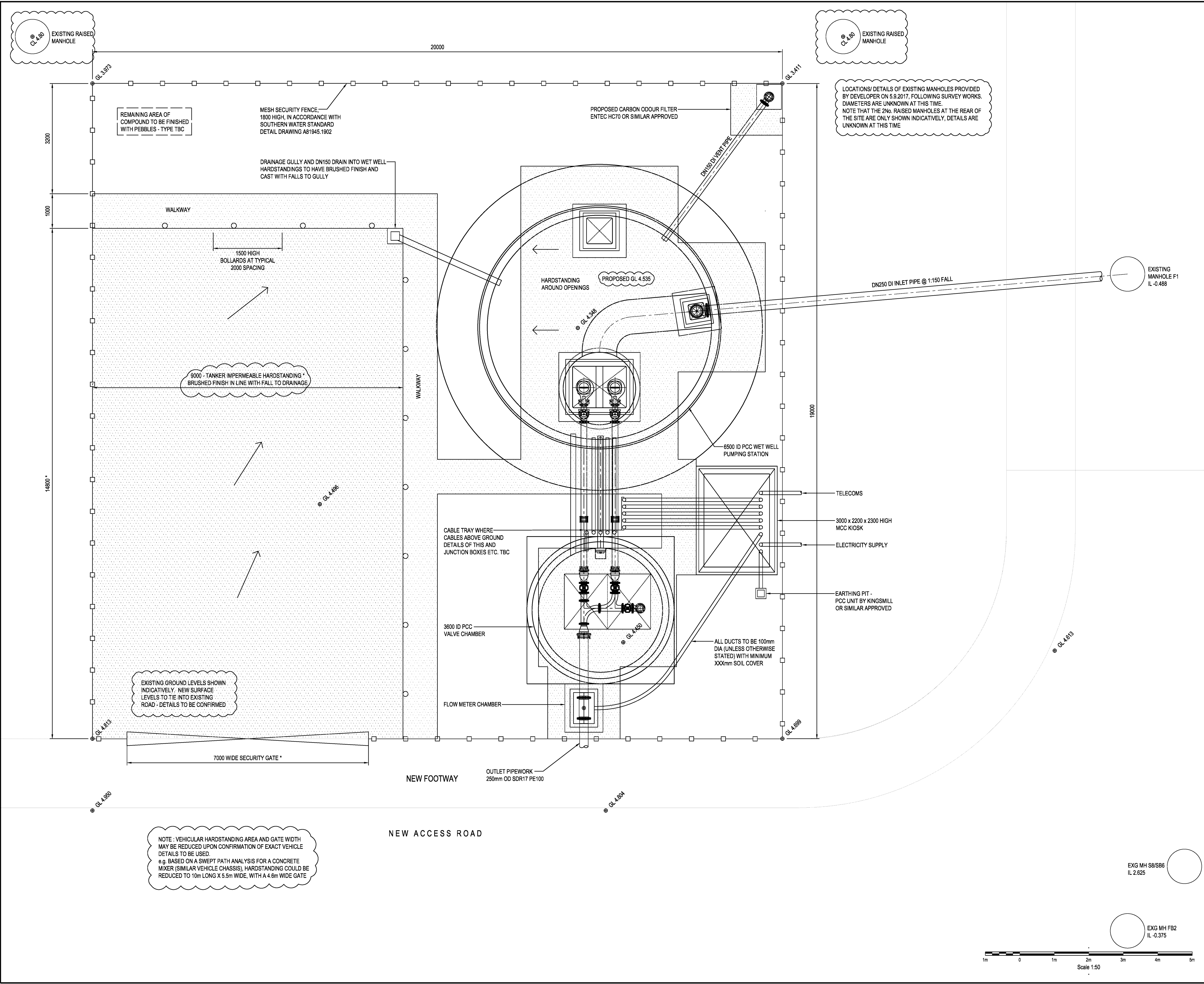




NOTES

- ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES UNLESS SHOWN OTHERWISE
- ALL LEVELS ARE IN METRES AND RELATE TO ORDANCE DATUM UNLESS STATED OTHERWISE
- DO NOT SCALE FROM THIS DRAWING
DO NOT TAKE DIGITAL DIMENSIONS OFF THIS DRAWING
WORK TO FIGURED DIMENSIONS ONLY - IF IN DOUBT ASK
- ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE FOLLOWING DOCUMENTS, UNLESS SPECIFIED OTHERWISE:-
 - THE SPECIFICATION FOR TUNNELLING BTS & ICE 2015
 - SOUTHERN WATER TECHNICAL SPECIFICATION MANUAL CIVIL ENGINEERING REQUIREMENTS:
 - CED 4002
 - CED 4015
 - CED 4023
 - CED 4024
 - SEWERS FOR ADOPTION CESWI 7th EDITION
- FOR CONSTRUCTION METHODOLOGY, REFER TO THE CONTRACTOR'S SPECIFIC METHOD STATEMENT FOR THE WORK
- THE CONTRACTOR IS TO CONFIRM ALL LEVELS AND SETTING OUT PRIOR TO COMMENCEMENT OF THE WORKS
- CONSTRUCTION TOLERANCES IN ACCORDANCE WITH THE 'SPECIFICATION FOR TUNNELLING' BTS & ICE 2010, TABLE 15, SECTION 328, TOLERANCES FOR TUNNELS, SHAFTS AND UNDERGROUND WORKS
- ALL PROPRIETARY PRODUCTS ARE TO BE USED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS
- ACCESS ARRANGEMENTS, PROTECTIVE BARRIERS AND TEMPORARY PLATFORMS ARE TO BE DESIGNED BY OTHERS
- SERVICE DIVERSIONS ARE THE RESPONSIBILITY OF OTHERS

KEY

PERSONNEL FOOTWAY / HARDSTANDING AREA

VEHICULAR HARDSTANDING

HARDSTANDING DETAILS IN ACCORDANCE WITH SOUTHERN WATER STANDARD DETAILS

SIGNIFICANT DESIGNER'S IDENTIFIED HAZARDS

HAZ001	UNKNOWN GROUND CONDITIONS
HAZ002	STRIKING OF BURIED SERVICES
HAZ010	INJURY/FATALITY DUE TO WORKING IN CONFINED SPACES
HAZ011	EMERGENCY ACCESS AND EGRESS OF SHAFT

- FOR MORE DETAILED INFORMATION ON THE HIGHLIGHTED HAZARDS, REFER TO COWI UK LIMITED DESIGNER'S RISK ASSESSMENT FOR THIS PROJECT.

- 'EVERYDAY' LOW RISK HAZARDS AND THOSE HAZARDS WHICH SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE NOT BEEN INDICATED ON THIS DRAWING.

- SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED DURING THE COURSE OF THE WORKS, THE CONTRACTOR SHALL NOTIFY ALL RELEVANT MEMBERS OF THE PROJECT TEAM.

CURRENT VERSION INFORMATION

B. KIOSK AND CHAMBERS RELOCATED, PIPEWORK LAYOUT UPDATED, HARDSTANDING AREAS REVISED						
B	ISSUED FOR APPROVAL	NM	LJP	AJK	AJK	24.11.17
A	FOR DISCUSSION	NM	LJP	-	-	08.11.17
Rev	Revision Description	Drawn	Des'd	CHK'd	App't	Date

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Kelvin House, RTC Business Park,
London Road, Derby, DE24 8UP
Tel: 01332 343800 E-Mail: info_@cowi.com

Client:

Project:

TODDINGTON LANE RISING MAIN

Title:

SITE LAYOUT

Drawn by:	Designed by:	Checked:
NM	LJP	AJK
Date:	Orig. Sheet Size:	Approved:
NOV 2017	A1	AJK
Scales:	Status:	
1:50	FOR DISCUSSION	

Drawing No:

J1534-DRG-C01-004

Revision

B

NOTE: VEHICULAR HARDSTANDING AREA AND GATE WIDTH MAY BE REDUCED UPON CONFIRMATION OF EXACT VEHICLE DETAILS TO BE USED.
e.g. BASED ON A SWEEP PATH ANALYSIS FOR A CONCRETE MIXER (SIMILAR VEHICLE CHASSIS), HARDSTANDING COULD BE REDUCED TO 10m LONG X 5.5m WIDE, WITH A 4.6m WIDE GATE

EXISTING GROUND LEVELS SHOWN INDICATIVELY. NEW SURFACE LEVELS TO TIE INTO EXISTING ROAD - DETAILS TO BE CONFIRMED

LOCATIONS/ DETAILS OF EXISTING MANHOLES PROVIDED BY DEVELOPER ON 5.9.2017, FOLLOWING SURVEY WORKS. DIAMETERS ARE UNKNOWN AT THIS TIME. NOTE THAT THE 2No. RAISED MANHOLES AT THE REAR OF THE SITE ARE ONLY SHOWN INDICATIVELY, DETAILS ARE UNKNOWN AT THIS TIME

EXISTING RAISED MANHOLE
@ GL 4.860

EXISTING RAISED MANHOLE
@ GL 4.860

EXISTING MANHOLE F1
IL -0.488

EXISTG MH S8/S86
IL 2.625

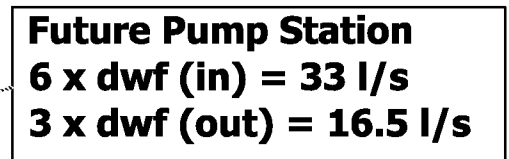
EXISTG MH FB2
IL -0.375

Scale 1:50

APPENDIX E: Condition 13, Foul Layout Schematic & Peak Flows

Retail

Trade Flow = 0.5 l/sec/Ha of developable area



800 DWELLINGS

APPENDIX F: Condition 10, WSCC Surface Drainage Correspondence

Sean Foley

From: Sean Foley
Sent: 05 March 2018 09:11
To: 'Mark Akmenkalns'
Cc: [REDACTED]

Subject: [REDACTED]

Mark,

This is very good news and WSCC's acceptance of a Cv value of 0.84 in this instance is most appreciated.

Many thanks

Sean Foley
Principal Engineer
Mayer Brown Ltd
[REDACTED]

From: Mark Akmenkalns [mailto:mark.akmenkalns@westsussex.gov.uk]
Sent: 05 March 2018 08:56
To: Sean Foley <[REDACTED]>
Cc: Tim Townsend <[REDACTED]>
Subject: D1013/00: RES application LU/278/17/RES - SURFACE WATER DRAINAGE - WSCC Response 18-03-05

Sean,

Thank you for reviewing the surface water simulation against the alternative FSR data with a Cv value of 1 (100%). I have reviewed your situation with the WSCC Drainage Team and would confirm the following:

- WSCC have preference to utilise the FEH data (more current day compared to FSR).
- With regards to the Cv we accept your summation and design value of 0.84, in this instance.

In conclusion your initial surface water hydraulic calculations are acceptable.

Please note for future applications the WSCC Drainage Team will always require evidence in support of the selected Cv design value.

Tim – With regards to the uncertainty with the 'future parcels' and the corresponding estimated impermeable area/storage we recommend this is controlled by a bespoke condition.

Any queries please call.

Regards,

[REDACTED]

From: Sean Foley [REDACTED]
Sent: 01 March 2018 15:30
To: Mark Akmenkalns
Subject: RE: D1013/00: RES application LU/278/17/RES - SURFACE WATER DRAINAGE - WSCC Response 18-02-26

Mark,

I just ran the simulation and it works well when using the FSR rainfall profile. Please see attached results

Some minor flooding that is easily and safely contained within the road network.

It would be fantastic if we could go with this scenario please because there is no uplift in attenuation volume required

Regards,

Sean Foley
[REDACTED]

From: Mark Akmenkalns [REDACTED]
Sent: 01 March 2018 15:10
To: Sean Foley [REDACTED]
Subject: RE: D1013/00: RES application LU/278/17/RES - SURFACE WATER DRAINAGE - WSCC Response 18-02-26

Sean,

Have you run the Microdrainage simulation to lesser FSR rainfall with a Cv of 1?

Regards,

Mark Akmenkalns | Infrastructure Engineer (Consultant), Implementation Team, Strategic Planning, Communities and
Infrastructure, West Sussex County Council
Location: Ground Northleigh, County Hall, Chichester PO19 1RG
Internal: 25753 | External: 03302 225753 | E-mail: mark.akmenkalns@westsussex.gov.uk

From: Sean Foley [REDACTED]
Sent: 01 March 2018 14:59
To: Mark Akmenkalns
[REDACTED]

Subject: RE: D1013/00: RES application LU/278/17/RES - SURFACE WATER DRAINAGE - WSCC Response 18-02-26

Mark,

Thanks for your response and it is good news overland flow information is sufficient.

We'd like to take the opportunity to let WSCC know the development as a whole will provide a significant reduction in the rate and volume of surface water run-off when compared to the pre-demolition undeveloped site that had a hardstanding area of approximately 22 hectares that previously discharged into the black ditch.

Regarding the use of Cv, thanks for sending over what WCSS consider to be supporting evidence. As pointed out in our previous E-mail the suggested WSCC change results in an uplift of approximately £100,000 to the below ground attenuation cost. We expect our Client's finances are not at the top of WSCC's agenda but it is important to emphasise the importance of changing the design parameter of Cv to 1, especially when we consider it unnecessary to do so. I'm sure there are instances when it might be appropriate but we don't believe this is it. We believe the explanation below provides reasonable justification why it is not required for this particular development.

SFA 7th Edition

The reference to SFA 7th Edition (SFA7) is that “an impermeability of 100% run-off should generally be assumed”. This is not a reference to the design parameter of Cv within the modified rational method. We have actually used 100% impermeability from the roads, parking areas and roofs that we know about – see image below. In the other future development plots we can only apply a % of the development boundary because the layout has not yet been decided.

McCloy Susdrain Fact sheet

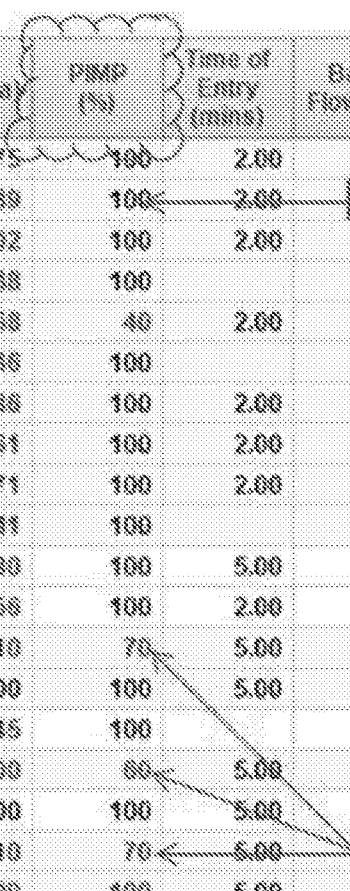
This is a guidance document produced by an independent firm of Consulting Engineers and our Client feels it is not appropriate to use this document as a justification for Cv on this development.

We believe the document, as the title suggests, is an assessment tool for determining storage volumes. At the early stages of most planning applications we produce “Quick Storage Estimates” (QSE) using Windes and we’re 100% confident WSCC have received many of these QSE estimates when reviewing drainage designs. QSE could be viewed as an “assessment tool” to determine high level volumes to ensure sufficient storage space is available within planning applications.

If, for example, we work out the QSE estimate for our 19 hectare catchment (FEH Rainfall, 19 hectares, 50% impermeability, discharge rate of 15 l/sec/hect, 30% CC) the attenuation volume is up to 5,520m³. If we use the less onerous FSR Rainfall the volume is up to 4,750m³. 770m³ difference between FEH & FSR.

We, however, have produced a detailed drainage model that accurately analyses the main sewer within the entire 19 hectare catchment. This has been used to analyse system overloads, storage, reverse flow characteristics, surcharging and backwater effects within the piped network and to accurately determine the attenuation volume. We’ve also used the more onerous **FEH rainfall profile**. Using this detailed model the total volume of attenuation has actually worked out at 5,340m³ (1,600m³ for main infrastructure and the remaining 3,830m³ spread across 12 development parcels.

Our model also does not simply discharge 100% of run-off into the black ditch. It is only the detailed areas that 100% is applied, but a large number of future parcels have not yet been designed yet so we can only apply an estimation of the % impermeability. Below are some images from our model where we’ve applied the total application boundary a future parcels and then applied and percentage impermeability. The total modelled impermeability works out at approximately 58% of total catchment (11.14 Ha within 19 Ha catchment)



Pipe Number	US/MH Name	Pipe Length (m)	Area (ha)	PMP (%)	Time of Entry (mins)	Base Flow (l/s)	Pipe Rough (mm)	US/MH (m)	D/S (m)
13.000	SW-FUT-01	63.816	0.275	100	2.00		0.600	2.560	2.
14.000	Plots 80-86	12.624	0.089	100	2.00		0.600	2.550	2.
15.000	Plots 87-94	7.200	0.102	100	2.00		0.600	2.550	2.
1.013	SW05	37.575	0.038	100			0.600	2.150	1.
16.000	C2 Resiblock A	8.659	0.358	40	2.00		0.600	2.275	2.
1.014	SW06	32.449	0.036	100			0.600	1.990	1.
17.000	SW-FUT-02	54.502	0.186	100	2.00		0.600	2.320	2.
18.000	Plots 60-73	7.800	0.061	100	2.00		0.600	2.600	2.
19.000	Plots 74-78	9.600	0.071	100	2.00		0.600	2.600	2.
17.001	SW07	21.498	0.011	100			0.600	2.100	2.
20.000	Plots 39-46	6.005	0.080	100	5.00		0.600	3.690	2.
21.000	SW-LYM 01	24.867	0.056	100	2.00		0.600	3.740	3.
22.000	Non resi	39.317	0.810	70	5.00		0.600	4.800	3.
22.001	Non resi	13.808	0.000	100	5.00		0.600	3.720	3.
21.001	SW-LYM 02	44.896	0.045	100			0.600	3.640	3.
23.000	Parcel A1	39.613	1.000	60	5.00		0.600	4.000	3.
23.001	As-built SAs	28.513	0.000	100	5.00		0.600	3.783	3.
24.000	Non Resi	34.498	0.910	70	5.00		0.600	3.800	3.
24.001	SW Stub 02	5.111	0.000	100	5.00		0.600	3.840	3.
23.002	SW-LYM 03/1	16.877	0.000	100	5.00		0.600	3.570	3.
21.002	SW-LYM 03	25.768	0.045	100			0.600	3.350	3.

Pipe Number	DS/MH Name	DS/CL (m)	Fall (m)	US C.Depth (m)	DS C.Depth (m)	Σ Imp. Area (ha)	Control in USMH	Rain No.
30.001	SW09	5.000	0.200	2.475	2.375	0.630	ro-Brake®	1
31.000	SW09	5.000	1.150	1.325	2.375	0.096		1
32.000	Stub SW9/2	5.100	0.200	1.950	2.150	0.224		1
32.001	SW09	5.000	0.100	2.375	2.375	0.224	ro-Brake®	1
30.002	SW16	4.640	0.300	2.375	2.315	1.034		1
33.000	SW13	4.020	0.110	1.305	1.115	0.071		1
33.001	SW14	4.020	0.160	1.115	1.275	0.142		1
33.002	SW15	4.600	0.290	1.275	2.145	0.213		1
33.003	SW16	4.640	0.130	2.070	2.240	0.264		1
30.003	SW17	5.000	0.300	2.240	2.900	1.386		1
30.004	SW21	5.000	0.140	2.750	2.890	1.386		1
21.010	SW22	4.300	0.030	2.440	1.770	4.814		1
20.001	SW23	3.900	0.135	1.770	1.505	4.958		1
34.000	SW23	3.900	0.100	1.275	1.175	0.080		1
20.002	SW24	3.710	0.085	1.505	1.400	5.058		1
1.015	SW25	3.600	0.130	1.400	1.420	10.910		1
35.000	Stub SW25/1	3.700	0.230	1.105	1.335	0.055		1
35.001	SW25	3.600	0.180	1.335	1.415	0.110		1
36.000	SW25	3.600	0.200	1.215	1.415	0.094		1
1.016	Outfall B	1.750	0.200	1.875	0.225	11.144	ro-Brake®	Total m equals 55% of

Within the Mcloy document the Author states the following: “it is a usable approximation that can provide acceptable solutions for design. Most of the inputs are based on statistics and calibration factors; therefore we can only ever achieve an approximation of how the system will behave in reality. The results of calculations and modelling need to be used alongside professional judgement to provide the design”

We firmly believe that we have applied sound professional judgement when generating this hybrid model that contains a combination of very detailed development parcels alongside future parcels that have very little design information and, as such, a Cv of 0.84 can continue to be applied.

Our Client wishes to fulfil his planning obligations and conduct his business in a responsible and sustainable manner but feels the unwarranted amendment to the design parameter Cv, on this development, is wasteful of both finance and resource.

With the above in mind we'd be grateful if you could reconsider the use of Cv in this particular scenario.

Regards,

Sean Foley
Principal Engineer
Mayer Brown Ltd

From: Mark Akmenkalns
Sent: 26 February 2018 15:55
To: Sean Foley

[REDACTED]

Subject: D1013/00: RES application LU/278/17/RES - SURFACE WATER DRAINAGE - WSCC Response 18-02-26

Sean,

Thanks for your response. On review of your response to 4 & 5 I confirm the overland flow evidence is sufficient.

With regards to the Cv criteria I have consulted with the WSCC Drainage Team who have provide two pieces of supporting evidence as follows (see attached):

- SFA7 Extract
- Susdrain/CIRIA fact sheet

In conclusion, as previously advised, the WSCC Drainage Team require a Cv of 1.0 (100% run-off).

Regards,

[REDACTED]

From: Sean Foley [REDACTED]
Sent: 23 February 2018 17:49
To: Mark Akmenkalns [REDACTED]
Cc: Tim Townsend; Graham, Laura [REDACTED]
Adrian Barnley; Oliver Nevett; [REDACTED] David Lambert; Sara McKnight; Edgley, Martin; Edgley, Antony; Adam Winstone; Paul Stewart
Subject: RE: D1013/00: RES application LU/278/17/RES - SURFACE WATER DRAINAGE - WSCC Response 18-02-23

Mark,

Thanks for responding so quickly.

In response to Items 4 & 5 below please find attached a pdf (3 drawings) that shows the route of overland flow in the event of system failure, blockage or overload. I trust this demonstrates that dwellings should be suitably protected in the event of a drainage system failure and resulting overland flow can find its way safely through the road network and into the wetlands.

In response to value to use for Cv. I have been working with Micro Drainage to design and analyse drainage networks for almost 20 years and I have never been asked to apply an a Cv value 1.0 within network simulation. I've also consulted my Colleagues in other offices and they are also in agreement

Regarding the design parameters:

- We've used the more onerous FEH rainfall profiles instead FSR profiles, which is location specific and generates higher rainfall volumes for the long duration storm events when compared to FSR
- We've used the higher default Cv setting of 0.84 instead of 0.75.

If we apply a Cv value of 1.0 the flooding within network increases by approximately 500m³ and the attenuation will need to be increased accordingly, which represents an increase of approximately £100,000 based upon an installation cost of £200/m³. This represents a significant expenditure for our Client, especially when we still feel it is unnecessary. With this in mind we would be grateful if a Cv value of 0.84 can be retained whilst being safe in the knowledge that the system overload can safely overflow into the wetlands

I look forward to your response

Regards,

Sean Foley

[REDACTED]

From: Mark Akmenkalns [REDACTED]

Sent: 23 February 2018 10:14

[REDACTED]

Thank you for your comprehensive email response. My comments as below.

Regards,

<u>Mark Akmenkalns</u> Infrastructure Engineer (Consultant), Implementation Team, Strategic Planning, Communities and Infrastructure, <u>West Sussex County Council</u> Location: Ground Northleigh, County Hall, Chichester PO19 1RG Internal: 25753 External: 03302 225753 E-mail: mark.akmenkalns@westsussex.gov.uk
--

From: Sean Foley [REDACTED]

Sent: 22 February 2018 10:14

To: Tim Townsend

Cc: Graham [REDACTED] Adrian Barnley;
Oliver Neve [REDACTED] Edgley, Martin;
Edgley, Anthony

Subject: RE: RES application LU/278/17/RES - SURFACE WATER DRAINAGE

Tim,

Many thanks for your response, which looks quite positive

Below are our responses in red. Happy to discuss

Regards,

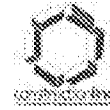
Sean Foley

[REDACTED]

Sean Foley,
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[REDACTED]

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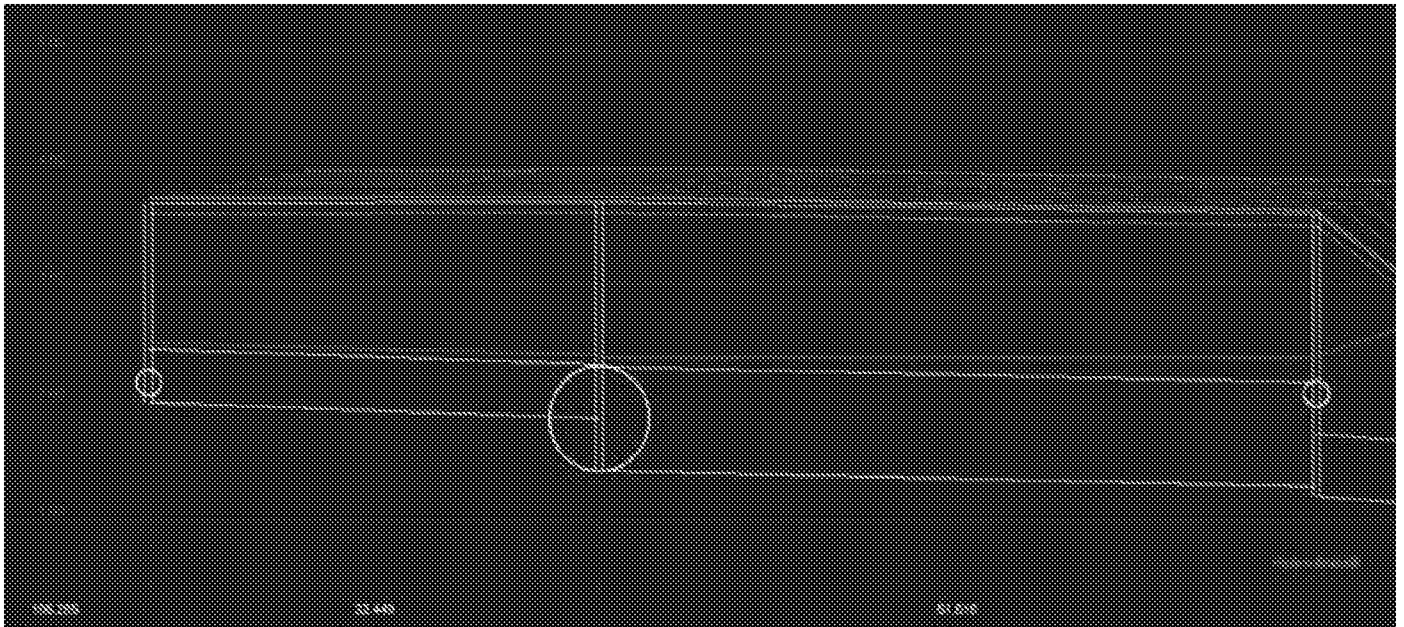


Dear Sean,

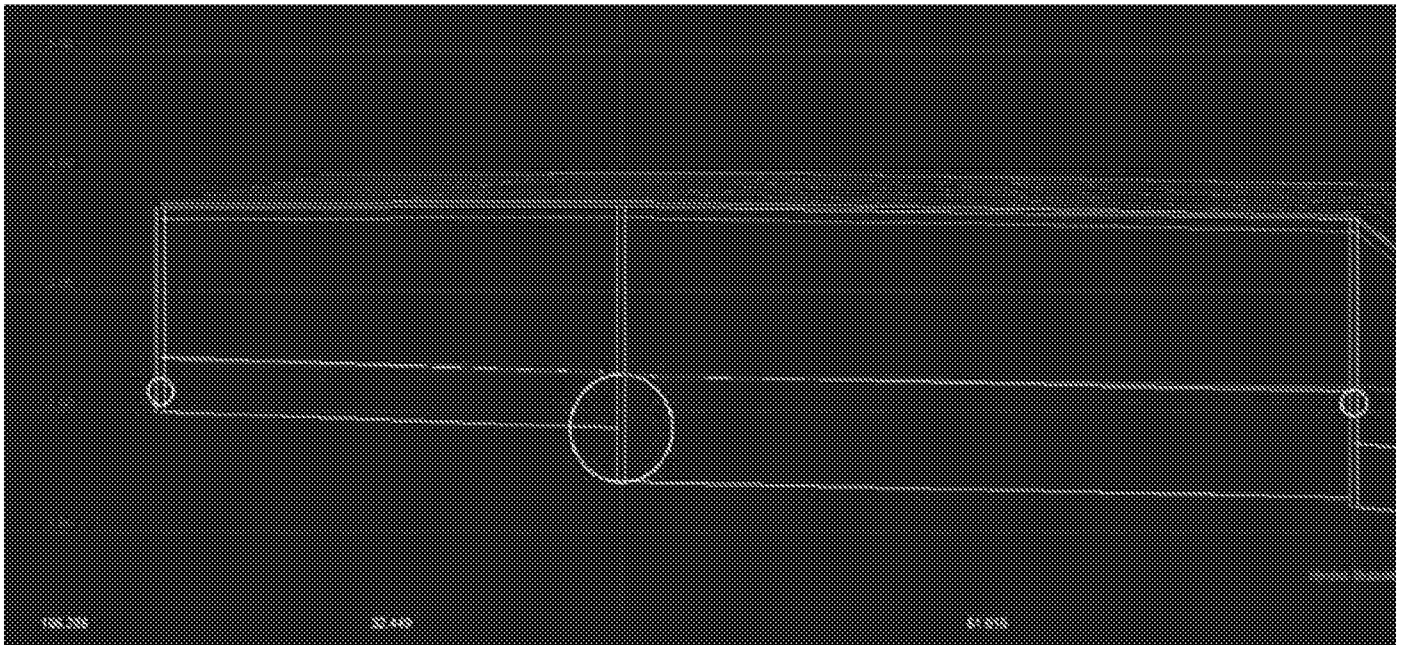
Thank you for your recent submission dated 30th January 2018 containing your surface water drainage assessment for the Southern By-Pass scheme. This has been reviewed and WSCC comments as follows:

- Item 1 Response - Noted, no further comments.
- Item 2 Response - Noted, no further comments.
- Item 3 Response - Agreed, no further comments.
- Item 4 Response - WSCC has reviewed the Micro-drainage simulation and accept this is a comprehensive model. However, noting the ultimate outfall is to the Black Ditch, it is not clear if this outfall will ever discharge under surcharged conditions. **If so, what bearing will this have on the upstream network and anticipated road extents (public and private)?**

The 1in100yr+CC flood level in the wetlands is 3.23m AOD by the outfall, but this will result in the outfall (@ 1.0m AOD) being surcharged by approximately 2.23m. There will be a flap valve on the final headwall to ensure this floodwater will not back up into the drainage network but in this scenario the drainage network can't push open the flap valve until the water level within the site goes above the flood level in the wetlands. In our opinion the chance of the critical 1in100yr+CC flood level in the wetlands (which is tidal) coinciding with the peak 1in100yr+CC storm event on the site are infinitesimally small.



We have however run the simulation with a fully surcharged outfall (@ 3.23m – see image above) and it results in a combined flood volume of 1750m³ escaping from the drainage network. We do not believe it is reasonable keep this flood water on site for this unlikely occurrence and the resulting flood water will flow safely through the road network and eventually into the wetlands.



We’ve also run the simulations with a 1m surcharged outfall (see image) and it results in a combined flood volume of approximately 500m³ escaping from the network.

It’s important to note that these are for the long duration 4 hours (average rainfall intensity of 20.5mm/hr) relatively low intensity rainfall events so the flood water will flow benignly in the road channel. For the short duration high intensity event 30mins (average rainfall intensity of 75mm/hr) the system won’t event flood because the storm will barely create enough water to fill the drainage network.

We agree the likelihood of a coincidence occurrence is low. We also appreciate that the standing time may only be for a few hours until the River water level reduces. Our only main concern here is to consider where flooding will occur within the site and what the impacts will be:

1. Will any flood water continue to flow ‘overland’ towards an outfall? (It may be prudent to show a basic sketch of the routing through roads/wetlands as you state)

2. Will flooding impact on access/egress (inc emergency access)
3. Will flooding impact on any buildings i.e. flood damage

- Item 5 Response - I note that you say you are obliged to follow the guidance agreed at the time planning was consented. Please note however that the WSCC look to observe the 100yr plus 40% climate change impacts to Section 38 roads as noted above in accordance with NPPF requirements. This is to understand overland flow routing and flooding vs standing time and accessibility. **Please confirm that the 100yr + 40% climate change has been modelled in accordance with NPPF requirements.**

We'd like to clarify that none of the S38 Roads are simulated to flood for the 30% allowance CC. There will be approx. 15m³ at the low point in the private road immediately to the east but none of this will reach the S38 Road.

However, we believe it is reasonable to undertake some sensitivity testing of the model to ascertain the impact the 40%CC allowance will have on the network when compared to the 30%CC allowance. We have re-run the model using 40%CC and the combined flood volume at this low point increases from 15m³ to 60m³. (see pipe numbers 14.00 & 15.00 below which represent the low point). This additional flood water will spill over the S38 table and flow safely in the estate roads a northerly direction and into the wetlands.

Noted. Whilst the overall impacts at 40% are negligible on the scale of the development, the same issues would apply as noted above.

1.012	SW04	240 minute 100 year Winter I+40%	240	4.400	3.972	1.232
13.000	SW-FUT-01	120 minute 100 year Winter I+40%	120	4.000	3.951	1.091
14.000	Plots 80-86	240 minute 100 year Winter I+40%	240	3.800	3.828	1.053
15.000	Plots 87-94	240 minute 100 year Winter I+40%	240	3.800	3.831	1.056
1.013	SW05	240 minute 100 year Winter I+40%	240	4.100	3.843	1.243
16.000	C2 Resiblock A	120 minute 100 year Winter I+40%	120	4.300	3.843	1.343
1.014	SW06	240 minute 100 year Winter I+40%	240	3.700	3.730	1.290
17.000	SW-FUT-02	240 minute 100 year Winter I+40%	240	4.280	3.723	1.103
18.000	Plots 60-73	240 minute 100 year Winter I+40%	240	3.700	3.701	0.876

- Item 6 Response - Noted, no further comments.
- Item 7 Response - Noted, drawings 312 & 412 are now subject to the S278/38 design check.
- Item 7 Response - Agreed, no further comments.
- Item 8 Response - Agreed, no further comments.
- Item 9 Response - Agreed, no further comments.
- Item 10 Response - Agreed, no further comments.
- Microdrainage - WSCC note that there numerous hydrobrake flow controls proposed. WSCC recommendation (and S38 policy) is to ensure the solid handling opening is a minimum of 75mm to mitigate future block risks; we note a few are specified just below this size. **Please confirm that all will have opening of minimum of 75mm.**

All of the controls on the network apart from the final outfall are on the private / future development plots and we anticipate that all of the flow control devices will be specified with an opening no less than 75mm. There will be designed / specified as there plots are development in the near future.

The only flood control on the main drainage runs are on the final outfall where the opening is 286mm.

Noted. No further comments.

- Microdrainage - Please note the WSCC requirement for selecting an appropriate coefficient of volumetric run-off (Cv); where your calculations consider the impermeable areas only as contributing to the drainage system we recommend a Cv of 1.0 (This is also advised in Sewers For Adoption 7th Edition and so may already apply elsewhere). **Please confirm that a Cv of 1.0 has been used.**

We have conformed to the requirements of SFA7 and 100% of the hardstanding from roads, footpath, parking, driveways and houses have been plugged into the micro drainage model. However we have not used a Cv of 1.0 because it will be an incorrect usage of this parameter within micro drainage

When selecting a suitable Cv value the Wallingford Procedure Volume 4 states:

"An extensive study of the runoff data from sewered urban catchments showed that the volume of runoff was related to the impervious area, the soil type and the catchment wetness. An approximate result may be obtained by assuming that the runoff derives from a proportion of the impervious area (paved and roof), the proportion varying according to soil type. On this basis the overall average value of Cv is about 0.75, ranging from 0.6 on catchments with rapidly-draining soils to about 0.9 on catchments with heavy soils"

These values reflect the loss of some rainfall from impervious areas through cracks and into depressions and by drainage onto pervious (unpaved) areas. Similarly, any runoff from the pervious areas onto the impervious areas is also incorporated. The above range of values for Cv should therefore be used in conjunction with the total impervious area (paved and roof) intended to drain to the storm system. This is a large drainage catchment extending over 19 hectares.

Microdrainage has two default settings for Cv, which are 0.75 (the summer setting) or 0.84 (the winter setting). All of our simulations has used the higher winter setting of 0.84

If you take the typical value of Cv as 0.75 and multiply it by 1.3 (which is the routing co-efficient in the modified rational method) you get 0.975 which is very nearly 1 and therefore makes no difference compared to the Rational Method of design if using a Cv of 1. By choosing the higher setting of 0.84 in micro drainage the figure increases to 1.09.

I trust the above explanation explains why we have chosen the higher default setting of 0.84 within micro drainage as the Cv value

CIRIA advises that the Microdrainage (and other design software) 'defaults' may not be appropriate. Microdrainage points to Wallingford Vol 1 to determine the calculation criteria, however your reference to Wallingford is not relevant as the catchment is 100% impervious (with no soil factors). Indeed the Wallingford website questions/answers also covers this topic. Whilst I appreciate your summary of your parameters, however it is a **WSCC policy (as LLFA) to use a Cv of 1.0** (100% run-off).

I look forward to your early responses to the highlighted points in the text above.

Thank you,

Tim

Tim Townsend

Principal Planner, Highways – Planning Services

West Sussex County Council, Ground Floor Northleigh, County Hall, Chichester PO19 1RH

Phone: (External) 03302 225726 (Internal) 25726

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APPENDIX G: Condition 10, Exceedance Flows

OVERALL 19 HECTARE CATCHMENT

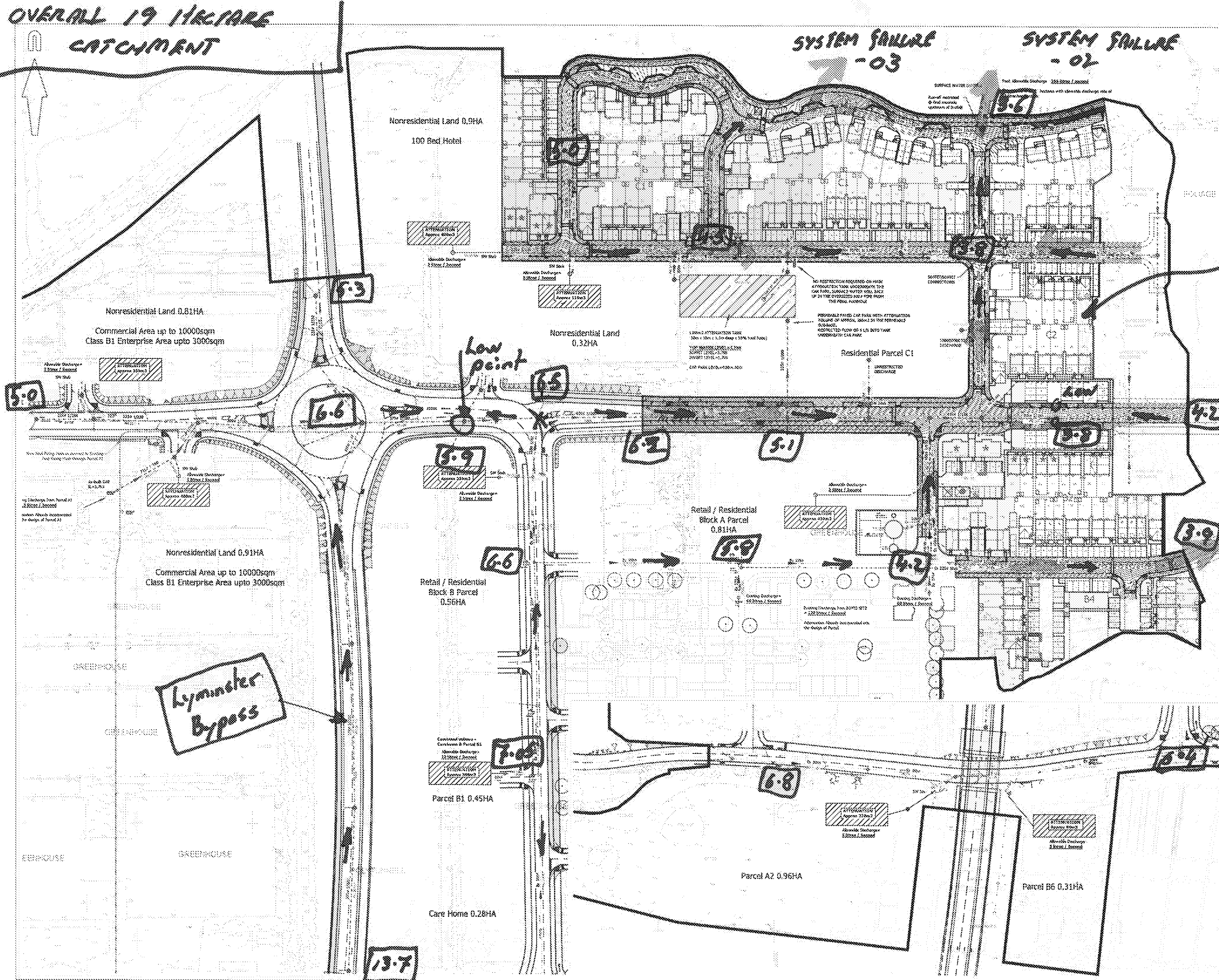
SYSTEM FAILURE -03

SYSTEM FAILURE -02

AD ORIGINAL

PHASE 2: Application

SYSTEM FAILURE 01



KEY:

Stepped Cavity Tray
(raised DPC or appropriate
working for construction method)

External Brickwork
EXT BRK

Tanking
T T T

Slope on Edge
SOE

Retaining Wall
RET WALL

Fall Arrows

Proposed Levels
ML&Z

Primary Access

Secondary Access

Finished floor levels shown thus: FFL 10.00

Phase Boundary

NOTES:

1. Road corridors based on
existing design for all roads and
levels to be based on site.
2. Existing survey data and
phase boundary shown in brown
and may differ from current site
leveling based on May 2017
management.

**SPILL LEVEL
OVER TABLE
4.05**

Low point

Low point

AREA SOUTH OF ROAD TWO IN ABEYANCE

**SYSTEM FAILURE INTO
WETLANDS - 01**

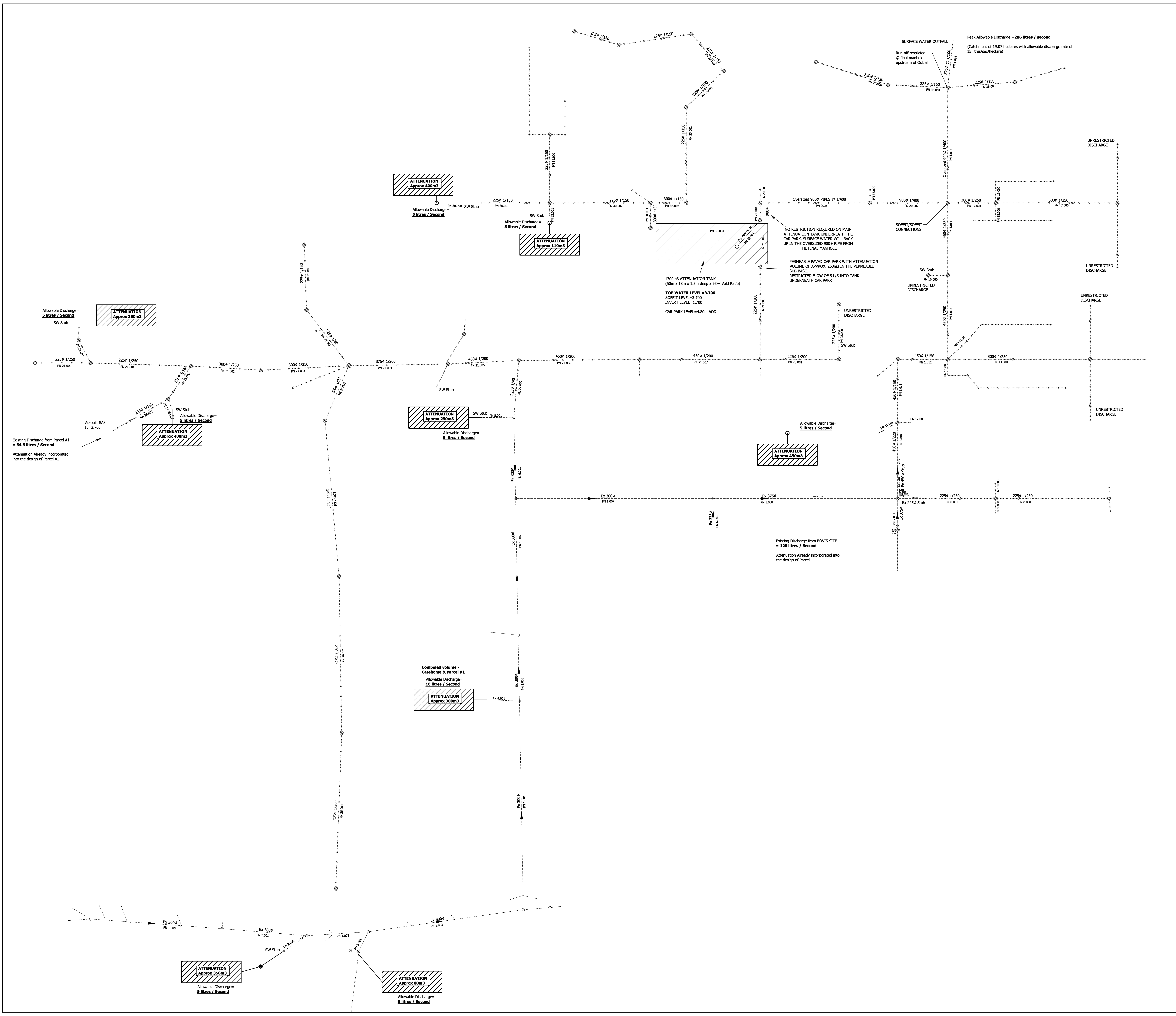
REV	No.	Date	Description	Author
B	21.02.18		FFL and external levels (incl. parking and drives) revised for Photo 7a-7b at 80-84. Plot 117 is in abeyance.	AJW
C			Plot 117-126 external levels and FFLs reviewed and revised in accordance with minimum surface level of 4.05 AOD to.	AJW
B	17.01.18		Additional dropped kerbs indicated (see Mayor Brown Surface Treatment Drawings for full kerb details).	AJW
A	15.01.18		Revised to incorporate revised planning layout.	AJW
REV	No.	Date	Description	Author
Drawn				DETAILS
Client	Persimmon Homes (Thames Valley)			
Project	Phase 2 Littlehampton			
File	Levels Plan (Sheet 1)			
Scale	1:250	Scale	2017	Drawn
Checked	KTG	Drawn	AJW	Sheet No.
				5691:03
				D

MJA CONSULTING
CIVIL AND STRUCTURAL ENGINEERS

104050N

→ Direction of fall of road → overland flow route in case of system failure

APPENDIX H: Condition 10, Windes – Network Details



Mayer Brown Ltd		Page 1							
Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands								
Date January 2018 File West Catchment Model_...	Designed by S Foley Checked by								
XP Solutions	Network 2013.1								
Existing Network Details for Storm									
* - Indicates pipe has been modified outside of System 1									
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
* 1.000	59.000	0.251	235.1	0.066	2.00	0.600	o	300	
* 1.001	38.000	0.163	233.1	0.040	0.00	0.600	o	300	
* 2.000	12.808	0.200	64.0	0.534	5.00	0.600	o	300	
* 2.001	12.001	0.080	150.0	0.000	2.00	0.600	o	150	
* 1.002	27.675	0.121	228.7	0.045	0.00	0.600	o	300	
* 3.000	19.930	0.200	99.7	0.198	5.00	0.600	o	300	
* 3.001	10.000	0.067	149.3	0.000	2.00	0.600	o	150	
* 1.003	70.062	0.300	233.5	0.047	0.00	0.600	o	300	
* 1.004	94.210	0.425	221.7	0.153	0.00	0.600	o	300	
* 4.000	20.000	0.065	307.7	0.438	5.00	0.600	o	300	
* 4.001	14.532	0.097	149.8	0.000	2.00	0.600	o	150	
* 1.005	30.500	0.140	217.9	0.046	0.00	0.600	o	300	
* 1.006	59.368	0.270	219.9	0.088	0.00	0.600	o	300	
* 5.000	19.999	0.595	33.6	0.392	5.00	0.600	o	300	
* 5.001	14.532	0.105	138.4	0.000	2.00	0.600	o	150	
* 5.002	36.500	0.150	243.3	0.070	0.00	0.600	o	300	
* 1.007	88.421	0.300	294.7	0.077	0.00	0.600	o	300	
* 6.000	20.006	0.100	200.1	0.700	5.00	0.600	o	375	
* 6.001	14.650	0.875	16.7	0.000	5.00	0.600	o	375	
* 1.008	77.584	0.400	194.0	0.077	0.00	0.600	o	375	
PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
* 1.000	TL_SW01	6.380	5.170	0.910	6.790	4.919	1.571		1050
* 1.001	TL_SW02	6.790	4.919	1.571	6.800	4.756	1.744		1200
* 2.000	Parcel A2_1	6.800	5.200	1.300	6.900	5.000	1.600		1200
* 2.001	Parcel A2_2	6.900	5.000	1.750	6.800	4.920	1.730	Hydro-Brake®	1200
* 1.002	TL_SW03	6.800	4.756	1.744	6.780	4.635	1.845		1200
* 3.000	Parcel B6_1	6.900	5.000	1.600	6.900	4.800	1.800		1200
* 3.001	Parcel B6_2	6.900	4.800	1.950	6.780	4.733	1.897	Hydro-Brake®	1200
* 1.003	TL_SW04	6.780	4.635	1.845	6.380	4.335	1.745		1200
* 1.004	TL_SW05	6.380	4.335	1.745	7.055	3.910	2.845		1200
* 4.000	Parcel B1&CH_1	7.220	4.200	2.720	7.220	4.135	2.785		1200
* 4.001	Parcel B1&CH_2	7.220	4.135	2.935	7.055	4.038	2.867	Hydro-Brake®	1200
* 1.005	Ex. SB10	7.055	3.910	2.845	6.900	3.770	2.830		1200
* 1.006	Ex. SB9	6.900	3.770	2.830	6.570	3.500	2.770		1200
* 5.000	Block B_1	6.380	4.500	1.580	6.380	3.905	2.175		1200
* 5.001	Block B_2	6.380	3.905	2.325	6.360	3.800	2.410	Hydro-Brake®	1200
* 5.002	Ex. SB17	6.360	3.650	2.410	6.570	3.500	2.770		1200
* 1.007	Ex. SB8	6.570	3.500	2.770	5.810	3.200	2.310		1350
* 6.000	BovisA_1	5.600	4.100	1.125	5.600	4.000	1.225		1200
* 6.001	BovisA_2	5.600	4.000	1.225	5.810	3.125	2.310	Hydro-Brake®	1200
* 1.008	Ex SB7	5.810	3.125	2.310	4.700	2.725	1.600		1350
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Mayer Brown Ltd		Page 2								
Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands									
Date January 2018 File West Catchment Model_...	Designed by S Foley Checked by									
XP Solutions	Network 2013.1									
Existing Network Details for Storm										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	* 7.000	20.000	0.175	114.3	0.700	5.00	0.600	o	375	
	* 7.001	13.401	0.425	31.5	0.000	5.00	0.600	o	375	
	* 1.009	4.916	0.025	196.6	0.000	0.00	0.600	o	450	
	* 8.000	24.849	0.200	124.2	0.054	5.00	0.600	o	150	
	* 8.001	43.097	0.210	205.2	0.060	2.00	0.600	o	225	
	* 9.000	33.343	0.297	112.3	0.053	5.00	0.600	o	150	
	* 9.001	6.800	0.038	178.9	0.053	2.00	0.600	o	225	
	* 10.000	6.800	0.100	68.0	0.146	2.00	0.600	o	225	
	* 8.002	43.824	0.130	337.1	0.029	0.00	0.600	o	225	
	* 1.010	34.073	0.155	219.8	0.000	0.00	0.600	o	450	
	* 11.000	40.643	0.100	406.4	0.567	5.00	0.600	o	300	
	* 11.001	9.903	0.130	76.2	0.000	2.00	0.600	o	150	
	* 12.000	6.000	0.103	58.3	0.064	2.00	0.600	o	225	
	* 1.011	28.223	0.180	156.8	0.042	0.00	0.600	o	450	
	* 1.012	22.432	0.140	160.2	0.038	0.00	0.600	o	450	
	* 13.000	63.816	0.260	245.4	0.275	2.00	0.600	o	300	
	* 14.000	12.624	0.250	50.5	0.089	2.00	0.600	o	225	
	* 15.000	7.200	0.250	28.8	0.102	2.00	0.600	o	225	
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	* 7.000	BovisB_1	4.650	3.400	0.875	4.650	3.225	1.050		1200
	* 7.001	BovisB_2	4.650	3.225	1.050	4.700	2.800	1.525	Hydro-Brake®	1200
	* 1.009	Dummy Node	4.700	2.725	1.525	4.700	2.700	1.550		1200
	* 8.000	Plots 123 - 126	4.050	3.320	0.580	3.850	3.120	0.580		450
	* 8.001	SW01, G01&G02	3.850	3.040	0.585	4.360	2.830	1.305		1200
	* 9.000	Plots 117 - 122	4.050	3.165	0.735	4.300	2.868	1.282		450
	* 9.001	Stub SW02/2	4.300	2.868	1.207	4.360	2.830	1.305		450
	* 10.000	Plots 101-116	4.300	3.000	1.075	4.360	2.900	1.235		450
	* 8.002	SW02	4.360	2.830	1.305	4.700	2.700	1.775		1200
	* 1.010	Ex SB6	4.700	2.625	1.625	4.600	2.470	1.680		1500
	* 11.000	Ret Block A	4.700	3.000	1.400	4.600	2.900	1.400		1200
	* 11.001	Ret Block A	4.600	2.900	1.550	4.600	2.770	1.680	Hydro-Brake®	1050
	* 12.000	Plots 95-100	4.600	3.000	1.375	4.600	2.897	1.478		450
	* 1.011	SW03	4.600	2.470	1.680	4.400	2.290	1.660		1500
	* 1.012	SW04	4.400	2.290	1.660	4.100	2.150	1.500		1500
	* 13.000	SW-FUT-01	4.000	2.560	1.140	4.100	2.300	1.500		1200
	* 14.000	Plots 80-86	3.800	2.550	1.025	4.100	2.300	1.575		450
	* 15.000	Plots 87-94	3.800	2.550	1.025	4.100	2.300	1.575		450
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Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands									
Date January 2018 File West Catchment Model_...	Designed by S Foley Checked by									
XP Solutions	Network 2013.1									
Existing Network Details for Storm										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	* 1.013	37.575	0.160	234.8	0.038	0.00	0.600	o	450	
	* 16.000	8.659	0.221	39.2	0.143	2.00	0.600	o	225	
	* 1.014	32.449	0.130	249.6	0.036	0.00	0.600	o	450	
	* 17.000	54.502	0.220	247.7	0.186	2.00	0.600	o	300	
	* 18.000	7.800	0.150	52.0	0.061	2.00	0.600	o	225	
	* 19.000	9.600	0.150	64.0	0.071	2.00	0.600	o	225	
	* 17.001	21.498	0.090	238.9	0.011	0.00	0.600	o	300	
	20.000	6.005	0.785	7.6	0.080	5.00	0.600	o	225	
	21.000	24.867	0.100	248.7	0.056	2.00	0.600	o	225	
	* 22.000	39.317	0.280	140.4	0.567	5.00	0.600	o	450	
	* 22.001	13.808	0.080	172.6	0.000	5.00	0.600	o	225	
	21.001	44.896	0.215	208.8	0.045	0.00	0.600	o	225	
	* 23.000	39.613	0.237	167.1	0.600	5.00	0.600	o	450	
	23.001	28.513	0.193	147.7	0.000	5.00	0.600	o	225	
	* 24.000	34.498	0.360	95.8	0.637	5.00	0.600	o	450	
	* 24.001	5.111	0.070	73.0	0.000	5.00	0.600	o	225	
	23.002	16.877	0.145	116.4	0.000	5.00	0.600	o	225	
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	* 1.013	SW05	4.100	2.150	1.500	3.700	1.990	1.260		1500
	* 16.000	C2 Resiblock A	4.300	2.275	1.800	3.700	2.054	1.421		450
	* 1.014	SW06	3.700	1.990	1.260	3.710	1.860	1.400		1500
	* 17.000	SW-FUT-02	4.280	2.320	1.660	3.700	2.100	1.300		1200
	* 18.000	Plots 60-73	3.700	2.600	0.875	3.700	2.450	1.025		450
	* 19.000	Plots 74-78	3.700	2.600	0.875	3.700	2.450	1.025		450
	* 17.001	SW07	3.700	2.100	1.300	3.710	2.010	1.400		1200
	20.000	Plots 39-46	4.710	3.090	1.395	4.300	2.305	1.770		1200
	21.000	SW-LYM 01	5.040	3.740	1.075	5.500	3.640	1.635		1200
	* 22.000	Non resi	5.200	4.000	0.750	5.200	3.720	1.030		1200
	* 22.001	Non resi	5.200	3.720	1.255	5.500	3.640	1.635	Hydro-Brake®	1200
	21.001	SW-LYM 02	5.500	3.640	1.635	6.300	3.425	2.650		1200
	* 23.000	Parcel A1	7.000	4.000	2.550	6.000	3.763	1.787		1200
	23.001	As-built SA8	6.000	3.763	2.012	5.920	3.570	2.125	Hydro-Brake®	1200
	* 24.000	Non Resi	6.000	4.000	1.550	6.000	3.640	1.910		1200
	* 24.001	SW Stub 02	6.000	3.640	2.135	5.920	3.570	2.125	Hydro-Brake®	1200
	23.002	SW-LYM 03/1	5.920	3.570	2.125	6.300	3.425	2.650		1200
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Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands							
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XP Solutions			Network 2013.1							
Existing Network Details for Storm										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	21.002	25.768	0.125	206.1	0.045	0.00	0.600	o	225	
	21.003	43.680	0.160	273.0	0.033	0.00	0.600	o	300	
	25.000	25.335	0.200	126.7	0.057	2.00	0.600	o	225	
	25.001	34.164	0.530	64.5	0.102	0.00	0.600	o	225	
	26.000	69.723	1.800	38.7	0.108	2.00	0.600	o	225	
	26.001	70.010	3.200	21.9	0.108	0.00	0.600	o	225	
	26.002	64.700	1.580	40.9	0.108	0.00	0.600	o	225	
	26.003	30.927	1.000	30.9	0.023	0.00	0.600	o	300	
	21.004	45.590	0.230	198.2	0.038	0.00	0.600	o	375	
	21.005	38.840	0.160	242.7	0.231	0.00	0.600	o	450	
	* 27.000	26.634	0.540	49.3	0.000	5.00	0.600	o	225	
	21.006	37.201	0.280	132.9	0.040	0.00	0.600	o	450	
	* 21.007	63.944	0.270	236.8	0.040	0.00	0.600	o	450	
	* 28.000	24.684	0.120	205.7	0.161	5.00	0.600	o	225	
	* 28.001	35.227	0.180	195.7	0.043	5.00	0.600	o	225	
	* 21.008	19.302	0.170	113.5	0.043	0.00	0.600	o	450	
	* 21.009	42.970	0.140	306.9	0.000	0.00	0.600	o	525	
	29.000	7.262	0.100	72.6	0.343	5.00	0.600	o	450	
	* 29.001	27.748	1.690	16.4	0.000	5.00	0.600	o	150	
	* 30.000	20.005	0.100	200.1	0.630	5.00	0.600	o	450	
	* 30.001	30.526	0.200	152.6	0.000	0.00	0.600	o	225	
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	21.002	SW-LYM 03	6.300	3.350	2.725	6.640	3.225	3.190		1200
	21.003	SW-LYM 04	6.640	3.225	3.115	6.640	3.065	3.275		1200
	25.000	SW-LYM 07	5.370	3.870	1.275	6.140	3.670	2.245		1200
	25.001	SW-LYM 08	6.140	3.670	2.245	6.640	3.140	3.275		1200
	26.000	PBA 01	13.700	12.200	1.275	11.900	10.400	1.275		1200
	26.001	PBA 02	11.900	10.400	1.275	8.700	7.200	1.275		1200
	26.002	PBA 03	8.700	7.200	1.275	7.200	5.620	1.355		1200
	26.003	SW-LYM 05	7.200	5.540	1.360	6.640	4.540	1.800		1200
	21.004	SW-LYM 10	6.640	2.990	3.275	5.900	2.760	2.765		1500
	21.005	SW-LYM11	5.900	2.680	2.770	6.380	2.520	3.410		1350
	* 27.000	ExSB17_Dum Node	6.360	3.700	2.435	6.380	3.160	2.995		1200
	21.006	SW-LYM 12	6.380	2.520	3.410	6.260	2.240	3.570		1350
	* 21.007	SW-FUT-03	6.260	2.240	3.570	5.100	1.970	2.680		1350
	* 28.000	Stub SW18/1	4.300	2.500	1.575	4.680	2.380	2.075		1200
	* 28.001	SW18	4.680	2.380	2.075	5.100	2.200	2.675		1200
	* 21.008	SW19	5.100	1.970	2.680	5.000	1.800	2.750		1350
	* 21.009	SW20	5.000	1.800	2.675	5.000	1.660	2.815		1800
	29.000	Car Park	5.000	3.500	1.050	5.000	3.400	1.150		1200
	* 29.001	Car Park	5.000	3.400	1.450	5.000	1.710	3.140	Hydro-Brake®	1200
	* 30.000	Non Resi	5.300	2.700	2.150	5.300	2.600	2.250		1200
	* 30.001	Stub SW9/1	5.300	2.600	2.475	5.000	2.400	2.375	Hydro-Brake®	1200
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Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands							
Date January 2018 File West Catchment Model_...			Designed by S Foley Checked by							
XP Solutions			Network 2013.1							
Existing Network Details for Storm										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	* 31.000	30.576	1.150	26.6	0.096	5.00	0.600	o	225	
	* 32.000	22.482	0.200	112.4	0.224	5.00	0.600	o	450	
	* 32.001	5.638	0.100	56.4	0.000	5.00	0.600	o	225	
	* 30.002	45.139	0.300	150.5	0.084	0.00	0.600	o	225	
	* 33.000	21.924	0.110	199.3	0.071	5.00	0.600	o	225	
	* 33.001	23.225	0.160	145.2	0.071	5.00	0.600	o	225	
	* 33.002	42.860	0.290	147.8	0.071	5.00	0.600	o	225	
	* 33.003	16.004	0.130	123.1	0.071	5.00	0.600	o	300	
	* 30.003	7.752	0.300	25.8	0.068	0.00	0.600	o	300	
	* 30.004	49.146	0.140	351.0	0.000	0.00	0.600	o	450	
	* 21.010	7.734	0.030	257.8	0.000	0.00	0.600	o	900	
	* 20.001	49.171	0.135	364.2	0.064	0.00	0.600	o	900	
	34.000	5.695	0.100	57.0	0.080	5.00	0.600	o	225	
	* 20.002	34.760	0.085	408.9	0.020	0.00	0.600	o	900	
	* 1.015	51.616	0.130	397.0	0.064	0.00	0.600	o	900	
	* 35.000	34.385	0.230	149.5	0.055	5.00	0.600	o	225	
	* 35.001	26.630	0.180	147.9	0.055	0.00	0.600	o	225	
	* 36.000	30.249	0.200	151.2	0.094	2.00	0.600	o	225	
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	* 31.000	SW08	5.100	3.550	1.325	5.000	2.400	2.375		1200
	* 32.000	Non Resi	5.100	2.700	1.950	5.100	2.500	2.150		1200
	* 32.001	Stub SW9/2	5.100	2.500	2.375	5.000	2.400	2.375	Hydro-Brake®	1200
	* 30.002	SW09	5.000	2.400	2.375	4.640	2.100	2.315		1200
	* 33.000	SW12	4.320	2.790	1.305	4.020	2.680	1.115		1200
	* 33.001	SW13	4.020	2.680	1.115	4.020	2.520	1.275		1200
	* 33.002	SW14	4.020	2.520	1.275	4.600	2.230	2.145		1200
	* 33.003	SW15	4.600	2.230	2.070	4.640	2.100	2.240		1200
	* 30.003	SW16	4.640	2.100	2.240	5.000	1.800	2.900		1200
	* 30.004	SW17	5.000	1.800	2.750	5.000	1.660	2.890		1200
	* 21.010	SW21	5.000	1.660	2.440	4.300	1.630	1.770		1800
	* 20.001	SW22	4.300	1.630	1.770	3.900	1.495	1.505		1800
	34.000	Plots 47-55	4.100	2.600	1.275	3.900	2.500	1.175		1200
	* 20.002	SW23	3.900	1.495	1.505	3.710	1.410	1.400		1800
	* 1.015	SW24	3.710	1.410	1.400	3.600	1.280	1.420		1800
	* 35.000	Plots	3.700	2.370	1.105	3.700	2.140	1.335		1200
	* 35.001	Stub SW25/1	3.700	2.140	1.335	3.600	1.960	1.415		1200
	* 36.000	Stub SW25/2	3.600	2.160	1.215	3.600	1.960	1.415		1200
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Lion House				Littlehampton									
Oriental Road				Overall Surface Network									
Woking GU22 8AR				West of Wetlands									
Date January 2018				Designed by S Foley									
File West Catchment Model_...				Checked by									
XP Solutions				Network 2013.1									
Existing Network Details for Storm													
PN Length Fall Slope I.Area T.E. k HYD DIA													
(m) (m) (1:X) (ha) (mins) (mm) SECT (mm)													
* 1.016 21.220 0.200 106.1 0.030 0.00 0.600 o 525													
PN	US/MH	US/CL	US/IL	US	DS/CL	DS/IL	DS	Ctrl	US/MH				
	Name	(m)	(m)	C.Depth	(m)	(m)	C.Depth		(mm)				
				(m)			(m)						
* 1.016 SW25 3.600 1.200 1.875 1.750 1.000 0.225 Hydro-Brake® 1800													
Surcharged Outfall Details for Storm													
Outfall Outfall C. Level I. Level Min D,L W													
Pipe Number Name (m) (m) I. Level (mm) (mm)													
(m)													
1.016 Outfall B 1.750 1.000 1.000 0 0													
Datum (m) 0.000 Offset (mins) 0													
Time	Depth	Time	Depth	Time	Depth	Time	Depth	Time	Depth	Time	Depth	Time	Depth
(mins)	(m)	(mins)	(m)	(mins)	(m)	(mins)	(m)	(mins)	(m)	(mins)	(m)	(mins)	(m)
1	0.000	44	0.000	87	0.000	130	0.000	173	0.000	216	0.000	259	0.000
2	0.000	45	0.000	88	0.000	131	0.000	174	0.000	217	0.000	260	0.000
3	0.000	46	0.000	89	0.000	132	0.000	175	0.000	218	0.000	261	0.000
4	0.000	47	0.000	90	0.000	133	0.000	176	0.000	219	0.000	262	0.000
5	0.000	48	0.000	91	0.000	134	0.000	177	0.000	220	0.000	263	0.000
6	0.000	49	0.000	92	0.000	135	0.000	178	0.000	221	0.000	264	0.000
7	0.000	50	0.000	93	0.000	136	0.000	179	0.000	222	0.000	265	0.000
8	0.000	51	0.000	94	0.000	137	0.000	180	0.000	223	0.000	266	0.000
9	0.000	52	0.000	95	0.000	138	0.000	181	0.000	224	0.000	267	0.000
10	0.000	53	0.000	96	0.000	139	0.000	182	0.000	225	0.000	268	0.000
11	0.000	54	0.000	97	0.000	140	0.000	183	0.000	226	0.000	269	0.000
12	0.000	55	0.000	98	0.000	141	0.000	184	0.000	227	0.000	270	0.000
13	0.000	56	0.000	99	0.000	142	0.000	185	0.000	228	0.000	271	0.000
14	0.000	57	0.000	100	0.000	143	0.000	186	0.000	229	0.000	272	0.000
15	0.000	58	0.000	101	0.000	144	0.000	187	0.000	230	0.000	273	0.000
16	0.000	59	0.000	102	0.000	145	0.000	188	0.000	231	0.000	274	0.000
17	0.000	60	0.000	103	0.000	146	0.000	189	0.000	232	0.000	275	0.000
18	0.000	61	0.000	104	0.000	147	0.000	190	0.000	233	0.000	276	0.000
19	0.000	62	0.000	105	0.000	148	0.000	191	0.000	234	0.000	277	0.000
20	0.000	63	0.000	106	0.000	149	0.000	192	0.000	235	0.000	278	0.000
21	0.000	64	0.000	107	0.000	150	0.000	193	0.000	236	0.000	279	0.000
22	0.000	65	0.000	108	0.000	151	0.000	194	0.000	237	0.000	280	0.000
23	0.000	66	0.000	109	0.000	152	0.000	195	0.000	238	0.000	281	0.000
24	0.000	67	0.000	110	0.000	153	0.000	196	0.000	239	0.000	282	0.000
25	0.000	68	0.000	111	0.000	154	0.000	197	0.000	240	0.000	283	0.000
26	0.000	69	0.000	112	0.000	155	0.000	198	0.000	241	0.000	284	0.000
27	0.000	70	0.000	113	0.000	156	0.000	199	0.000	242	0.000	285	0.000
28	0.000	71	0.000	114	0.000	157	0.000	200	0.000	243	0.000	286	0.000
29	0.000	72	0.000	115	0.000	158	0.000	201	0.000	244	0.000	287	0.000
30	0.000	73	0.000	116	0.000	159	0.000	202	0.000	245	0.000	288	0.000
31	0.000	74	0.000	117	0.000	160	0.000	203	0.000	246	0.000	289	0.000
32	0.000	75	0.000	118	0.000	161	0.000	204	0.000	247	0.000	290	0.000
33	0.000	76	0.000	119	0.000	162	0.000	205	0.000	248	0.000	291	0.000
34	0.000	77	0.000	120	0.000	163	0.000	206	0.000	249	0.000	292	0.000
35	0.000	78	0.000	121	0.000	164	0.000	207	0.000	250	0.000	293	0.000
36	0.000	79	0.000	122	0.000	165	0.000	208	0.000	251	0.000	294	0.000
37	0.000	80	0.000	123	0.000	166	0.000	209	0.000	252	0.000	295	0.000
38	0.000	81	0.000	124	0.000	167	0.000	210	0.000	253	0.000	296	0.000
39	0.000	82	0.000	125	0.000	168	0.000	211	0.000	254	0.000	297	0.000
40	0.000	83	0.000	126	0.000	169	0.000	212	0.000	255	0.000	298	0.000
41	0.000	84	0.000	127	0.000	170	0.000	213	0.000	256	0.000	299	0.000
42	0.000	85	0.000	128	0.000	171	0.000	214	0.000	257	0.000	300	0.000
43	0.000	86	0.000	129	0.000	172	0.000	215	0.000	258	0.000	301	0.000
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Lion House		Littlehampton							
Oriental Road		Overall Surface Network							
Woking GU22 8AR		West of Wetlands							
Date January 2018		Designed by S Foley							
File West Catchment Model_...		Checked by							
XP Solutions		Network 2013.1							
Online Controls for Storm									
Hydro-Brake® Manhole: Parcel A2_2, DS/PN: 2.001, Volume (m³): 3.0									
Design Head (m) 1.200 Hydro-Brake® Type Md4 Invert Level (m) 5.000									
Design Flow (l/s) 5.0 Diameter (mm) 76									
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	2.3	0.800	4.0	2.000	6.4	4.000	9.0	7.000	11.9
0.200	3.0	1.000	4.5	2.200	6.7	4.500	9.5	7.500	12.3
0.300	2.6	1.200	4.9	2.400	7.0	5.000	10.1	8.000	12.7
0.400	2.9	1.400	5.3	2.600	7.3	5.500	10.6	8.500	13.1
0.500	3.2	1.600	5.7	3.000	7.8	6.000	11.0	9.000	13.5
0.600	3.5	1.800	6.0	3.500	8.4	6.500	11.5	9.500	13.9
Hydro-Brake® Manhole: Parcel B6_2, DS/PN: 3.001, Volume (m³): 3.7									
Design Head (m) 0.800 Hydro-Brake® Type Md4 Invert Level (m) 4.800									
Design Flow (l/s) 5.0 Diameter (mm) 84									
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	2.6	0.800	4.9	2.000	7.8	4.000	11.0	7.000	14.5
0.200	4.0	1.000	5.5	2.200	8.2	4.500	11.7	7.500	15.1
0.300	3.4	1.200	6.0	2.400	8.5	5.000	12.3	8.000	15.6
0.400	3.5	1.400	6.5	2.600	8.9	5.500	12.9	8.500	16.0
0.500	3.9	1.600	7.0	3.000	9.5	6.000	13.5	9.000	16.5
0.600	4.3	1.800	7.4	3.500	10.3	6.500	14.0	9.500	16.9
Hydro-Brake® Manhole: Parcel B1&CH 2, DS/PN: 4.001, Volume (m³): 4.8									
Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 4.135									
Design Flow (l/s) 10.0 Diameter (mm) 113									
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	3.3	0.800	8.9	2.000	14.1	4.000	19.9	7.000	26.3
0.200	8.2	1.000	10.0	2.200	14.8	4.500	21.1	7.500	27.3
0.300	8.0	1.200	10.9	2.400	15.4	5.000	22.2	8.000	28.1
0.400	7.1	1.400	11.8	2.600	16.0	5.500	23.3	8.500	29.0
0.500	7.2	1.600	12.6	3.000	17.2	6.000	24.4	9.000	29.9
0.600	7.8	1.800	13.3	3.500	18.6	6.500	25.4	9.500	30.7
Hydro-Brake® Manhole: Block B_2, DS/PN: 5.001, Volume (m³): 4.1									
Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 3.905									
Design Flow (l/s) 5.0 Diameter (mm) 80									
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	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
Hydro-Brake® Manhole: BovisA_2, DS/PN: 6.001, Volume (m³): 3.9									
Design Head (m) 1.200 Hydro-Brake® Type Md5 SW Only Invert Level (m) 4.000									
Design Flow (l/s) 60.0 Diameter (mm) 293									
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Lion House		Littlehampton							
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File West Catchment Model_...		Checked by							
XP Solutions		Network 2013.1							
Hydro-Brake® Manhole: BovisA_2, DS/PN: 6.001, Volume (m³): 3.9									
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	10.6	0.800	57.7	2.000	73.3	4.000	103.3	7.000	136.7
0.200	27.7	1.000	57.8	2.200	76.7	4.500	109.6	7.500	141.5
0.300	43.3	1.200	59.7	2.400	80.1	5.000	115.5	8.000	146.1
0.400	52.6	1.400	62.7	2.600	83.3	5.500	121.2	8.500	150.6
0.500	56.9	1.600	66.1	3.000	89.5	6.000	126.6	9.000	155.0
0.600	58.3	1.800	69.7	3.500	96.7	6.500	131.7	9.500	159.3
Hydro-Brake® Manhole: BovisB_2, DS/PN: 7.001, Volume (m³): 3.7									
Design Head (m)		1.200	Hydro-Brake® Type		Md5 SW Only	Invert Level (m)		3.225	
Design Flow (l/s)		60.0	Diameter (mm)		293				
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	10.6	0.800	57.7	2.000	73.3	4.000	103.3	7.000	136.7
0.200	27.7	1.000	57.8	2.200	76.7	4.500	109.6	7.500	141.5
0.300	43.3	1.200	59.7	2.400	80.1	5.000	115.5	8.000	146.1
0.400	52.6	1.400	62.7	2.600	83.3	5.500	121.2	8.500	150.6
0.500	56.9	1.600	66.1	3.000	89.5	6.000	126.6	9.000	155.0
0.600	58.3	1.800	69.7	3.500	96.7	6.500	131.7	9.500	159.3
Hydro-Brake® Manhole: Ret Block A, DS/PN: 11.001, Volume (m³): 4.3									
Design Head (m)		1.000	Hydro-Brake® Type		Md4	Invert Level (m)		2.900	
Design Flow (l/s)		5.0	Diameter (mm)		80				
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	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
Hydro-Brake® Manhole: Non resi, DS/PN: 22.001, Volume (m³): 7.7									
Design Head (m)		1.000	Hydro-Brake® Type		Md4	Invert Level (m)		3.720	
Design Flow (l/s)		5.0	Diameter (mm)		80				
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	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
Hydro-Brake® Manhole: As-built SA8, DS/PN: 23.001, Volume (m³): 8.6									
Design Head (m)		2.000	Hydro-Brake® Type		Md4	Invert Level (m)		3.763	
Design Flow (l/s)		34.5	Diameter (mm)		176				
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.2	0.800	22.1	2.000	34.1	4.000	48.3	7.000	63.9
0.200	15.1	1.000	24.2	2.200	35.8	4.500	51.2	7.500	66.1
0.300	24.2	1.200	26.5	2.400	37.4	5.000	54.0	8.000	68.3
0.400	25.7	1.400	28.6	2.600	38.9	5.500	56.6	8.500	70.4
0.500	23.3	1.600	30.5	3.000	41.8	6.000	59.1	9.000	72.4
0.600	21.6	1.800	32.4	3.500	45.2	6.500	61.5	9.500	74.4
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Mayer Brown Ltd				Page 10																																																																																																																																																																																																																																																																																																																																															
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<u>Hydro-Brake® Manhole: SW Stub 02, DS/PN: 24.001, Volume (m³): 8.0</u> Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 3.640 Design Flow (l/s) 5.0 Diameter (mm) 80 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>2.4</td><td>0.800</td><td>4.5</td><td>2.000</td><td>7.1</td><td>4.000</td><td>10.0</td><td>7.000</td><td>13.2</td></tr><tr><td>0.200</td><td>3.5</td><td>1.000</td><td>5.0</td><td>2.200</td><td>7.4</td><td>4.500</td><td>10.6</td><td>7.500</td><td>13.7</td></tr><tr><td>0.300</td><td>3.0</td><td>1.200</td><td>5.5</td><td>2.400</td><td>7.7</td><td>5.000</td><td>11.2</td><td>8.000</td><td>14.1</td></tr><tr><td>0.400</td><td>3.2</td><td>1.400</td><td>5.9</td><td>2.600</td><td>8.0</td><td>5.500</td><td>11.7</td><td>8.500</td><td>14.5</td></tr><tr><td>0.500</td><td>3.5</td><td>1.600</td><td>6.3</td><td>3.000</td><td>8.6</td><td>6.000</td><td>12.2</td><td>9.000</td><td>15.0</td></tr><tr><td>0.600</td><td>3.9</td><td>1.800</td><td>6.7</td><td>3.500</td><td>9.3</td><td>6.500</td><td>12.7</td><td>9.500</td><td>15.4</td></tr></table> <u>Hydro-Brake® Manhole: Car Park, DS/PN: 29.001, Volume (m³): 2.8</u> Design Head (m) 1.500 Hydro-Brake® Type Md4 Invert Level (m) 3.400 Design Flow (l/s) 5.0 Diameter (mm) 72 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>2.1</td><td>0.800</td><td>3.6</td><td>2.000</td><td>5.7</td><td>4.000</td><td>8.1</td><td>7.000</td><td>10.7</td></tr><tr><td>0.200</td><td>2.5</td><td>1.000</td><td>4.0</td><td>2.200</td><td>6.0</td><td>4.500</td><td>8.6</td><td>7.500</td><td>11.1</td></tr><tr><td>0.300</td><td>2.3</td><td>1.200</td><td>4.4</td><td>2.400</td><td>6.3</td><td>5.000</td><td>9.0</td><td>8.000</td><td>11.4</td></tr><tr><td>0.400</td><td>2.6</td><td>1.400</td><td>4.8</td><td>2.600</td><td>6.5</td><td>5.500</td><td>9.5</td><td>8.500</td><td>11.8</td></tr><tr><td>0.500</td><td>2.9</td><td>1.600</td><td>5.1</td><td>3.000</td><td>7.0</td><td>6.000</td><td>9.9</td><td>9.000</td><td>12.1</td></tr><tr><td>0.600</td><td>3.1</td><td>1.800</td><td>5.4</td><td>3.500</td><td>7.6</td><td>6.500</td><td>10.3</td><td>9.500</td><td>12.5</td></tr></table> <u>Hydro-Brake® Manhole: Stub SW9/1, DS/PN: 30.001, Volume (m³): 6.0</u> Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 2.600 Design Flow (l/s) 5.0 Diameter (mm) 80 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>2.4</td><td>0.800</td><td>4.5</td><td>2.000</td><td>7.1</td><td>4.000</td><td>10.0</td><td>7.000</td><td>13.2</td></tr><tr><td>0.200</td><td>3.5</td><td>1.000</td><td>5.0</td><td>2.200</td><td>7.4</td><td>4.500</td><td>10.6</td><td>7.500</td><td>13.7</td></tr><tr><td>0.300</td><td>3.0</td><td>1.200</td><td>5.5</td><td>2.400</td><td>7.7</td><td>5.000</td><td>11.2</td><td>8.000</td><td>14.1</td></tr><tr><td>0.400</td><td>3.2</td><td>1.400</td><td>5.9</td><td>2.600</td><td>8.0</td><td>5.500</td><td>11.7</td><td>8.500</td><td>14.5</td></tr><tr><td>0.500</td><td>3.5</td><td>1.600</td><td>6.3</td><td>3.000</td><td>8.6</td><td>6.000</td><td>12.2</td><td>9.000</td><td>15.0</td></tr><tr><td>0.600</td><td>3.9</td><td>1.800</td><td>6.7</td><td>3.500</td><td>9.3</td><td>6.500</td><td>12.7</td><td>9.500</td><td>15.4</td></tr></table> <u>Hydro-Brake® Manhole: Stub SW9/2, DS/PN: 32.001, Volume (m³): 6.3</u> Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 2.500 Design Flow (l/s) 5.0 Diameter (mm) 80 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>2.4</td><td>0.800</td><td>4.5</td><td>2.000</td><td>7.1</td><td>4.000</td><td>10.0</td><td>7.000</td><td>13.2</td></tr><tr><td>0.200</td><td>3.5</td><td>1.000</td><td>5.0</td><td>2.200</td><td>7.4</td><td>4.500</td><td>10.6</td><td>7.500</td><td>13.7</td></tr><tr><td>0.300</td><td>3.0</td><td>1.200</td><td>5.5</td><td>2.400</td><td>7.7</td><td>5.000</td><td>11.2</td><td>8.000</td><td>14.1</td></tr><tr><td>0.400</td><td>3.2</td><td>1.400</td><td>5.9</td><td>2.600</td><td>8.0</td><td>5.500</td><td>11.7</td><td>8.500</td><td>14.5</td></tr><tr><td>0.500</td><td>3.5</td><td>1.600</td><td>6.3</td><td>3.000</td><td>8.6</td><td>6.000</td><td>12.2</td><td>9.000</td><td>15.0</td></tr><tr><td>0.600</td><td>3.9</td><td>1.800</td><td>6.7</td><td>3.500</td><td>9.3</td><td>6.500</td><td>12.7</td><td>9.500</td><td>15.4</td></tr></table> <u>Hydro-Brake® Manhole: SW25, DS/PN: 1.016, Volume (m³): 39.9</u> Design Head (m) 2.000 Hydro-Brake® Type Md10 Invert Level (m) 1.200 Design Flow (l/s) 280.0 Diameter (mm) 376 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>13.7</td><td>0.500</td><td>107.9</td><td>1.200</td><td>216.0</td><td>2.000</td><td>278.9</td><td>3.000</td><td>341.6</td></tr><tr><td>0.200</td><td>34.9</td><td>0.600</td><td>131.0</td><td>1.400</td><td>233.4</td><td>2.200</td><td>292.5</td><td>3.500</td><td>369.0</td></tr><tr><td>0.300</td><td>58.8</td><td>0.800</td><td>170.5</td><td>1.600</td><td>249.5</td><td>2.400</td><td>305.5</td><td>4.000</td><td>394.4</td></tr><tr><td>0.400</td><td>83.5</td><td>1.000</td><td>197.2</td><td>1.800</td><td>264.6</td><td>2.600</td><td>318.0</td><td>4.500</td><td>418.4</td></tr></table>										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	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2	0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7	0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1	0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5	0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0	0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4	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	2.1	0.800	3.6	2.000	5.7	4.000	8.1	7.000	10.7	0.200	2.5	1.000	4.0	2.200	6.0	4.500	8.6	7.500	11.1	0.300	2.3	1.200	4.4	2.400	6.3	5.000	9.0	8.000	11.4	0.400	2.6	1.400	4.8	2.600	6.5	5.500	9.5	8.500	11.8	0.500	2.9	1.600	5.1	3.000	7.0	6.000	9.9	9.000	12.1	0.600	3.1	1.800	5.4	3.500	7.6	6.500	10.3	9.500	12.5	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	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2	0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7	0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1	0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5	0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0	0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4	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	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2	0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7	0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1	0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5	0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0	0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4	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	13.7	0.500	107.9	1.200	216.0	2.000	278.9	3.000	341.6	0.200	34.9	0.600	131.0	1.400	233.4	2.200	292.5	3.500	369.0	0.300	58.8	0.800	170.5	1.600	249.5	2.400	305.5	4.000	394.4	0.400	83.5	1.000	197.2	1.800	264.6	2.600	318.0	4.500	418.4
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Date January 2018	Designed by S Foley								
File West Catchment Model_...	Checked by								
XP Solutions	Network 2013.1								
<u>Hydro-Brake® Manhole: SW25, DS/PN: 1.016, Volume (m³): 39.9</u>									
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)
5.000	441.0	6.000	483.1	7.000	521.8	8.000	557.8	9.000	591.7
5.500	462.5	6.500	502.8	7.500	540.1	8.500	575.0	9.500	607.9

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Lion House Oriental Road Woking GU22 8AR		Littlehampton Overall Surface Network West of Wetlands						
Date January 2018		Designed by S Foley						
File West Catchment Model_...		Checked by						
XP Solutions		Network 2013.1						
Storage Structures for Storm								
Cellular Storage Manhole: Parcel A2_1, DS/PN: 2.000								
Invert Level (m)5.200Safety Factor2.0 Infiltration Coefficient Base (m/hr)0.00000Porosity0.95 Infiltration Coefficient Side (m/hr)0.00000								
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	402.1	349.7	1.000	402.2	424.5	1.100	0.0	424.5
Cellular Storage Manhole: Parcel B6_1, DS/PN: 3.000								
Invert Level (m)5.000Safety Factor2.0 Infiltration Coefficient Base (m/hr)0.00000Porosity0.95 Infiltration Coefficient Side (m/hr)0.00000								
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	92.0	80.0	1.000	92.0	128.0	1.100	0.0	128.0
Cellular Storage Manhole: Parcel B1&CH_1, DS/PN: 4.000								
Invert Level (m)4.200Safety Factor2.0 Infiltration Coefficient Base (m/hr)0.00000Porosity0.95 Infiltration Coefficient Side (m/hr)0.00000								
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	345.0	300.0	1.000	345.0	380.0	1.100	0.0	380.0
Cellular Storage Manhole: Block B_1, DS/PN: 5.000								
Invert Level (m)4.500Safety Factor2.0 Infiltration Coefficient Base (m/hr)0.00000Porosity0.95 Infiltration Coefficient Side (m/hr)0.00000								
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	310.5	270.0	1.000	310.5	344.0	1.100	0.0	344.0
Cellular Storage Manhole: BovisA_1, DS/PN: 6.000								
Invert Level (m)4.100Safety Factor2.0 Infiltration Coefficient Base (m/hr)0.00000Porosity0.95 Infiltration Coefficient Side (m/hr)0.00000								
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	258.8	225.0	1.200	258.8	297.0	1.300	0.0	297.0
Cellular Storage Manhole: BovisB_1, DS/PN: 7.000								
Invert Level (m)3.400Safety Factor2.0 Infiltration Coefficient Base (m/hr)0.00000Porosity0.95 Infiltration Coefficient Side (m/hr)0.00000								
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	258.8	225.0	1.200	258.8	297.0	1.300	0.0	297.0
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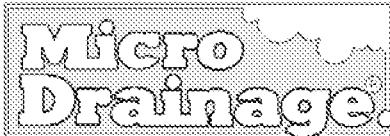
Mayer Brown Ltd		Page 14																		
Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands																			
Date January 2018 File West Catchment Model_...	Designed by S Foley Checked by																			
XP Solutions	Network 2013.1																			
<u>Cellular Storage Manhole: Ret Block A, DS/PN: 11.000</u> Invert Level (m) 3.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>517.5</td><td>450.0</td><td>1.000</td><td>517.5</td><td>560.0</td><td>1.100</td><td>0.0</td><td>560.0</td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	517.5	450.0	1.000	517.5	560.0	1.100	0.0	560.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)												
0.000	517.5	450.0	1.000	517.5	560.0	1.100	0.0	560.0												
<u>Cellular Storage Manhole: Non resi, DS/PN: 22.000</u> Invert Level (m) 4.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>414.0</td><td>360.0</td><td>1.000</td><td>414.0</td><td>452.0</td><td>1.100</td><td>0.0</td><td>452.0</td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	414.0	360.0	1.000	414.0	452.0	1.100	0.0	452.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)												
0.000	414.0	360.0	1.000	414.0	452.0	1.100	0.0	452.0												
<u>Cellular Storage Manhole: Parcel A1, DS/PN: 23.000</u> Invert Level (m) 4.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>575.0</td><td>500.0</td><td>1.000</td><td>575.0</td><td>590.0</td><td>1.100</td><td>0.0</td><td>590.0</td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	575.0	500.0	1.000	575.0	590.0	1.100	0.0	590.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)												
0.000	575.0	500.0	1.000	575.0	590.0	1.100	0.0	590.0												
<u>Cellular Storage Manhole: Non Resi, DS/PN: 24.000</u> Invert Level (m) 4.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>506.0</td><td>400.0</td><td>1.000</td><td>506.0</td><td>500.0</td><td>1.100</td><td>0.0</td><td>500.0</td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	506.0	400.0	1.000	506.0	500.0	1.100	0.0	500.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)												
0.000	506.0	400.0	1.000	506.0	500.0	1.100	0.0	500.0												
<u>Porous Car Park Manhole: Car Park, DS/PN: 29.000</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 50.0 Membrane Percolation (mm/hr) 1000 Length (m) 50.0 Max Percolation (l/s) 694.4 Slope (1:X) 0.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 4.500 Cap Volume Depth (m) 0.000																				
<u>Cellular Storage Manhole: Non Resi, DS/PN: 30.000</u> Invert Level (m) 2.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>506.0</td><td>400.0</td><td>1.000</td><td>506.0</td><td>500.0</td><td>1.100</td><td>0.0</td><td>500.0</td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	506.0	400.0	1.000	506.0	500.0	1.100	0.0	500.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)												
0.000	506.0	400.0	1.000	506.0	500.0	1.100	0.0	500.0												
<u>Cellular Storage Manhole: Non Resi, DS/PN: 32.000</u> Invert Level (m) 2.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000																				
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Mayer Brown Ltd			Page 15																																						
Lion House		Littlehampton																																							
Oriental Road		Overall Surface Network																																							
Woking GU22 8AR		West of Wetlands																																							
Date January 2018		Designed by S Foley																																							
File West Catchment Model_...		Checked by																																							
XP Solutions		Network 2013.1																																							
<u>Cellular Storage Manhole: Non Resi, DS/PN: 32.000</u> <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>126.5</td><td>110.0</td><td>1.000</td><td>126.5</td><td>152.0</td><td>1.100</td><td>0.0</td><td>152.0</td></tr></table> <u>Cellular Storage Manhole: SW21, DS/PN: 21.010</u> Invert Level (m) 1.710 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>1050.0</td><td>1050.0</td><td>1.500</td><td>1050.0</td><td>1263.0</td><td>1.600</td><td>0.0</td><td>1263.0</td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	126.5	110.0	1.000	126.5	152.0	1.100	0.0	152.0	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	1050.0	1050.0	1.500	1050.0	1263.0	1.600	0.0	1263.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																	
0.000	126.5	110.0	1.000	126.5	152.0	1.100	0.0	152.0																																	
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																	
0.000	1050.0	1050.0	1.500	1050.0	1263.0	1.600	0.0	1263.0																																	
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APPENDIX I: Condition 10, Windes -- 1in100yr Simulation Results

Mayer Brown Ltd			Page 1					
Lion House		Littlehampton						
Oriental Road		Overall Surface Network						
Woking GU22 8AR		West of Wetlands						
Date January 2018		Designed by S Foley						
File West Catchment Model_...		Checked by						
XP Solutions		Network 2013.1						
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		2			
Number of Online Controls		14	Number of Storage Structures		14			
				Number of Time/Area Diagrams		0		
				Number of Real Time Controls		0		
Synthetic Rainfall Details								
Rainfall Model		FEH		D3 (1km)	0.407			
Site Location		GB 502850 104400 TQ 02850 04400		E (1km)	0.314			
C (1km)		-0.027		F (1km)	2.329			
D1 (1km)		0.393		Cv (Summer)	0.750			
D2 (1km)		0.274		Cv (Winter)	0.840			
Margin for Flood Risk Warning (mm)		300.0						
Analysis Timestep		2.5 Second Increment (Extended)						
DTS Status		ON						
DVD Status		ON						
Inertia Status		ON						
Profile(s)		Winter						
Duration(s) (mins)		120, 240, 360						
Return Period(s) (years)		100						
Climate Change (%)		30						
PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	120 Winter	100	+30%					
1.001	120 Winter	100	+30%	100/120 Winter				
2.000	360 Winter	100	+30%	100/120 Winter				
2.001	360 Winter	100	+30%	100/120 Winter				
1.002	120 Winter	100	+30%	100/120 Winter				
3.000	120 Winter	100	+30%	100/120 Winter				
3.001	120 Winter	100	+30%	100/120 Winter				
1.003	120 Winter	100	+30%	100/120 Winter				
1.004	120 Winter	100	+30%	100/120 Winter				
4.000	120 Winter	100	+30%	100/120 Winter				
4.001	240 Winter	100	+30%	100/120 Winter				
1.005	120 Winter	100	+30%	100/120 Winter				
1.006	120 Winter	100	+30%	100/120 Winter				
5.000	360 Winter	100	+30%	100/120 Winter				
5.001	360 Winter	100	+30%	100/120 Winter				
5.002	120 Winter	100	+30%	100/120 Winter		100/120 Winter	3	
1.007	120 Winter	100	+30%	100/120 Winter				
6.000	120 Winter	100	+30%	100/120 Winter				
6.001	120 Winter	100	+30%	100/120 Winter				
1.008	120 Winter	100	+30%	100/120 Winter				
7.000	120 Winter	100	+30%	100/120 Winter				
7.001	120 Winter	100	+30%	100/120 Winter				
1.009	120 Winter	100	+30%	100/120 Winter				
8.000	120 Winter	100	+30%	100/120 Winter				
8.001	120 Winter	100	+30%	100/120 Winter		100/120 Winter	3	
9.000	120 Winter	100	+30%	100/120 Winter				
9.001	120 Winter	100	+30%	100/120 Winter				
10.000	120 Winter	100	+30%	100/120 Winter				
8.002	120 Winter	100	+30%	100/120 Winter				
1.010	120 Winter	100	+30%	100/120 Winter				
11.000	360 Winter	100	+30%	100/120 Winter				
11.001	360 Winter	100	+30%	100/120 Winter				
12.000	120 Winter	100	+30%	100/120 Winter				
1.011	120 Winter	100	+30%	100/120 Winter				
1.012	120 Winter	100	+30%	100/120 Winter				
13.000	120 Winter	100	+30%	100/120 Winter				
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Lion House		Littlehampton							
Oriental Road		Overall Surface Network							
Woking GU22 8AR		West of Wetlands							
Date January 2018		Designed by S Foley							
File West Catchment Model_...		Checked by							
XP Solutions		Network 2013.1							
Summary of Critical Results by Maximum Level (Rank 1) for Storm									
PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.	
14.000	120 Winter	100	+30%	100/120 Winter					
15.000	120 Winter	100	+30%	100/120 Winter					
1.012	120 Winter	100	+30%	100/120 Winter					
16.000	120 Winter	100	+30%	100/120 Winter					
1.014	120 Winter	100	+30%	100/120 Winter					
17.000	120 Winter	100	+30%	100/120 Winter					
18.000	120 Winter	100	+30%	100/120 Winter					
19.000	120 Winter	100	+30%	100/120 Winter					
17.001	120 Winter	100	+30%	100/120 Winter					
20.000	240 Winter	100	+30%	100/240 Winter					
21.000	120 Winter	100	+30%	100/120 Winter					
22.000	360 Winter	100	+30%	100/120 Winter					
22.001	360 Winter	100	+30%	100/120 Winter	100/360 Winter				
21.001	120 Winter	100	+30%	100/120 Winter					
23.000	120 Winter	100	+30%	100/120 Winter					
23.001	120 Winter	100	+30%	100/120 Winter					
24.000	360 Winter	100	+30%	100/120 Winter					
24.001	360 Winter	100	+30%	100/120 Winter					
23.002	240 Winter	100	+30%	100/120 Winter					
21.002	240 Winter	100	+30%	100/120 Winter					
21.003	240 Winter	100	+30%	100/120 Winter					
25.000	240 Winter	100	+30%	100/120 Winter					
25.001	240 Winter	100	+30%	100/120 Winter					
26.000	120 Winter	100	+30%						
26.001	120 Winter	100	+30%						
26.002	120 Winter	100	+30%						
26.003	120 Winter	100	+30%						
21.004	240 Winter	100	+30%	100/120 Winter					
21.005	240 Winter	100	+30%	100/120 Winter					
27.000	120 Winter	100	+30%	100/120 Winter					
21.006	240 Winter	100	+30%	100/120 Winter					
21.007	240 Winter	100	+30%	100/120 Winter					
28.000	240 Winter	100	+30%	100/120 Winter					
28.001	240 Winter	100	+30%	100/120 Winter					
21.008	240 Winter	100	+30%	100/120 Winter					
21.009	240 Winter	100	+30%	100/120 Winter					
29.000	360 Winter	100	+30%	100/120 Winter					
29.001	360 Winter	100	+30%	100/120 Winter					
30.000	360 Winter	100	+30%	100/120 Winter					
30.001	360 Winter	100	+30%	100/120 Winter					
31.000	120 Winter	100	+30%						
32.000	240 Winter	100	+30%	100/120 Winter					
32.001	240 Winter	100	+30%	100/120 Winter					
30.002	240 Winter	100	+30%	100/120 Winter					
33.000	240 Winter	100	+30%	100/120 Winter					
33.001	240 Winter	100	+30%	100/120 Winter					
33.002	240 Winter	100	+30%	100/120 Winter					
33.003	240 Winter	100	+30%	100/120 Winter					
30.003	240 Winter	100	+30%	100/120 Winter					
30.004	240 Winter	100	+30%	100/120 Winter					
21.010	240 Winter	100	+30%	100/120 Winter					
20.001	240 Winter	100	+30%	100/120 Winter					
34.000	120 Winter	100	+30%	100/120 Winter					
20.002	120 Winter	100	+30%	100/120 Winter					
1.015	120 Winter	100	+30%	100/120 Winter					
35.000	120 Winter	100	+30%	100/120 Winter					
35.001	120 Winter	100	+30%	100/120 Winter					
35.002	120 Winter	100	+30%	100/120 Winter					
1.016	120 Winter	100	+30%	100/120 Winter					

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Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands					
Date January 2018			Designed by S Foley					
File West Catchment Model_...			Checked by					
XP Solutions			Network 2013.1					
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
2.000	Parcel A2_1	6.059	0.559	0.000	0.04	0.0	5.0	SURCHARGED
2.001	Parcel A2_2	6.068	0.918	0.000	0.35	0.0	4.6	SURCHARGED
1.002	TL_SW03	5.329	0.273	0.000	0.50	0.0	32.8	SURCHARGED
3.000	Parcel B6_1	5.905	0.605	0.000	0.06	0.0	6.3	SURCHARGED
3.001	Parcel B6_2	5.908	0.958	0.000	0.45	0.0	5.8	SURCHARGED
1.003	TL_SW04	5.253	0.318	0.000	0.59	0.0	40.7	SURCHARGED
1.004	TL_SW05	5.163	0.528	0.000	0.87	0.0	62.7	SURCHARGED
4.000	Parcel B1&CH_1	4.880	0.380	0.000	0.19	0.0	10.6	SURCHARGED
4.001	Parcel B1&CH 2	4.998	0.713	0.000	0.62	0.0	8.3	SURCHARGED
1.005	Ex. SB10	4.851	0.641	0.000	1.00	0.0	68.1	SURCHARGED
1.006	Ex. SB9	4.739	0.669	0.000	1.13	0.0	80.3	SURCHARGED
5.000	Block B_1	5.186	0.386	0.000	0.04	0.0	6.2	SURCHARGED
5.001	Block B_2	5.192	1.137	0.000	0.41	0.0	5.6	SURCHARGED
5.002	Ex. SB17	4.331	0.381	0.000	0.17	59.3	11.0	SURCHARGED
1.007	Ex. SB8	4.435	0.635	0.000	1.11	0.0	69.2	SURCHARGED
6.000	BovisA_1	4.856	0.381	0.000	0.50	0.0	59.2	SURCHARGED
6.001	BovisA_2	5.286	0.911	0.000	0.16	0.0	58.1	SURCHARGED
1.008	Ex SB7	4.272	0.772	0.000	0.88	0.0	120.4	SURCHARGED
7.000	BovisB_1	4.272	0.497	0.000	0.34	0.0	53.1	SURCHARGED
7.001	BovisB_2	4.252	0.652	0.000	0.21	0.0	52.8	SURCHARGED
1.009	Dummy Node	4.040	0.865	0.000	1.23	0.0	158.3	SURCHARGED
8.000	Plots 123 - 126	3.850	0.380	0.000	0.71	0.0	10.8	FLOOD RISK
8.001	SW01, G01&G02	3.769	0.504	0.000	0.29	50.4	10.0	FLOOD RISK
9.000	Plots 117 - 122	4.046	0.731	0.000	0.67	0.0	10.9	FLOOD RISK
9.001	Stub SW02/2	4.037	0.944	0.000	0.69	0.0	20.6	FLOOD RISK
10.000	Plots 101-116	4.070	0.845	0.000	0.66	0.0	29.3	FLOOD RISK
8.002	SW02	4.021	0.966	0.000	1.43	0.0	33.6	SURCHARGED
1.010	Ex SB6	4.014	0.939	0.000	0.92	0.0	174.0	SURCHARGED
11.000	Ret Block A	3.781	0.481	0.000	0.27	0.0	13.5	SURCHARGED
11.001	Ret Block A	4.046	0.996	0.000	0.26	0.0	4.7	SURCHARGED
12.000	Plots 95-100	3.922	0.697	0.000	0.35	0.0	16.0	SURCHARGED
1.011	SW03	3.918	0.998	0.000	0.84	0.0	185.5	SURCHARGED
1.012	SW04	3.812	1.072	0.000	0.90	0.0	189.4	SURCHARGED
13.000	SW-FUT-01	3.753	0.893	0.000	0.80	0.0	53.8	FLOOD RISK
14.000	Plots 80-86	3.708	0.933	0.000	0.39	0.0	24.8	FLOOD RISK
15.000	Plots 87-94	3.708	0.933	0.000	0.40	0.0	28.0	FLOOD RISK
1.013	SW05	3.710	1.110	0.000	1.53	0.0	264.3	SURCHARGED
16.000	C2 Resiblock A	3.646	1.146	0.000	0.54	0.0	35.7	SURCHARGED
1.014	SW06	3.694	1.154	0.000	1.79	0.0	316.9	FLOOD RISK
17.000	SW-FUT-02	3.413	0.793	0.000	0.57	0.0	38.0	SURCHARGED
18.000	Plots 60-73	3.449	0.624	0.000	0.44	0.0	23.9	FLOOD RISK
19.000	Plots 74-78	3.453	0.628	0.000	0.52	0.0	28.3	FLOOD RISK
17.001	SW07	3.431	1.031	0.000	1.35	0.0	85.2	FLOOD RISK
20.000	Plots 39-46	3.383	0.068	0.000	0.08	0.0	9.7	SURCHARGED
21.000	SW-LYM 01	4.407	0.442	0.000	0.33	0.0	9.9	SURCHARGED
22.000	Non resi	4.883	0.433	0.000	0.08	0.0	18.4	SURCHARGED
22.001	Non resi	5.176	1.231	0.001	0.14	0.0	4.8	FLOOD
21.001	SW-LYM 02	4.388	0.523	0.000	0.56	0.0	19.1	SURCHARGED
23.000	Parcel A1	4.463	0.013	0.000	0.12	0.0	26.9	SURCHARGED
23.001	As-built SA8	4.473	0.485	0.000	0.60	0.0	23.8	SURCHARGED
24.000	Non Resi	4.825	0.375	0.000	0.04	0.0	10.8	SURCHARGED
24.001	SW Stub 02	5.125	1.260	0.000	0.13	0.0	4.7	SURCHARGED
23.002	SW-LYM 03/1	4.334	0.539	0.000	0.68	0.0	29.2	SURCHARGED
21.002	SW-LYM 03	4.320	0.745	0.000	1.44	0.0	48.0	SURCHARGED
21.003	SW-LYM 04	4.287	0.762	0.000	0.83	0.0	51.8	SURCHARGED
25.000	SW-LYM 07	4.288	0.193	0.000	0.16	0.0	6.9	SURCHARGED
25.001	SW-LYM 08	4.284	0.389	0.000	0.32	0.0	19.3	SURCHARGED
26.000	PBA 01	12.279	-0.146	0.000	0.27	0.0	21.7	OK
26.001	PBA 02	10.498	-0.127	0.000	0.40	0.0	43.2	OK
26.002	PBA 03	7.356	-0.069	0.000	0.82	0.0	64.8	OK
26.003	SW-LYM 05	5.668	-0.172	0.000	0.38	0.0	69.4	OK
21.004	SW-LYM 10	4.258	0.893	0.000	0.88	0.0	114.0	SURCHARGED
21.005	SW-LYM11	4.191	1.061	0.000	0.74	0.0	135.7	SURCHARGED
27.000	ExSB17_Dum Node	4.160	0.235	0.000	0.85	0.0	58.4	SURCHARGED
21.006	SW-LYM 12	4.154	1.184	0.000	0.73	0.0	181.5	SURCHARGED
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Lion House Oriental Road Woking GU22 8AR		Littlehampton Overall Surface Network West of Wetlands						
Date January 2018		Designed by S Foley						
File West Catchment Model_...		Checked by						
XP Solutions		Network 2013.1						
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
21.007	SW-FUT-03	4.041	1.351	0.000	0.96	0.0	185.3	SURCHARGED
28.000	Stub SW18/1	3.747	1.022	0.000	0.55	0.0	18.4	SURCHARGED
28.001	SW18	3.884	1.279	0.000	0.66	0.0	22.9	SURCHARGED
21.008	SW19	3.924	1.504	0.000	0.91	0.0	211.8	SURCHARGED
21.009	SW20	3.696	1.371	0.000	0.87	0.0	210.1	SURCHARGED
29.000	Car Park	4.719	0.769	0.000	0.03	0.0	5.7	FLOOD RISK
29.001	Car Park	4.758	1.208	0.000	0.11	0.0	4.6	FLOOD RISK
30.000	Non Resi	3.602	0.452	0.000	0.05	0.0	9.2	SURCHARGED
30.001	Stub SW9/1	3.809	0.984	0.000	0.11	0.0	4.4	SURCHARGED
31.000	SW08	3.618	-0.157	0.000	0.20	0.0	19.1	OK
32.000	Non Resi	3.606	0.456	0.000	0.02	0.0	5.0	SURCHARGED
32.001	Stub SW9/2	3.626	0.901	0.000	0.09	0.0	4.2	SURCHARGED
30.002	SW09	3.587	0.962	0.000	0.67	0.0	26.9	SURCHARGED
33.000	SW12	3.495	0.480	0.000	0.23	0.0	7.9	SURCHARGED
33.001	SW13	3.536	0.631	0.000	0.39	0.0	15.4	SURCHARGED
33.002	SW14	3.595	0.850	0.000	0.57	0.0	23.0	SURCHARGED
33.003	SW15	3.629	1.099	0.000	0.36	0.0	30.8	SURCHARGED
30.003	SW16	3.529	1.129	0.000	0.47	0.0	64.5	SURCHARGED
30.004	SW17	3.456	1.206	0.000	0.41	0.0	63.7	SURCHARGED
21.010	SW21	3.435	0.875	0.000	0.34	0.0	204.1	SURCHARGED
20.001	SW22	3.354	0.824	0.000	0.19	0.0	162.9	SURCHARGED
34.000	Plots 47-55	3.440	0.615	0.000	0.70	0.0	31.0	SURCHARGED
20.002	SW23	3.387	0.992	0.000	0.23	0.0	170.4	SURCHARGED
1.015	SW24	3.482	1.172	0.000	0.40	0.0	328.1	FLOOD RISK
35.000	Plots	3.342	0.747	0.000	0.60	0.0	23.8	SURCHARGED
38.001	Stub SW25/1	3.426	1.041	0.000	1.03	0.0	40.5	SURCHARGED
38.006	Stub SW25/2	3.426	1.041	0.000	1.03	0.0	40.5	FLOOD RISK
1.016	SW25	3.461	1.736	0.000	0.82	0.0	281.7	FLOOD RISK
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APPENDIX J: Condition 10, Windes -- 1in30yr & 1in1yr Simulation Results

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Lion House	Littlehampton		
Oriental Road	Overall Surface Network		
Woking GU22 8AR	West of Wetlands		
Date January 2018	Designed by S Foley		
File West Catchment Model_...	Checked by		
XP Solutions	Network 2013.1		
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	2
Number of Online Controls	14	Number of Storage Structures	14
Number of Time/Area Diagrams	0	Number of Real Time Controls	0
Synthetic Rainfall Details			
Rainfall Model	FEH	D3 (1km)	0.407
Site Location	GB 502850 104400 TQ 02850 04400	E (1km)	0.314
C (1km)	-0.027	F (1km)	2.329
D1 (1km)	0.393	Cv (Summer)	0.750
D2 (1km)	0.274	Cv (Winter)	0.840
Margin for Flood Risk Warning (mm)			300.0
Analysis Timestep	2.5	Second Increment (Extended)	
DTS Status			ON
DVD Status			ON
Inertia Status			ON
Profile(s)		Winter	
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480		
Return Period(s) (years)		30	
Climate Change (%)		0	
PN	Storm	Return Period	Climate Change
		First X Surchage	First Y Flood
		First Z Overflow	O/F Act. Lvl Exc.
1.000	15 Winter	30	0%
1.001	15 Winter	30	0%
2.000	480 Winter	30	0%
2.001	480 Winter	30	0%
1.002	15 Winter	30	0%
3.000	120 Winter	30	0%
3.001	120 Winter	30	0%
1.003	15 Winter	30	0%
1.004	15 Winter	30	0%
4.000	240 Winter	30	0%
4.001	240 Winter	30	0%
1.005	15 Winter	30	0%
1.006	15 Winter	30	0%
5.000	240 Winter	30	0%
5.001	240 Winter	30	0%
5.002	15 Winter	30	0%
1.007	15 Winter	30	0%
6.000	30 Winter	30	0%
6.001	30 Winter	30	0%
1.008	30 Winter	30	0%
7.000	30 Winter	30	0%
7.001	30 Winter	30	0%
1.009	30 Winter	30	0%
8.000	15 Winter	30	0%
8.001	15 Winter	30	0%
9.000	15 Winter	30	0%
9.001	15 Winter	30	0%
10.000	15 Winter	30	0%
8.002	15 Winter	30	0%
1.010	30 Winter	30	0%
11.000	480 Winter	30	0%
11.001	480 Winter	30	0%
12.000	30 Winter	30	0%
1.011	30 Winter	30	0%
1.012	30 Winter	30	0%
13.000	15 Winter	30	0%

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Lion House		Littlehampton						
Oriental Road		Overall Surface Network						
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Date January 2018		Designed by S Foley						
File West Catchment Model_...		Checked by						
XP Solutions		Network 2013.1						
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
14.000	30 Winter	30	0%	30/15 Winter				
15.000	30 Winter	30	0%	30/15 Winter				
1.013	30 Winter	30	0%	30/15 Winter				
16.000	30 Winter	30	0%	30/15 Winter				
1.014	30 Winter	30	0%	30/15 Winter				
17.000	15 Winter	30	0%	30/15 Winter				
18.000	15 Winter	30	0%					
19.000	15 Winter	30	0%					
17.001	15 Winter	30	0%	30/15 Winter				
20.000	15 Winter	30	0%					
21.000	15 Winter	30	0%	30/15 Winter				
22.000	480 Winter	30	0%					
22.001	480 Winter	30	0%	30/15 Winter				
21.001	15 Winter	30	0%	30/15 Winter				
23.000	60 Winter	30	0%					
23.001	30 Winter	30	0%	30/15 Winter				
24.000	480 Winter	30	0%					
24.001	480 Winter	30	0%	30/15 Winter				
23.002	15 Winter	30	0%	30/15 Winter				
21.002	15 Winter	30	0%	30/15 Winter				
21.003	15 Winter	30	0%	30/15 Winter				
25.000	15 Winter	30	0%	30/15 Winter				
25.001	15 Winter	30	0%	30/15 Winter				
26.000	15 Winter	30	0%					
26.001	15 Winter	30	0%					
26.002	15 Winter	30	0%	30/15 Winter				
26.003	15 Winter	30	0%					
21.004	15 Winter	30	0%	30/15 Winter				
21.005	15 Winter	30	0%	30/15 Winter				
27.000	15 Winter	30	0%	30/15 Winter				
21.006	15 Winter	30	0%	30/15 Winter				
21.007	15 Winter	30	0%	30/15 Winter				
28.000	15 Winter	30	0%	30/15 Winter				
28.001	15 Winter	30	0%	30/15 Winter				
21.008	240 Winter	30	0%	30/15 Winter				
21.009	240 Winter	30	0%	30/15 Winter				
29.000	240 Winter	30	0%	30/15 Winter				
29.001	15 Winter	30	0%	30/15 Winter				
30.000	480 Winter	30	0%					
30.001	480 Winter	30	0%	30/15 Winter				
31.000	15 Winter	30	0%					
32.000	120 Winter	30	0%					
32.001	120 Winter	30	0%	30/15 Winter				
30.002	15 Winter	30	0%	30/15 Winter				
33.000	15 Winter	30	0%	30/15 Winter				
33.001	15 Winter	30	0%	30/15 Winter				
33.002	15 Winter	30	0%	30/15 Winter				
33.003	15 Winter	30	0%	30/15 Winter				
30.003	240 Winter	30	0%	30/15 Winter				
30.004	240 Winter	30	0%	30/30 Winter				
21.010	240 Winter	30	0%					
20.001	240 Winter	30	0%					
34.000	15 Winter	30	0%					
20.002	120 Winter	30	0%	30/15 Winter				
1.015	30 Winter	30	0%	30/15 Winter				
35.000	15 Winter	30	0%					
35.001	30 Winter	30	0%	30/15 Winter				
36.000	30 Winter	30	0%	30/15 Winter				
1.016	30 Winter	30	0%	30/15 Winter				
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Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands					
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File West Catchment Model_...			Checked by					
XP Solutions			Network 2013.1					
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
2.000	Parcel A2_1	5.636	0.136	0.000	0.03	0.0	3.9	SURCHARGED
2.001	Parcel A2_2	5.642	0.492	0.000	0.27	0.0	3.6	SURCHARGED
1.002	TL_SW03	5.275	0.219	0.000	0.73	0.0	47.9	SURCHARGED
3.000	Parcel B6_1	5.402	0.102	0.000	0.05	0.0	5.2	SURCHARGED
3.001	Parcel B6_2	5.405	0.455	0.000	0.33	0.0	4.2	SURCHARGED
1.003	TL_SW04	5.236	0.301	0.000	0.73	0.0	50.4	SURCHARGED
1.004	TL_SW05	5.146	0.511	0.000	1.04	0.0	74.0	SURCHARGED
4.000	Parcel B1&CH_1	4.496	-0.004	0.000	0.16	0.0	8.5	OK
4.001	Parcel B1&CH 2	4.476	0.191	0.000	0.61	0.0	8.2	SURCHARGED
1.005	Ex. SB10	4.758	0.548	0.000	1.05	0.0	71.9	SURCHARGED
1.006	Ex. SB9	4.603	0.533	0.000	1.13	0.0	83.6	SURCHARGED
5.000	Block B_1	4.816	0.016	0.000	0.04	0.0	6.3	SURCHARGED
5.001	Block B_2	4.811	0.756	0.000	0.34	0.0	4.7	SURCHARGED
5.002	Ex. SB17	4.103	0.153	0.000	0.32	56.2	21.1	SURCHARGED
1.007	Ex. SB8	4.211	0.411	0.000	1.15	0.0	71.6	SURCHARGED
6.000	BovisA_1	4.452	-0.023	0.000	0.45	0.0	53.6	OK
6.001	BovisA_2	4.411	0.036	0.000	0.14	0.0	52.6	SURCHARGED
1.008	Ex SB7	3.961	0.461	0.000	0.91	0.0	124.3	SURCHARGED
7.000	BovisB_1	3.787	0.012	0.000	0.31	0.0	48.7	SURCHARGED
7.001	BovisB_2	3.750	0.150	0.000	0.19	0.0	47.3	SURCHARGED
1.009	Dummy Node	3.613	0.438	0.000	1.31	0.0	169.1	SURCHARGED
8.000	Plots 120 - 126	4.050	0.530	0.185	1.22	0.0	18.5	FLOOD
8.001	SW01, G01&G02	3.835	0.570	0.000	0.34	58.8	11.9	FLOOD RISK
9.000	Plots 117 - 123	4.049	0.734	0.000	1.13	0.0	13.2	FLOOD RISK
9.001	Stub SW02/2	4.037	0.944	0.000	0.83	0.0	24.8	FLOOD RISK
10.000	Plots 101-116	4.128	0.903	0.000	1.17	0.0	52.2	FLOOD RISK
8.002	SW02	3.982	0.927	0.000	2.53	0.0	67.7	SURCHARGED
1.010	Ex SB6	3.537	0.512	0.000	1.00	0.0	195.3	SURCHARGED
11.000	Ret Block A	3.380	0.080	0.000	0.20	0.0	10.2	SURCHARGED
11.001	Ret Block A	3.551	0.501	0.000	0.20	0.0	3.6	SURCHARGED
12.000	Plots 95-100	3.474	0.249	0.000	0.39	0.0	17.7	SURCHARGED
1.011	SW03	3.464	0.544	0.000	0.93	0.0	204.4	SURCHARGED
1.012	SW04	3.329	0.589	0.000	0.99	0.0	207.5	SURCHARGED
13.000	SW-PVT-01	3.411	0.551	0.000	1.35	0.0	91.1	SURCHARGED
14.000	Plots 80-86	3.226	0.451	0.000	0.34	0.0	21.7	SURCHARGED
15.000	Plots 87-94	3.219	0.444	0.000	0.36	0.0	25.3	SURCHARGED
1.013	SW05	3.198	0.598	0.000	1.46	0.0	276.5	SURCHARGED
16.000	C2 Resiblock A	2.915	0.415	0.000	0.57	0.0	37.7	SURCHARGED
1.014	SW06	2.865	0.425	0.000	1.70	0.0	300.7	SURCHARGED
17.000	SW-PVT-02	2.915	0.285	0.000	1.03	0.0	63.3	SURCHARGED
18.000	Plots 60-73	2.708	-0.117	0.000	0.47	0.0	25.7	OK
19.000	Plots 74-78	2.720	-0.105	0.000	0.56	0.0	29.9	OK
17.001	SW07	2.646	0.246	0.000	1.94	0.0	122.2	SURCHARGED
20.000	Plots 39-46	3.162	-0.153	0.000	0.23	0.0	28.2	OK
21.000	SW-LYM 01	4.344	0.379	0.000	0.74	0.0	22.5	SURCHARGED
22.000	Non resi	4.414	-0.036	0.000	0.02	0.0	5.3	OK
22.001	Non resi	4.410	0.465	0.000	0.12	0.0	4.1	SURCHARGED
21.001	SW-LYM 02	4.330	0.465	0.000	0.87	0.0	29.9	SURCHARGED
23.000	Parcel A1	4.181	-0.269	0.000	0.13	0.0	29.2	OK
23.001	As-built SA8	4.162	0.174	0.000	0.62	0.0	24.8	SURCHARGED
24.000	Non Resi	4.403	-0.047	0.000	0.02	0.0	5.4	OK
24.001	SW Stub 02	4.417	0.552	0.000	0.12	0.0	4.3	SURCHARGED
23.002	SW-LYM 03/1	4.267	0.472	0.000	0.74	0.0	31.8	SURCHARGED
21.002	SW-LYM 03	4.235	0.720	0.000	1.51	0.0	50.5	SURCHARGED
21.003	SW-LYM 04	4.259	0.734	0.000	0.83	0.0	52.0	SURCHARGED
25.000	SW-LYM 07	4.299	0.204	0.000	0.56	0.0	23.9	SURCHARGED
25.001	SW-LYM 08	4.284	0.389	0.000	0.85	0.0	52.1	SURCHARGED
26.000	PBA 01	12.320	-0.105	0.000	0.55	0.0	44.5	OK
26.001	PBA 02	10.552	-0.073	0.000	0.77	0.0	83.8	OK
26.002	PBA 03	8.611	1.136	0.000	1.31	0.0	103.3	FLOOD RISK
26.003	SW-LYM 05	5.709	-0.131	0.000	0.60	0.0	109.3	OK
21.004	SW-LYM 10	4.186	0.821	0.000	1.43	0.0	135.7	SURCHARGED
21.005	SW-LYM11	3.850	0.720	0.000	1.31	0.0	240.6	SURCHARGED
27.000	ExSB17_Dum Node	3.939	0.014	0.000	0.80	0.0	54.9	SURCHARGED
21.006	SW-LYM 12	3.649	0.679	0.000	1.15	0.0	233.2	SURCHARGED
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Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
21.007	SW-RUT-03	3.325	0.835	0.000	1.42	0.0	275.1	SURCHARGED
28.000	Stub SW18/1	3.290	0.565	0.000	1.48	0.0	49.1	SURCHARGED
28.001	SW18	3.087	0.482	0.000	1.74	0.0	60.9	SURCHARGED
21.008	SW19	2.803	0.383	0.000	0.47	0.0	108.1	SURCHARGED
21.009	SW20	2.662	0.337	0.000	0.44	0.0	105.2	SURCHARGED
29.000	Car Park	4.588	0.638	0.000	0.03	0.0	5.5	SURCHARGED
29.001	Car Park	4.709	1.159	0.000	0.10	0.0	4.3	FLOOD RISK
30.000	Non Resi	3.134	-0.016	0.000	0.02	0.0	4.2	OK
30.001	Stub SW9/1	3.141	0.316	0.000	0.09	0.0	3.6	SURCHARGED
31.000	SW08	3.643	-0.132	0.000	0.36	0.0	33.8	OK
32.000	Non Resi	3.060	-0.090	0.000	0.02	0.0	5.2	OK
32.001	Stub SW9/2	3.059	0.334	0.000	0.08	0.0	3.6	SURCHARGED
33.000	SW03	3.010	0.385	0.000	1.35	0.0	54.8	SURCHARGED
33.000	SW12	3.372	0.357	0.000	0.57	0.0	19.2	SURCHARGED
33.001	SW13	3.321	0.416	0.000	0.96	0.0	38.1	SURCHARGED
33.002	SW14	3.179	0.425	0.000	1.40	0.0	58.8	SURCHARGED
33.003	SW15	2.586	0.056	0.000	0.89	0.0	75.3	SURCHARGED
30.003	SW16	2.571	0.171	0.000	0.30	0.0	41.3	SURCHARGED
30.004	SW17	2.563	0.313	0.000	0.26	0.0	40.6	SURCHARGED
21.010	SW21	2.555	-0.005	0.000	0.18	0.0	105.7	OK
20.001	SW22	2.528	-0.002	0.000	0.13	0.0	107.4	OK
34.000	Plots 47-55	2.731	-0.094	0.000	0.63	0.0	28.0	OK
20.002	SW23	2.464	0.069	0.000	0.16	0.0	116.8	SURCHARGED
1.015	SW24	2.492	0.182	0.000	0.25	0.0	200.8	SURCHARGED
35.000	Plots	2.573	-0.022	0.000	0.47	0.0	18.9	OK
35.001	Stub SW25/1	2.540	0.175	0.000	0.70	0.0	27.6	SURCHARGED
36.000	Stub SW25/2	2.534	0.149	0.000	0.65	0.0	25.7	SURCHARGED
1.016	SW25	2.472	0.747	0.000	0.65	0.0	222.6	SURCHARGED
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<u>Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								
<u>Simulation Criteria</u>								
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		2			
Number of Online Controls		14	Number of Storage Structures		14			
				Number of Time/Area Diagrams		0		
				Number of Real Time Controls		0		
<u>Synthetic Rainfall Details</u>								
Rainfall Model		FEH		D3 (1km)	0.407			
Site Location		GB 502850 104400 TQ 02850 04400		E (1km)	0.314			
C (1km)		-0.027		F (1km)	2.329			
D1 (1km)		0.393		Cv (Summer)	0.750			
D2 (1km)		0.274		Cv (Winter)	0.840			
Margin for Flood Risk Warning (mm)		300.0						
Analysis Timestep		2.5 Second Increment (Extended)						
DTS Status		ON						
DVD Status		ON						
Inertia Status		ON						
Profile(s)		Winter						
Duration(s) (mins)		15, 30, 60, 120, 240, 360, 480						
Return Period(s) (years)		1						
Climate Change (%)		0						
PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	1	0%					
1.001	15 Winter	1	0%					
2.000	480 Winter	1	0%					
2.001	480 Winter	1	0%	1/15 Winter				
1.002	15 Winter	1	0%					
3.000	60 Winter	1	0%					
3.001	60 Winter	1	0%	1/15 Winter				
1.003	15 Winter	1	0%					
1.004	15 Winter	1	0%					
4.000	240 Winter	1	0%					
4.001	240 Winter	1	0%					
1.005	15 Winter	1	0%					
1.006	15 Winter	1	0%					
5.000	120 Winter	1	0%					
5.001	120 Winter	1	0%	1/15 Winter				
5.002	30 Winter	1	0%				0	
1.007	30 Winter	1	0%					
6.000	60 Winter	1	0%					
6.001	60 Winter	1	0%					
1.008	30 Winter	1	0%					
7.000	30 Winter	1	0%					
7.001	30 Winter	1	0%					
1.009	30 Winter	1	0%					
8.000	15 Winter	1	0%					
8.001	15 Winter	1	0%				0	
9.000	15 Winter	1	0%					
9.001	15 Winter	1	0%	1/15 Winter				
10.000	15 Winter	1	0%					
8.002	15 Winter	1	0%	1/15 Winter				
1.010	30 Winter	1	0%					
11.000	480 Winter	1	0%					
11.001	480 Winter	1	0%	1/60 Winter				
12.000	15 Winter	1	0%					
1.011	30 Winter	1	0%					
1.012	30 Winter	1	0%					
13.000	15 Winter	1	0%					
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Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
14.000	15 Winter	1	0%					
15.000	15 Winter	1	0%					
1.013	60 Winter	1	0%					
16.000	15 Winter	1	0%					
1.014	60 Winter	1	0%					
17.000	15 Winter	1	0%					
18.000	15 Winter	1	0%					
19.000	15 Winter	1	0%					
17.001	15 Winter	1	0%					
20.000	15 Winter	1	0%					
21.000	15 Winter	1	0%					
22.000	360 Winter	1	0%					
22.001	360 Winter	1	0%	1/15 Winter				
21.001	15 Winter	1	0%					
23.000	120 Winter	1	0%					
23.001	120 Winter	1	0%					
24.000	360 Winter	1	0%					
24.001	360 Winter	1	0%	1/15 Winter				
23.002	120 Winter	1	0%					
21.002	120 Winter	1	0%					
21.003	15 Winter	1	0%					
25.000	15 Winter	1	0%					
25.001	15 Winter	1	0%					
26.000	15 Winter	1	0%					
26.001	15 Winter	1	0%					
26.002	15 Winter	1	0%					
26.003	15 Winter	1	0%					
21.004	15 Winter	1	0%					
21.005	15 Winter	1	0%					
27.000	240 Winter	1	0%					
21.006	15 Winter	1	0%					
21.007	15 Winter	1	0%					
28.000	15 Winter	1	0%					
28.001	15 Winter	1	0%					
21.008	15 Winter	1	0%					
21.009	15 Winter	1	0%					
29.000	240 Winter	1	0%	1/30 Winter				
29.001	240 Winter	1	0%	1/15 Winter				
30.000	480 Winter	1	0%					
30.001	480 Winter	1	0%	1/240 Winter				
31.000	15 Winter	1	0%					
32.000	60 Winter	1	0%					
32.001	60 Winter	1	0%	1/15 Winter				
30.002	15 Winter	1	0%					
33.000	15 Winter	1	0%					
33.001	15 Winter	1	0%					
33.002	15 Winter	1	0%					
33.003	15 Winter	1	0%					
30.003	15 Winter	1	0%					
30.004	15 Winter	1	0%					
21.010	120 Winter	1	0%					
20.001	120 Winter	1	0%					
34.000	15 Winter	1	0%					
20.002	60 Winter	1	0%					
1.015	60 Winter	1	0%					
35.000	15 Winter	1	0%					
35.001	15 Winter	1	0%					
36.000	15 Winter	1	0%					
1.016	60 Winter	1	0%	1/15 Winter				
PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	TL_SW01	5.240	-0.230	0.000	0.11	0.0	7.7	OK
1.001	TL_SW02	5.001	-0.218	0.000	0.16	0.0	11.0	OK
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PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
2.000	Parcel A2_1	5.335	-0.165	0.000	0.03	0.0	3.7	OK
2.001	Parcel A2_2	5.333	0.183	0.000	0.22	0.0	2.9	SURCHARGED
1.002	TL_SW03	4.861	-0.195	0.000	0.26	0.0	17.2	OK
3.000	Parcel B6_1	5.095	-0.205	0.000	0.07	0.0	6.3	OK
3.001	Parcel B6_2	5.091	0.141	0.000	0.30	0.0	3.9	SURCHARGED
1.003	TL_SW04	4.759	-0.176	0.000	0.34	0.0	23.6	OK
1.004	TL_SW05	4.483	-0.152	0.000	0.46	0.0	32.8	OK
4.000	Parcel B1&CH_1	4.297	-0.203	0.000	0.11	0.0	6.1	OK
4.001	Parcel B1&CH 2	4.283	-0.002	0.000	0.46	0.0	6.1	OK
1.005	Ex. SB10	4.071	-0.139	0.000	0.55	0.0	37.8	OK
1.006	Ex. SB9	3.937	-0.133	0.000	0.58	0.0	41.4	OK
5.000	Block B_1	4.583	-0.217	0.000	0.05	0.0	8.0	OK
5.001	Block B_2	4.579	0.524	0.000	0.30	0.0	4.1	SURCHARGED
5.002	Ex. SB17	3.738	-0.212	0.000	0.13	0.0	8.4	OK
1.007	Ex. SB8	3.712	-0.088	0.000	0.82	0.0	51.0	OK
6.000	BovisA_1	4.220	-0.255	0.000	0.19	0.0	22.8	OK
6.001	BovisA_2	4.172	-0.203	0.000	0.06	0.0	22.8	OK
1.008	Ex SB7	3.325	-0.175	0.000	0.55	0.0	74.8	OK
7.000	BovisB_1	3.506	-0.269	0.000	0.18	0.0	28.1	OK
7.001	BovisB_2	3.427	-0.173	0.000	0.11	0.0	28.1	OK
1.009	Dummy Node	3.028	-0.147	0.000	0.79	0.0	101.9	OK
8.000	Plots 123 - 126	3.385	-0.085	0.000	0.38	0.0	5.7	OK
8.001	SW01, G01&G02	3.162	-0.103	0.000	0.32	0.0	11.0	OK
9.000	Plots 117 - 122	3.227	-0.088	0.000	0.34	0.0	5.6	OK
9.001	Stub SW02/2	3.141	0.048	0.000	0.32	0.0	9.6	SURCHARGED
10.000	Plots 101-116	3.144	-0.081	0.000	0.40	0.0	17.9	OK
8.002	SW02	3.131	0.078	0.000	1.26	0.0	33.7	SURCHARGED
1.010	Ex SB6	2.883	-0.192	0.000	0.62	0.0	118.5	OK
11.000	Ret Block A	3.119	-0.181	0.000	0.07	0.0	3.6	OK
11.001	Ret Block A	3.115	0.065	0.000	0.18	0.0	3.2	SURCHARGED
12.000	Plots 95-100	3.064	-0.161	0.000	0.18	0.0	8.2	OK
1.011	SW03	2.713	-0.207	0.000	0.57	0.0	124.3	OK
1.012	SW04	2.541	-0.199	0.000	0.60	0.0	125.2	OK
13.000	SW-FUT-01	2.714	-0.146	0.000	0.48	0.0	32.6	OK
14.000	Plots 80-86	2.614	-0.161	0.000	0.18	0.0	11.4	OK
15.000	Plots 87-94	2.615	-0.160	0.000	0.19	0.0	13.1	OK
1.013	SW05	2.441	-0.159	0.000	0.75	0.0	138.9	OK
16.000	C2 Resiblock A	2.355	-0.145	0.000	0.28	0.0	18.4	OK
1.014	SW06	2.300	-0.140	0.000	0.81	0.0	144.3	OK
17.000	SW-FUT-02	2.444	-0.176	0.000	0.33	0.0	21.9	OK
18.000	Plots 60-73	2.656	-0.169	0.000	0.14	0.0	7.8	OK
19.000	Plots 74-78	2.662	-0.163	0.000	0.17	0.0	9.1	OK
17.001	SW07	2.273	-0.127	0.000	0.62	0.0	39.2	OK
20.000	Plots 39-46	3.129	-0.186	0.000	0.07	0.0	8.5	OK
21.000	SW-LYM 01	3.814	-0.151	0.000	0.23	0.0	7.0	OK
22.000	Non resi	4.122	-0.328	0.000	0.02	0.0	4.7	OK
22.001	Non resi	4.120	0.175	0.000	0.10	0.0	3.5	SURCHARGED
21.001	SW-LYM 02	3.734	-0.131	0.000	0.35	0.0	12.1	OK
23.000	Parcel A1	4.068	-0.382	0.000	0.06	0.0	12.3	OK
23.001	As-built SA8	3.939	-0.049	0.000	0.31	0.0	12.3	OK
24.000	Non Resi	4.117	-0.333	0.000	0.02	0.0	5.0	OK
24.001	SW Stub 02	4.116	0.251	0.000	0.09	0.0	3.5	SURCHARGED
23.002	SW-LYM 03/1	3.664	-0.131	0.000	0.36	0.0	15.6	OK
21.002	SW-LYM 03	3.484	-0.091	0.000	0.66	0.0	22.0	OK
21.003	SW-LYM 04	3.351	-0.174	0.000	0.36	0.0	22.7	OK
25.000	SW-LYM 07	3.932	-0.163	0.000	0.17	0.0	7.3	OK
25.001	SW-LYM 08	3.748	-0.147	0.000	0.26	0.0	16.2	OK
26.000	PBA 01	12.262	-0.163	0.000	0.17	0.0	13.5	OK
26.001	PBA 02	10.470	-0.155	0.000	0.21	0.0	22.9	OK
26.002	PBA 03	7.300	-0.125	0.000	0.41	0.0	32.2	OK
26.003	SW-LYM 05	5.629	-0.211	0.000	0.19	0.0	34.6	OK
21.004	SW-LYM 10	3.189	-0.176	0.000	0.54	0.0	70.6	OK
21.005	SW-LYM11	2.903	-0.227	0.000	0.48	0.0	88.1	OK
27.000	ExSB17_Dum Node	3.700	-0.225	0.000	0.00	0.0	0.0	OK
21.006	SW-LYM 12	2.709	-0.261	0.000	0.37	0.0	91.1	OK
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Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
21.007	SW-FUT-03	2.460	-0.230	0.000	0.47	0.0	91.8	OK
28.000	Stub SW18/1	2.616	-0.109	0.000	0.51	0.0	16.9	OK
28.001	SW18	2.507	-0.098	0.000	0.61	0.0	21.2	OK
21.008	SW19	2.189	-0.231	0.000	0.48	0.0	110.6	OK
21.009	SW20	2.048	-0.277	0.000	0.45	0.0	109.0	OK
29.000	Car Park	4.508	0.558	0.000	0.04	0.0	7.3	SURCHARGED
29.001	Car Park	4.548	0.998	0.000	0.10	0.0	4.2	SURCHARGED
30.000	Non Resi	2.834	-0.316	0.000	0.02	0.0	4.3	OK
30.001	Stub SW9/1	2.836	0.011	0.000	0.08	0.0	3.3	SURCHARGED
31.000	SW08	3.599	-0.176	0.000	0.11	0.0	10.3	OK
32.000	Non Resi	2.785	-0.365	0.000	0.02	0.0	5.8	OK
32.001	Stub SW9/2	2.783	0.058	0.000	0.08	0.0	3.4	SURCHARGED
30.002	SW09	2.517	-0.108	0.000	0.53	0.0	21.3	OK
33.000	SW12	2.863	-0.152	0.000	0.22	0.0	7.5	OK
33.001	SW13	2.777	-0.128	0.000	0.38	0.0	14.9	OK
33.002	SW14	2.638	-0.107	0.000	0.53	0.0	21.5	OK
33.003	SW15	2.351	-0.179	0.000	0.33	0.0	28.2	OK
30.003	SW16	2.233	-0.167	0.000	0.40	0.0	55.4	OK
30.004	SW17	1.985	-0.265	0.000	0.35	0.0	54.0	OK
21.010	SW21	1.913	-0.647	0.000	0.13	0.0	75.4	OK
20.001	SW22	1.910	-0.620	0.000	0.09	0.0	75.6	OK
34.000	Plots 47-55	2.667	-0.158	0.000	0.19	0.0	8.5	OK
20.002	SW23	1.906	-0.489	0.000	0.09	0.0	69.5	OK
1.015	SW24	1.910	-0.400	0.000	0.17	0.0	138.9	OK
35.000	Plots	2.428	-0.167	0.000	0.14	0.0	5.8	OK
35.001	Stub SW25/1	2.220	-0.145	0.000	0.27	0.0	10.7	OK
36.000	Stub SW25/2	2.245	-0.140	0.000	0.31	0.0	12.0	OK
1.016	SW25	1.863	0.138	0.000	0.42	0.0	144.4	SURCHARGED
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APPENDIX K: Condition 10, Pre-Demolition Drainage