road
Hedge End
Phase 1

Drawing Title

Phase 1
Exceedance Flow Routes
Sheet 2 of 2

Drawing No.

M380/15

Date: September 2017 Scale: 1:500 @ A0
E-Mail: bfox@plapl.com

LAND AT BOORLEY GARDENS, HEDGE END

Pollution Hazard Assessment

A Pollution Hazard Assessment has been undertaken for each catchment following the guidance set out in the SuDS Manual, CIRIA C753, London 2015, Section 26.7 'Method of Managing Pollution Risk'. With reference to that document, the appropriate approach is the "simple index approach" for surface water and groundwater. Extracts from Tables 26.2 and 26.3 are set out below.

Table 26.2 (Part): Pollution Hazard Indices for Different Land Use Classification

Land Use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie <300 traffic movements/day	Low	0.5	0.4	0.4
Total		0.7	0.6	0.45

Table 26.3 (Part): Indicative SuDS Mitigation Indices for Discharge to Surface Waters

Type of SuDS component	TSS	Metals	Hydrocarbons
Swale	0.5	0.6	0.6
Pond	0.7	0.7	0.5
Basin	0.5	0.5	0.6

The guidelines recommend that the total SuDS mitigation index must be greater than or equal to the pollution hazard index. Applying the criteria set out in Table 26.2 and 26.3 to each catchment is considered below.

Catchments A1, A2 and B – Residential land use discharging to an attenuation pond with sediment forebay adjacent to the inlet with controlled discharge.

	TSS	Metals	Hydrocarbons
Hazard Indices (as per Table 26.2)	0.7	0.6	0.45
Mitigation Indices (as per Table 26.3) Pond	0.5 (0.5 x 0.5) = 0.75	0.5 (0.6 x 0.5) = 0.8	0.6 (0.6 x 0.5) = 0.8

The mitigation indices are greater than or equal to the hazard indices therefore adequate treatment prevails.

Hampshire County Council's Flood and Water Management Team have created this template to assist developers when seeking planning permission for new sites.
In order for the team to be able to act as a statutory consultee for surface water drainage for major planning applications ALL of the following information is required.
This check list is designed to help developers provide the correct information and reduce time spent by HCC searching for details we require.

FOR ALL APPLICATIONS WE ARE ASKED TO COMMENT ON WE WILL NEED THE FOLLOWING INFORMATION - PLEASE FILL IN THIS FORM AND SUBMIT WITH ANY SURFACE WATER CONSULTATIONS

	Information required:	Included	Document chapter/page number where information can be viewed
1	Background information on the proposed design. Including proposal; site; plans of surface water drainage and any SuDS featured in the scheme	Y	Outline planning consent (application reference: O/15/75953) was granted consent (appeal reference: APP/W1715/W/15/3130073). Details of the Phase 1 surface water drainage strategy are contained in section 3 of the report entitled Flood Risk Assessment and Surface and Foul Water Drainage Strategy update (reference: M380-DOC02-Issue 1). The planning layout is contained in Appendix 1 of report reference M380-DOC02. Plans of surface water drainage - M380/02 contained in Appendix 2 of report reference M380-DOC02. Plans of SuDS - M380/12 contained in Appendix 3 of report reference M380-DOC02.
2	Evidence that the applicant understands the sensitivity of discharge points relating to the receiving water body. Where this is main river or discharging through contaminated land the LPA may have to consult the Environment Agency (EA)	Y	The Moorgreen Stream runs along the north of the site in an easterly direction. The phase 1 surface water drainage system drains into the Moorgreen Stream which is a Main River. Surface water quality is discussed and assessed in paragraphs 3.9 - 3.11 of report M380-DOC02 and Appendix 6 of the report.
3	Evidence of and information on the existing surface water flow paths of undeveloped (greenfield) sites	Y	Phase 1 of the development site falls wholly within the catchment of the Moorgreen Stream. All existing surface water flow paths in an undeveloped situation would flow towards the Moorgreen Stream. Contours and topographical information are shown on Drawing Number M380/02 contained in Appendix 2 of report M380-DOC02.
4	Evidence of and information on the existing drainage network for previously developed (brownfield) sites	N	See point 3 above.
5	Identification of and information on areas that may have been affected by failures in the existing drainage regime	N	Site is greenfield and drained by network of ditches. No evidence of drainage system failure identified.

6	Evidence that the proposed drainage will follow the same pattern as the existing . This avoids directing flow to other locations.	Y	Phase 1 of the proposed development encompasses Catchments A1, A2 and B as shown on Drawing Number M380/02 contained in Appendix 2 of report M380-D0C02. These catchments drain via basins A1, A2 and B into the Moorgreen Stream in line with the existing situation.
7	Information evidencing that the correct level of water treatment exists in the system in accordance with the Ciria SuDS Manual C753	Y	Surface water quality is discussed and assessed in paragraphs 3.9 - 3.11 of report M380-D0C02 and Appendix 6 of the report. The calculations contained in Appendix 6 and the incorporation of two stages of treatment in the SuDS management train demonstrate the correct level of water treatment exists.
8	Where infiltration is used for drainage , evidence that a suitable number of infiltration tests have been completed. These need to be across the whole site; within different geologies and to a similar depth to the proposed infiltration devices. Tests must be completed according to the BRE 365 method or another recognised method including British Standard BS 5930: 2015	N	N/A - The original outline planning application (application reference: O/15/75953) contained a Flood Risk Assessment and Surface Water Drainage Strategy (document reference: FMW1467F) which established principles of attenuation based drainage system.
9	If not using infiltration for drainage - Existing and proposed run-off rate calculations completed according to a suitable method such as IH124 or FEH. Information is available from UK Sustainable Drainage: Guidance and Tools. Calculations must show that the proposed run off rates do not exceed the existing run-off rates. This must be shown for a one in one year event plus climate change and a one in one hundred year event plus climate change.	Y	Inaccordance with document reference FMW1467F consented under application reference: O/15/75953 attenuation has been designed so that all ponds or detention areas have the capacity to store runoff generated by a 1% plus climate change rainfall event, with a discharge rate of 5 l/s/ha. Table A in report M380-D0C02 demonstrate that these rates are not exceeded.
10	If not using infiltration for drainage - Existing and proposed run-off volume calculations completed according to a suitable method such as IH124 or FEH. Calculations must show that, where reasonably practical, runoff volume should not exceed the greenfield runoff volume for the same event. This must be shown for a 1 in 100 year, 6 hour rainfall event	N	As a result of the proposed development the amount of impermeable area on the development site increases. In the absence of infiltration drainage it is not reasonably practical to constrain the runoff volume to predevelopment greenfield volumes. To address this issue and inaccordance with document reference FMW1467F consented under application reference: O/15/75953 attenuation has been designed so that all ponds or detention areas have the capacity to store runoff generated by a 1% plus climate change rainfall event, with a discharge rate of 5 l/s/ha to the Moorgreen Stream. The runoff volume is discharged at a rate previously agreed with Eastleigh Borough Council which does not adversely affect flood risk.
11	Evidence that enough storage/attenuation has been provided without increasing the runoff rate or volume. This must be shown for a 1 in 100 year plus climate change event	Y	Table A and the calculations contained in Appendix 3 in report reference M380-D0C02 demonstrate the basins shown in Appendix 2 of report reference M380-D0C02 have sufficient capacity to attenuate rainfall during the 1:100+40% rainfall event with discharge at 5 l/s/ha into the Moorgreen Stream.

12	Evidence that runoff exceeding design criteria has been considered . Calculations and exceedance flow diagram/plans must show where above ground flooding might occur and where this would pool and flow.	Y	See paragraph 3.8 of report reference M380-DOC02. Exceedance flow routes have been assessed on Drawing Numbers M380/14 and M380/15 contained in Appendix 5 of report reference M380-DOC02.
13	Maintenance regimes of entire surface water drainage system including individual SuDS features, including a plan illustrating the organisation responsible for each element. Evidence that those responsible/adopting bodies are in discussion with the developer. For larger/phased sites, we need to see evidence of measures taken to protect and ensure continued operation of drainage features during construction.	Y	Paragraphs 3.12 - 3.17 in report reference M380-DOC02 cover the operation and maintenance of the drainage system.
14	Evidence that Urban Creep has been considered in the applicationm and that a 10% increase in impermeable area has been used in calculations to account for this.	Y	The surface water sewer system has been modelled in Micro Drainage and a copy of the calculations is contained in Appendix 4 of report reference M380-DOC02. The 1:100 storm has been sensitivity tested with both a 20% and 40% uplift to allow for the potential future increases in flow rates. It is considered that this includes for an allowance for urban creep on a 1:100 year storm event.
15	Did you take advantage of Hampshire County Council's Pre-Application advice service (details below)? If so, please insert your pre-application reference number here.	N	N/A

SuDS Manual

http://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx

Guidance for Climate Change percentages

http://www.susdrain.org/files/resources/briefings/1610_briefing_climate_change_briefing_note.pdf

British Standard for Infiltration tests BS 5930: 2015

<http://hantsfilewebservices.it2000.hants.gov.uk/linkviewer/LinkViewer.aspx?PIDv1=90%203%20ICM8%20ICMNLSD10%20DOC%5FBIN%5F0159%2026%20A1001001A17E25B22432G7509818%20A17E25B22432G750981%2014%20>

HCC's Pre-application Service

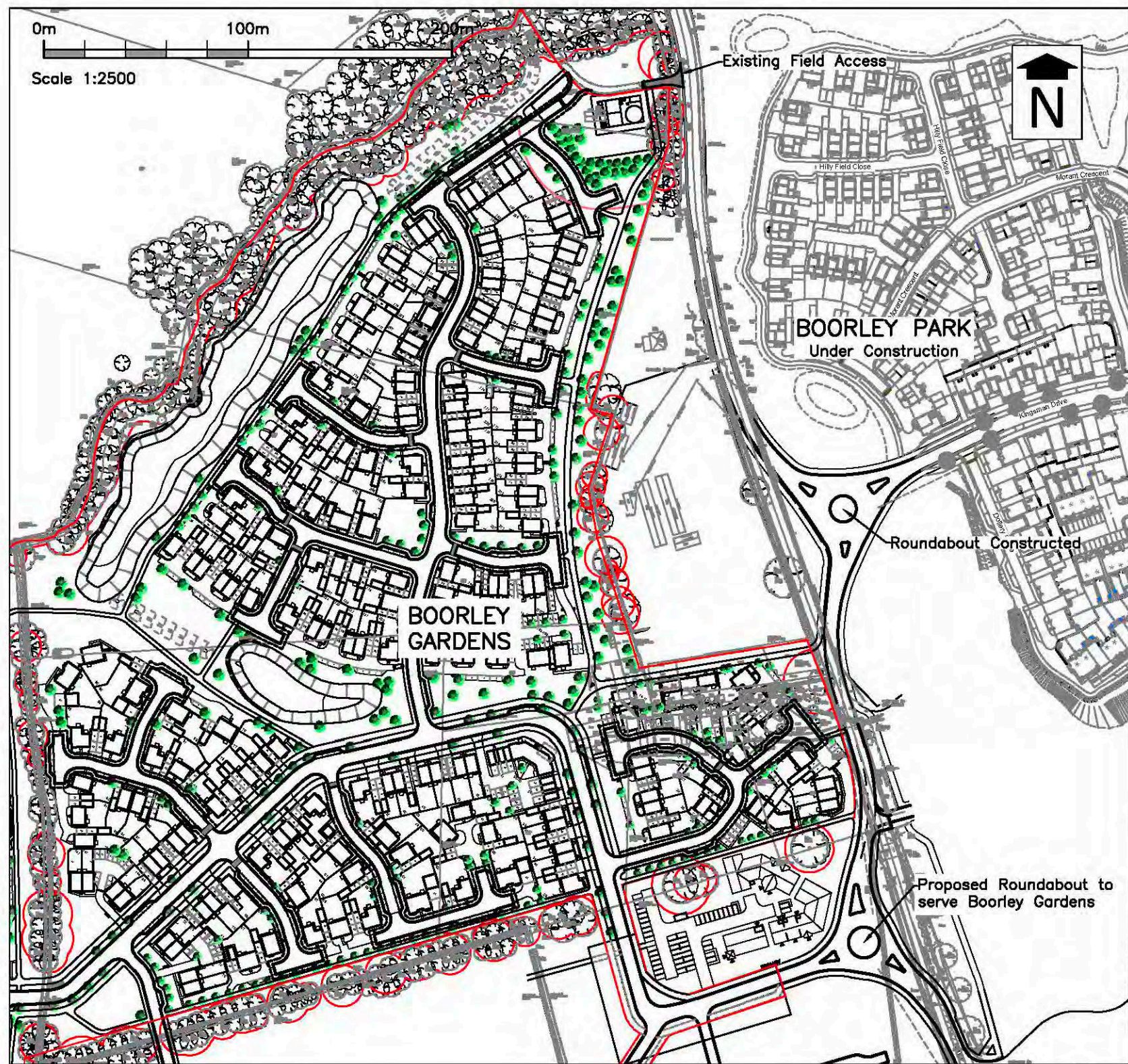
<http://documents.hants.gov.uk/flood-water-management/Surfacewaterandpre-applicationguide-Nov2015.pdf>

UK Sustainable Drainage: Guidance and Tools

<http://www.uksuds.com/>



Hampshire
County Council



LOCATION PLAN
Scale 1:2500



Stratton Park House, Wanborough Road
Swindon, SN3 4HG

Telephone
01793 828000

Website
www.pfapl.com

Preliminary
These drawings are produced for initial discussion and illustrative purposes only, and should not be relied upon for tender or pricing purposes.

NOTES

1. Drawing based on Topographical Survey by Anthony Brookes Surveys Ltd, drawing number A258/7834/1 dated June 2014.
2. On-site road layout based on AAP Architecture's Drawing Numbers P1388.01 & 04 Rev V, dated 19 September 2017.
3. Subject to Detailed Design.

Rev	Date	Description	Drawn	Check
#	16/08/17	First Issue.	DRB	CI
A	05/09/17	Boorley Park housing layout added.	DRM	CI
B	22/09/17	Client Logos updated. Layout revised (Rev V).	BF	CI

Status

PRELIMINARY

Client

miller homes
gleeson

Project

Boorley Gardens
Winchester Road
Hedge End

Drawing Title

On-site Sewage
Treatment Works
Location Plan

Drawing No.

M380/11

Rev B

Date: August 2017

Scale: 1:500 @ A1

E-Mail: dbrock@pfapl.com

Summary of Nutrem Process.

The on-site wastewater treatment facility will utilise a purely biological process to achieve very high levels of Phosphorus and Nitrogen removal through bacterial break down and absorption. The system will result in very high-quality water effluent suitable for discharge into watercourses without the requirement for additional treatment.

The process involves initial maceration of incoming raw sewage (in an enclosed unit) prior to it being pumped to a covered tank. The tank acts to balance incoming flows and as an anaerobic fermenter where food is generated for the Phosphorus Accumulating Organisms (PAOs) which perform the Phosphorus removal process in the next stage of treatment.

The fermented sewage is transferred to the two reactors in batches for processing using the bacteria and other organisms contained within them (known as biomass). At the start of the process the sewage is delivered to the bottom of the tank where it is gently mixed with the biomass. This first stage of processing forms the anaerobic stage of treatment, and the PAOs release the Phosphorus they contain ready to perform 'luxury uptake' later on in the processing stage. Luxury uptake is a process whereby PAOs absorb a significantly larger volume of Phosphorus than they release at this preliminary stage.

Whilst the anaerobic mixing is being carried out at the bottom of the tank, clean treated effluent is being discharged via a patented decanting system at the top of the tank. This process is known as simultaneous fill and discharge. The clean water being discharged enters an attenuation tank prior to leaving site to ensure the flow rate remains within the consented limit.

Once a full batch has been transferred to the bottom of the tank and the clean treated effluent has been discharged, the reactor enters a series of anoxic mixing phases (where the sewage is mixed without air being added) and aerobic mixing phases (where the sewage is mixed with air being added).

During these phases, the organic and inorganic components of the sewage are broken down and/or absorbed by the biomass. Nitrification and denitrification occurs during this period of the process, leading to the removal of Total Nitrogen from the sewage.

Towards the end of the processing time, the aeration and mixing are run at maximum levels to increase the dissolved oxygen levels in the tank. The PAOs perform luxury uptake and absorb a greater volume of Phosphorus than they released in the early stage.

At this point, Surplus Activated Sludge (SAS) is removed from the tank. The SAS is made up of excess bacteria and organisms generated during the processing time and contains a percentage of the PAOs. It is at this stage that the Phosphorus is removed from the system (in the SAS). The SAS is passed to a covered sludge holding tank, where it is stored until it is removed from site via tanker. In addition to being covered the sludge holding tank is kept aerated which further mitigates the risk of any odour being generated.

Once SAS removal has occurred, the aeration and mixing is turned off to allow all the biomass to settle to the bottom of the tank leaving clean treated water in the top 80%

of the tank space. The process is then repeated with the next batch of fermented sewage.

The clean effluent will be required to meet the stringent quality levels specified within the Consent to Discharge notice issued by the Environmental Agency, and so will be carefully monitored prior to its discharge into the local water course at the agreed flow rate.

All mechanical equipment likely to generate noise is housed within correctly rated baffled acoustic enclosures. The Balance Tank/Fermenter and Sludge holding tanks are both covered and vented via filters to ensure no odour escapes, whilst the reactors are left open to the atmosphere (as no odour is generated from them*).

Whilst the process is essentially enclosed and closely controlled, to prevent any potential odour emissions, a standoff distance of 40m between the foul water treatment facility and existing residential properties has been implemented. Data from a comparable operational plant in Petersfield indicates that no odour issues arise at closer locations to the treatment facility. Therefore, it is considered that there will be no issues in relation to odour arising for future residents of the one property whose garden lies just within the 40m exclusion zone.

Figure 1 Flow Diagram of Nutrem Process

