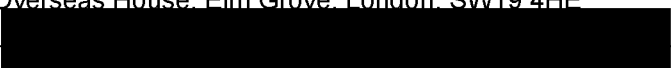


	TECHNICAL NOTES	
	Pringuer-James Consulting Engineers (Structural & Civil Engineers) Overseas House, Elm Grove, London, SW19 4HF 	
Project: Tudor Cottage, Sea Road	Project No. L2340	
Engineer: Vlad Myrsikov	Date: 20 June 2018	
Title: Drainage Strategy for Planning	No. L2340-TN-001_Rev01	

Planning Application Reference: APP/C3810/W/17/3183667

1. Introduction

This technical note provides drawings, calculations and other details to satisfy Planning Condition 9 and 10 as described below.

9) No building hereby permitted shall be occupied until surface water drainage works shall have been implemented in accordance with details that shall first have been submitted to and approved in writing by the local planning authority. Before any details are submitted to the local planning authority an assessment shall be carried out of the potential for disposing of surface water by means of a sustainable drainage system, having regard to Defra's non-statutory technical standards for sustainable drainage systems (or any subsequent version), and the results of the assessment shall have been provided to the local planning authority.

10) Where a sustainable drainage scheme is to be provided, the submitted details shall:
i) provide information about the design storm period and intensity, the method employed to delay and control the surface water discharged from the site and the measures taken to prevent pollution of the receiving groundwater and/or surface waters;
ii) include a timetable for its implementation; and,
iii) provide a management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime.

2. Surface Water Scheme

The following drawings, included in Appendix D, provide details of the surface water scheme for the development.

- L2340-C-52-750

3. Existing Site

Existing site surface water drainage consisted of building roofs and impermeable car park pavements to the front of the building. The overall area of 410m² was drainage un-attenuated into Southern Water sewer. The remaining areas were grass or small footpaths which were draining to adjoining grass areas. Appendix D contains a sketch showing existing areas.

Pre-development run-off calculations were completed using FEH data for all major rainfall events. Due to small nature of the site, T_c would be between 15 and 30 mins for peak events. 60mins event was included as this is critical for sewerage undertaker. The calculations are provided in Appendix A, and the results are summarised in Table 1 below:

	Pre-development site:		
	15 minute	30 minute	60 minute
Q_{ex} (1-in-1 year)	3.60 l/s	2.30 l/s	1.51 l/s
Q_{ex} (1-in-30 year)	8.90 l/s	5.80 l/s	4.52 l/s
Q_{ex} (1-in-100 year)	11.37 l/s	9.11 l/s	5.82 l/s

Table 1 - Existing Site Runoff Rates

PJCE have also calculated peak run-off using Southern Water (Sewers for Adoption) Methodology. For existing site peak runoff rate using this methodology was found to be **4.56l/s**.

The proposed site discharge rate will not exceed existing.

4. Implemented SuDS

The aim of SuDS is to identify “at source” water management measures to reduce surface water runoff. The most appropriate means of surface water control and discharge has been determined based on the hierarchy as set out in the non-statutory technical standards: CIRIA SuDS Manual (C753).

Systems considered and not implemented

- *Swales, bioretention systems, ponds*
There is insufficient space to include swales and it was impractical to implement bioretention system or to included for permanent pond.
- *Green Roofs*
Green roofs were not implemented as these are not practical on pitched roofs.
- *Soakaways*
Groundwater was found to be relatively high: around 1.7m and is sandy clay in nature. Thus soakaway is unlikely to produce sufficient empty times for implementation.
- *Attenuation tanks*
Attenuation tanks are viable for this development, however they were not implemented as other SuDS elements with further benefits were implemented instead.

Implemented systems

- *Permeable paving*
All pavements on site will be permeable. Parking bays are proposed a non-engineered, natural gravel finish, which is the same finish as the adjoining properties on Palk Court Cottages. This type of approach showed to be successful in this area.

A major advantage of permeable pavements is catchment and treatment of hydrocarbons and other pollutants. As per CIRIA (C752) The SuDS manual, Simple Index Approach Methodology (26.7.1), Car Park for domestic dwellings exhibits pollution index of 0.4 (Table 26.2) while permeable pavements exhibits mitigation potential of 0.4 when discharging to groundwater (Table 26.4), which means no further mitigation is required.
- *Detention Basin*
Detention system was implemented with the development. This is offline system which would only flood fully during more extreme events. Majority of the time the basin will be landscaped and provide amenity benefits to the development as per The SuDS Manual.
- *Flow Control Devices*
The downstream surface water networks will benefit from reduction in peak run-off from site. As such hydrobrake device has been included within the development.

5. Proposed Site

The proposed site impermeable area would only consist of new building roofs. Car Park will be permeable. Any impermeable footways will drain to adjoining grass areas. Overall, the impermeable site draining to sewer has decreased from 410m² pre-development to 365m² post-development, through the replacement of existing impermeable asphalt pavement in favour of permeable gravel car park pavement.

To test realistic system behaviour, a complex micro drainage model has been built, which takes into account actual pipe network to be built on-site and includes the detention basin and hydrobrake.

The modelling aimed to minimise peak storm run-off from the site by increasing detention basin size, however there are practical limitation, such as side slopes and usability of the detention basin as an amenity space.

Based on practical limitations, the site peak discharge rate was limited to 2.3l/s for 1-in-100year + 40% Climate Change rainfall events, which is the same as 1-in-1 year event for existing site, thus limiting impact on existing sewers from the development.

Full calculations are included in Appendix B, and summary of results is provided below.

	Post-Development peak run-off rate		
	Peak run-off Rate	Detention Basin Volume	Total Storage Volume (basin + pipes + manholes)
Q_{pr} (1 year + 40% CC)	1.5 l/s	1.214 m ³	2.497 m ³
Q_{pr} (30 year + 40% CC)	2.1 l/s	8.049 m ³	10.491 m ³
Q_{pr} (100 year + 40% CC)	2.3 l/s	11.627 m ³	14.187 m ³

Table 2 – Post-development modelling results

6. Other Considerations

Pollution Control

For car park, CIRIA (C752) The SuDS manual, Simple Index Approach Methodology (26.7.1), Car Park for domestic dwellings exhibits pollution index of 0.4 (Table 26.2) while permeable pavements exhibits mitigation potential of 0.4 when discharging to groundwater (Table 26.4), which means no further mitigation, other than permeable pavement itself is required to prevent and mitigate pollution risks to groundwater.

Implementation Timetable

The drainage system and detention basin will be installed before first occupation of the building. The landscaping surrounding detention basin will be completed separately and is not required for the function of the detention basin.

Management and Maintenance Plan

There are three SuDS items that require regular maintenance:

- Permeable Pavement
- Detention Basin
- Hydro-brake

The proposed detention basin is an off-line system, as such typical maintenance that would normally be expected for the on-line detention system is not applicable here. Normal landscape maintenance regime is applicable.

Full maintenance plan for above is included in Appendix C. Maintenance will be undertaken by the management company for the building, and no elements will be offered for adoption.

Appendixes

- Appendix A – Existing Site Run-off Calculations
- Appendix B – Proposed Site Run-off Calculations
- Appendix C – Maintenance Plan
- Appendix D – Drawings and Sketches

Appendix A: Existing Site Run-off Calculations

Equations Used

GREENFIELD AREAS

IH124: Catchment descriptor equation

Peak Run-off

$$Q_{\text{BAR (rural)}} = 0.00108 \text{ AREA}^{0.89} \text{ SAAR}^{1.17} \text{ SOIL}^{2.17}$$

$Q_{\text{BAR (rural)}}$ = mean annual flood (a return period in the region of 2.3 years)

AREA = area of catchment in km²

SAAR = Standard Average Annual Rainfall for the period 1941-1970 in mm
soil index, taken from FST soil maps or the WRAP map of the Wellington

SOIL = procedure

Calculation is completed for 50ha and linearly interpolated for required site area

DEVELOPED AREAS

Calculated using Modified Rational Method and FEH data

Peak Run-off Rate

$$Q_o = 2.78 C_v C_r i A$$

C_v = Volumetric Runoff coefficient

C_r = 1.3 (routing Coefficient)

i = Rainfall Intensity

A = Area

2.78 = Coefficient which accounts for the differences in units used for the inputs and the outputs of the equation

$$V = \frac{PR}{100} I A$$

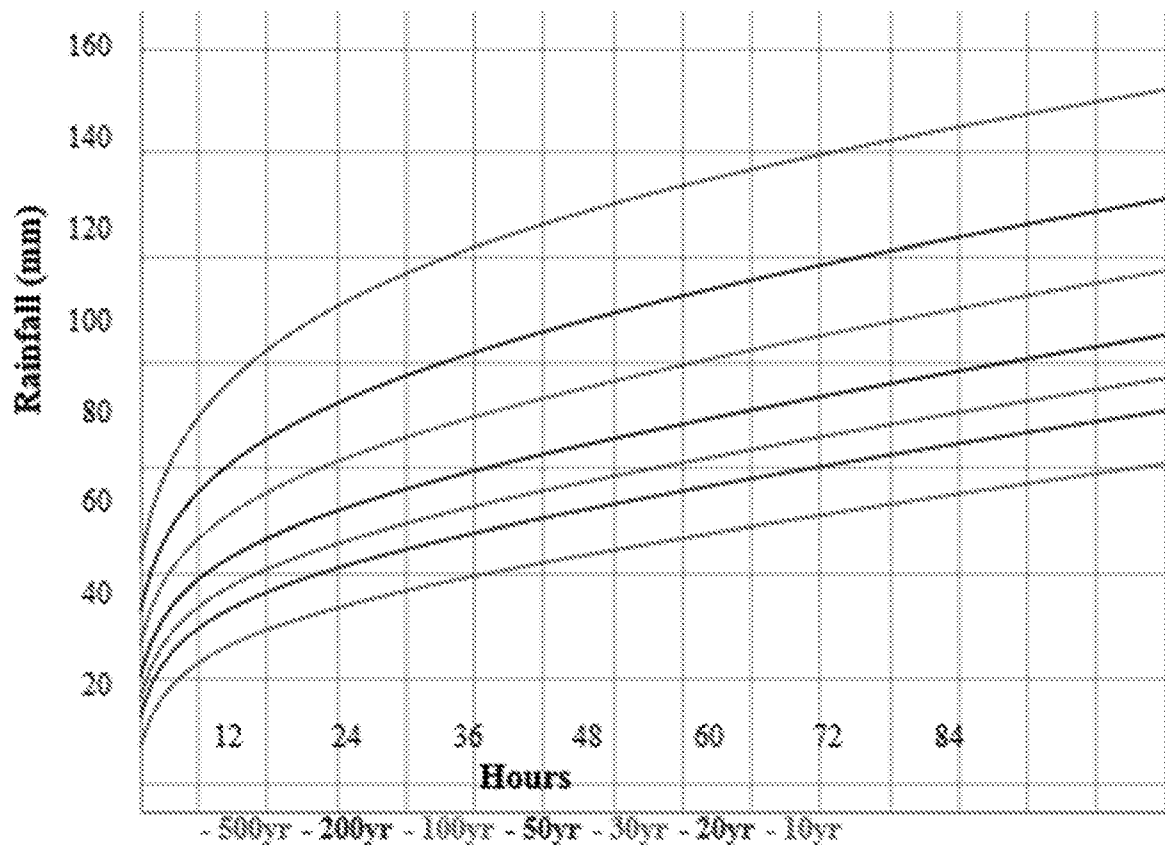
V = Volume of runoff

PR = Percentage of Run-off

I = rainfall depth (mm)

A = Area

Rainfall Data							
Location		507144	101633	125A Tudor Lodge, Sea Road, East Preston			
FEH data							
Return Period		1	2	10	30	100	100+CC (+40%)
Duration (mins)	Duration (hrs)	FSR rainfall depths (mm)	FEH Rainfall depths (mm)				
15	0.25	7.19	8.37	16.47	21.45	27.17	38.04
30	0.5	9.26	10.80	21.47	28.46	36.37	47.28
60	1	12.08	13.67	27.07	36.10	46.47	60.41
120	2	15.18	18.50	33.03	42.64	53.76	69.89
240	4	19.41	23.63	39.36	49.64	61.89	80.46
360	6	22.26	26.63	43.06	53.76	66.72	86.74
600	10	24.70	30.53	47.78	59.09	73.14	95.08
1440	24	33.40	37.86	56.92	69.67	86.07	111.89



Peak runoff rate calculations - Existing Site

IMPERMEABLE AREAS (Pre-development)			
Roofs	=	0.9	normal roofs
Pavements	=	0.75	hard standing
Surface	Area (ha)	Cv	Weighted Cv
Roofs	0.026	0.9	
Pavement	0.015	0.75	
TOTAL	0.041	0	0.85
Return Period			
1 in 1			
Duration (mins)	Rainfall Depth (mm)	Intensity (mm/hr)	Peak Flow Rate (l/s)
15	7.19	28.75	3.60
30	9.26	18.53	2.32
60	12.08	12.08	1.51

Return Period			
1 in 30			
Duration (mins)	Rainfall Depth (mm)	Intensity (mm/hr)	Peak Flow Rate (l/s)
15	17.93	71.72	8.98
30	23.16	46.33	5.80
60	36.10	36.10	4.52

Return Period			
1 in 100			
Duration (mins)	Rainfall Depth (mm)	Intensity (mm/hr)	Peak Flow Rate (l/s)
15	22.70	90.80	11.37
30	36.37	72.74	9.11
60	46.47	46.47	5.82

Appendix B. Proposed Site Calculations

Summary of results:

1-in-100 year + 40% Climate Change

- Peak run-off rate
- Peak attenuation tank volumes

Duration	Peak Runoff	Water Level in Basin	Basin Attenuation Volume	Total Attenuation volume, inc basins, pipes and structures
15mins	2.1 l/s	5.597 m	7.915 m ³	10.319 m ³
30mins	2.3 l/s	5.665 m	10.256 m ³	12.765 m ³
60mins	2.3 l/s	5.694 m	11.627 m ³	14.187 m ³

1-in-30 year + 40% Climate Change

Duration Peak Runoff

15mins	-	2.0 l/s
30mins	-	2.1 l/s
60 mins	-	2.1 l/s

1-in-1 year + 40% Climate Change

- Calculated using FSR Data, as FEH cannot calculate less than 1-in-2 year events.

Duration Peak Runoff

15mins	-	1.6 l/s
30mins	-	1.6 l/s
60 mins	-	1.5 l/s

Pringuer-James Consulting Engineers Limited		Page 1
Overseas House Elm Grove London SW19 4HE	PRINGUER-JAMES CONSULTING ENGINEERS	
Date 19/06/2018 11:11 File REDESIGN (REV D).MDX	Designed by vlad Checked by	
Innovyze	Network 2017.1.2	

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.850	Foul Sewage per hectare (l/s)	0.000
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	40.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Run Time (mins)	60
Manhole Headloss Coeff (Global)	0.750	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 507144 101633 TQ 07144 01633
Data Type	Point
Summer Storms	Yes
Winter Storms	No
Cv (Summer)	0.850
Cv (Winter)	0.840
Storm Duration (mins)	15

©1982-2017 XP Solutions

Pringuer-James Consulting Engineers Limited		Page 2
Overseas House Elm Grove London SW19 4HE	PRINGUER-JAMES CONSULTING ENGINEERS	
Date 19/06/2018 11:11 File REDESIGN (REV D).MDX	Designed by vlad Checked by	
Innovyze	Network 2017.1.2	
<u>Online Controls for Storm</u> <u>Orifice Manhole: 08, DS/PN: 1.003, Volume (m³): 0.5</u> Diameter (m) 0.029 Discharge Coefficient 0.600 Invert Level (m) 5.100 <u>Orifice Manhole: 11, DS/PN: 4.002, Volume (m³): 0.5</u> Diameter (m) 0.026 Discharge Coefficient 0.600 Invert Level (m) 5.156		
©1982-2017 XP Solutions		

Pringuer-James Consulting Engineers Limited		Page 3
Overseas House Elm Grove London SW19 4HE	PRINGUER-JAMES CONSULTING ENGINEERS	
Date 19/06/2018 11:11 File REDESIGN (REV D).MDX	Designed by vlad Checked by	
Innovyze	Network 2017.1.2	

Storage Structures for Storm

Tank or Pond Manhole: 5, DS/PN: 3.000

Invert Level (m) 5.300

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	7.9	0.200	14.9	0.400	23.5

Tank or Pond Manhole: 9, DS/PN: 5.000

Invert Level (m) 5.300

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	7.9	0.200	14.9	0.400	23.5

©1982-2017 XP Solutions

Pringuer-James Consulting Engineers Limited							Page 4																																																																																																																															
Overseas House Elm Grove London SW19 4HE				PRINGUER-JAMES CONSULTING ENGINEERS																																																																																																																																		
Date 19/06/2018 11:11				Designed by vlad																																																																																																																																		
File REDESIGN (REV D).MDX				Checked by																																																																																																																																		
Innovyze				Network 2017.1.2																																																																																																																																		
Summary of Results for 15 minute 100 year Summer (Storm) Margin for Flood Risk Warning (mm) 5.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status ON																																																																																																																																						
<table><tr><th colspan="3"></th><th colspan="3">Water</th><th colspan="2">Pipe</th><th></th></tr><tr><th></th><th>US/MH</th><th>US/CL</th><th>Level</th><th>Flow /</th><th>Maximum</th><th>Discharge</th><th>Flow</th><th></th></tr><tr><th>PN</th><th>Name</th><th>(m)</th><th>(m)</th><th>Cap.</th><th>Vol (m³)</th><th>Vol (m³)</th><th>(l/s)</th><th>Status</th></tr><tr><td>1.000</td><td>RWP20</td><td>6.000</td><td>5.500</td><td>0.41</td><td>0.300</td><td>2.779</td><td>5.9</td><td>SURCHARGED*</td></tr><tr><td>1.001</td><td>05</td><td>5.900</td><td>5.634</td><td>0.49</td><td>0.372</td><td>2.466</td><td>5.9</td><td>SURCHARGED</td></tr><tr><td>2.000</td><td>06</td><td>6.000</td><td>5.773</td><td>1.29</td><td>0.959</td><td>3.530</td><td>7.8</td><td>SURCHARGED</td></tr><tr><td>1.002</td><td>07</td><td>5.900</td><td>5.618</td><td>1.10</td><td>0.279</td><td>5.758</td><td>13.6</td><td>SURCHARGED</td></tr><tr><td>3.000</td><td>5</td><td>5.700</td><td>5.587</td><td>-1.12</td><td>3.958</td><td>-1.647</td><td>-12.2</td><td>SURCHARGED*</td></tr><tr><td>1.003</td><td>08</td><td>5.800</td><td>5.598</td><td>0.31</td><td>0.447</td><td>3.731</td><td>1.2</td><td>SURCHARGED</td></tr><tr><td>4.000</td><td>09</td><td>6.000</td><td>5.640</td><td>0.62</td><td>0.037</td><td>3.801</td><td>8.4</td><td>SURCHARGED</td></tr><tr><td>4.001</td><td>10</td><td>5.900</td><td>5.592</td><td>0.77</td><td>0.508</td><td>4.018</td><td>9.6</td><td>SURCHARGED</td></tr><tr><td>5.000</td><td>9</td><td>5.700</td><td>5.586</td><td>-1.07</td><td>3.957</td><td>-2.092</td><td>-11.6</td><td>SURCHARGED*</td></tr><tr><td>4.002</td><td>11</td><td>5.900</td><td>5.587</td><td>0.17</td><td>0.391</td><td>2.854</td><td>0.9</td><td>SURCHARGED</td></tr><tr><td>1.004</td><td>04</td><td>5.800</td><td>5.069</td><td>0.40</td><td>0.011</td><td>6.560</td><td>2.1</td><td>OK</td></tr></table>												Water			Pipe				US/MH	US/CL	Level	Flow /	Maximum	Discharge	Flow		PN	Name	(m)	(m)	Cap.	Vol (m³)	Vol (m³)	(l/s)	Status	1.000	RWP20	6.000	5.500	0.41	0.300	2.779	5.9	SURCHARGED*	1.001	05	5.900	5.634	0.49	0.372	2.466	5.9	SURCHARGED	2.000	06	6.000	5.773	1.29	0.959	3.530	7.8	SURCHARGED	1.002	07	5.900	5.618	1.10	0.279	5.758	13.6	SURCHARGED	3.000	5	5.700	5.587	-1.12	3.958	-1.647	-12.2	SURCHARGED*	1.003	08	5.800	5.598	0.31	0.447	3.731	1.2	SURCHARGED	4.000	09	6.000	5.640	0.62	0.037	3.801	8.4	SURCHARGED	4.001	10	5.900	5.592	0.77	0.508	4.018	9.6	SURCHARGED	5.000	9	5.700	5.586	-1.07	3.957	-2.092	-11.6	SURCHARGED*	4.002	11	5.900	5.587	0.17	0.391	2.854	0.9	SURCHARGED	1.004	04	5.800	5.069	0.40	0.011	6.560	2.1	OK
			Water			Pipe																																																																																																																																
	US/MH	US/CL	Level	Flow /	Maximum	Discharge	Flow																																																																																																																															
PN	Name	(m)	(m)	Cap.	Vol (m³)	Vol (m³)	(l/s)	Status																																																																																																																														
1.000	RWP20	6.000	5.500	0.41	0.300	2.779	5.9	SURCHARGED*																																																																																																																														
1.001	05	5.900	5.634	0.49	0.372	2.466	5.9	SURCHARGED																																																																																																																														
2.000	06	6.000	5.773	1.29	0.959	3.530	7.8	SURCHARGED																																																																																																																														
1.002	07	5.900	5.618	1.10	0.279	5.758	13.6	SURCHARGED																																																																																																																														
3.000	5	5.700	5.587	-1.12	3.958	-1.647	-12.2	SURCHARGED*																																																																																																																														
1.003	08	5.800	5.598	0.31	0.447	3.731	1.2	SURCHARGED																																																																																																																														
4.000	09	6.000	5.640	0.62	0.037	3.801	8.4	SURCHARGED																																																																																																																														
4.001	10	5.900	5.592	0.77	0.508	4.018	9.6	SURCHARGED																																																																																																																														
5.000	9	5.700	5.586	-1.07	3.957	-2.092	-11.6	SURCHARGED*																																																																																																																														
4.002	11	5.900	5.587	0.17	0.391	2.854	0.9	SURCHARGED																																																																																																																														
1.004	04	5.800	5.069	0.40	0.011	6.560	2.1	OK																																																																																																																														
©1982-2017 XP Solutions																																																																																																																																						

Pringuer-James Consulting Engineers Limited							Page 1																																																																																																																															
Overseas House Elm Grove London SW19 4HE				PRINGUER-JAMES CONSULTING ENGINEERS																																																																																																																																		
Date 19/06/2018 11:13				Designed by vlad																																																																																																																																		
File REDESIGN (REV D).MDX				Checked by																																																																																																																																		
Innovyze				Network 2017.1.2																																																																																																																																		
Summary of Results for 30 minute 100 year Summer (Storm) Margin for Flood Risk Warning (mm) 5.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status ON																																																																																																																																						
<table><tr><th colspan="3"></th><th colspan="2">Water</th><th colspan="3">Pipe</th><th></th></tr><tr><th></th><th>US/MH</th><th>US/CL</th><th>Level</th><th>Flow /</th><th>Maximum</th><th>Discharge</th><th>Flow</th><th></th></tr><tr><th>PN</th><th>Name</th><th>(m)</th><th>(m)</th><th>Cap.</th><th>Vol (m³)</th><th>Vol (m³)</th><th>(l/s)</th><th>Status</th></tr><tr><td>1.000</td><td>RWP20</td><td>6.000</td><td>5.500</td><td>0.36</td><td>0.323</td><td>3.628</td><td>5.2</td><td>SURCHARGED*</td></tr><tr><td>1.001</td><td>05</td><td>5.900</td><td>5.660</td><td>0.43</td><td>0.376</td><td>3.266</td><td>5.1</td><td>SURCHARGED</td></tr><tr><td>2.000</td><td>06</td><td>6.000</td><td>5.767</td><td>1.18</td><td>0.958</td><td>4.667</td><td>7.1</td><td>SURCHARGED</td></tr><tr><td>1.002</td><td>07</td><td>5.900</td><td>5.658</td><td>0.98</td><td>0.285</td><td>7.663</td><td>12.1</td><td>SURCHARGED</td></tr><tr><td>3.000</td><td>5</td><td>5.700</td><td>5.642</td><td>-0.98</td><td>5.093</td><td>-3.382</td><td>-10.7</td><td>SURCHARGED*</td></tr><tr><td>1.003</td><td>08</td><td>5.800</td><td>5.660</td><td>0.32</td><td>0.475</td><td>3.847</td><td>1.3</td><td>SURCHARGED</td></tr><tr><td>4.000</td><td>09</td><td>6.000</td><td>5.659</td><td>0.57</td><td>0.040</td><td>5.113</td><td>7.6</td><td>SURCHARGED</td></tr><tr><td>4.001</td><td>10</td><td>5.900</td><td>5.650</td><td>0.70</td><td>0.519</td><td>5.448</td><td>8.7</td><td>SURCHARGED</td></tr><tr><td>5.000</td><td>9</td><td>5.700</td><td>5.645</td><td>-0.95</td><td>5.163</td><td>-3.777</td><td>-10.3</td><td>SURCHARGED*</td></tr><tr><td>4.002</td><td>11</td><td>5.900</td><td>5.656</td><td>0.18</td><td>0.422</td><td>2.942</td><td>1.0</td><td>SURCHARGED</td></tr><tr><td>1.004</td><td>04</td><td>5.800</td><td>5.070</td><td>0.42</td><td>0.011</td><td>6.760</td><td>2.3</td><td>OK</td></tr></table>												Water		Pipe					US/MH	US/CL	Level	Flow /	Maximum	Discharge	Flow		PN	Name	(m)	(m)	Cap.	Vol (m³)	Vol (m³)	(l/s)	Status	1.000	RWP20	6.000	5.500	0.36	0.323	3.628	5.2	SURCHARGED*	1.001	05	5.900	5.660	0.43	0.376	3.266	5.1	SURCHARGED	2.000	06	6.000	5.767	1.18	0.958	4.667	7.1	SURCHARGED	1.002	07	5.900	5.658	0.98	0.285	7.663	12.1	SURCHARGED	3.000	5	5.700	5.642	-0.98	5.093	-3.382	-10.7	SURCHARGED*	1.003	08	5.800	5.660	0.32	0.475	3.847	1.3	SURCHARGED	4.000	09	6.000	5.659	0.57	0.040	5.113	7.6	SURCHARGED	4.001	10	5.900	5.650	0.70	0.519	5.448	8.7	SURCHARGED	5.000	9	5.700	5.645	-0.95	5.163	-3.777	-10.3	SURCHARGED*	4.002	11	5.900	5.656	0.18	0.422	2.942	1.0	SURCHARGED	1.004	04	5.800	5.070	0.42	0.011	6.760	2.3	OK
			Water		Pipe																																																																																																																																	
	US/MH	US/CL	Level	Flow /	Maximum	Discharge	Flow																																																																																																																															
PN	Name	(m)	(m)	Cap.	Vol (m³)	Vol (m³)	(l/s)	Status																																																																																																																														
1.000	RWP20	6.000	5.500	0.36	0.323	3.628	5.2	SURCHARGED*																																																																																																																														
1.001	05	5.900	5.660	0.43	0.376	3.266	5.1	SURCHARGED																																																																																																																														
2.000	06	6.000	5.767	1.18	0.958	4.667	7.1	SURCHARGED																																																																																																																														
1.002	07	5.900	5.658	0.98	0.285	7.663	12.1	SURCHARGED																																																																																																																														
3.000	5	5.700	5.642	-0.98	5.093	-3.382	-10.7	SURCHARGED*																																																																																																																														
1.003	08	5.800	5.660	0.32	0.475	3.847	1.3	SURCHARGED																																																																																																																														
4.000	09	6.000	5.659	0.57	0.040	5.113	7.6	SURCHARGED																																																																																																																														
4.001	10	5.900	5.650	0.70	0.519	5.448	8.7	SURCHARGED																																																																																																																														
5.000	9	5.700	5.645	-0.95	5.163	-3.777	-10.3	SURCHARGED*																																																																																																																														
4.002	11	5.900	5.656	0.18	0.422	2.942	1.0	SURCHARGED																																																																																																																														
1.004	04	5.800	5.070	0.42	0.011	6.760	2.3	OK																																																																																																																														
©1982-2017 XP Solutions																																																																																																																																						

Pringuer-James Consulting Engineers Limited						Page 1																																																																																																															
Overseas House Elm Grove London SW19 4HE			 																																																																																																																		
Date 19/06/2018 11:13 File REDESIGN (REV D).MDX						Designed by vlad Checked by																																																																																																															
Innovyze			Network 2017.1.2																																																																																																																		
<u>Summary of Results for 60 minute 100 year Summer (Storm)</u> Margin for Flood Risk Warning (mm) 5.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status ON <table border="1"> <thead> <tr> <th rowspan="2">PN</th> <th rowspan="2">US/MH Name</th> <th rowspan="2">US/CL (m)</th> <th colspan="2">Water</th> <th rowspan="2">Maximum Vol (m³)</th> <th rowspan="2">Discharge Vol (m³)</th> <th rowspan="2">Pipe Flow (l/s)</th> <th rowspan="2">Status</th> </tr> <tr> <th>Level (m)</th> <th>Flow / Cap.</th> </tr> </thead> <tbody> <tr> <td>1.000</td> <td>RWP20</td> <td>6.000</td> <td>5.500</td> <td>0.26</td> <td>0.351</td> <td>4.983</td> <td>3.7</td> <td>SURCHARGED*</td> </tr> <tr> <td>1.001</td> <td>05</td> <td>5.900</td> <td>5.776</td> <td>0.30</td> <td>0.395</td> <td>4.655</td> <td>3.6</td> <td>SURCHARGED</td> </tr> <tr> <td>2.000</td> <td>06</td> <td>6.000</td> <td>5.739</td> <td>0.85</td> <td>0.053</td> <td>6.046</td> <td>5.1</td> <td>SURCHARGED</td> </tr> <tr> <td>1.002</td> <td>07</td> <td>5.900</td> <td>5.762</td> <td>0.70</td> <td>0.302</td> <td>10.468</td> <td>8.6</td> <td>SURCHARGED</td> </tr> <tr> <td>3.000</td> <td>5</td> <td>5.700</td> <td>5.667</td> <td>-0.69</td> <td>5.668</td> <td>-2.299</td> <td>-7.5</td> <td>SURCHARGED*</td> </tr> <tr> <td>1.003</td> <td>08</td> <td>5.800</td> <td>5.753</td> <td>0.33</td> <td>0.516</td> <td>7.834</td> <td>1.3</td> <td>SURCHARGED</td> </tr> <tr> <td>4.000</td> <td>09</td> <td>6.000</td> <td>5.703</td> <td>0.43</td> <td>0.047</td> <td>6.664</td> <td>5.8</td> <td>SURCHARGED</td> </tr> <tr> <td>4.001</td> <td>10</td> <td>5.900</td> <td>5.707</td> <td>0.53</td> <td>0.528</td> <td>7.256</td> <td>6.7</td> <td>SURCHARGED</td> </tr> <tr> <td>5.000</td> <td>9</td> <td>5.700</td> <td>5.679</td> <td>-0.69</td> <td>5.938</td> <td>-3.044</td> <td>-7.5</td> <td>SURCHARGED*</td> </tr> <tr> <td>4.002</td> <td>11</td> <td>5.900</td> <td>5.695</td> <td>0.19</td> <td>0.440</td> <td>6.063</td> <td>1.0</td> <td>SURCHARGED</td> </tr> <tr> <td>1.004</td> <td>04</td> <td>5.800</td> <td>5.071</td> <td>0.44</td> <td>0.011</td> <td>13.868</td> <td>2.3</td> <td>OK</td> </tr> </tbody> </table>								PN	US/MH Name	US/CL (m)	Water		Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status	Level (m)	Flow / Cap.	1.000	RWP20	6.000	5.500	0.26	0.351	4.983	3.7	SURCHARGED*	1.001	05	5.900	5.776	0.30	0.395	4.655	3.6	SURCHARGED	2.000	06	6.000	5.739	0.85	0.053	6.046	5.1	SURCHARGED	1.002	07	5.900	5.762	0.70	0.302	10.468	8.6	SURCHARGED	3.000	5	5.700	5.667	-0.69	5.668	-2.299	-7.5	SURCHARGED*	1.003	08	5.800	5.753	0.33	0.516	7.834	1.3	SURCHARGED	4.000	09	6.000	5.703	0.43	0.047	6.664	5.8	SURCHARGED	4.001	10	5.900	5.707	0.53	0.528	7.256	6.7	SURCHARGED	5.000	9	5.700	5.679	-0.69	5.938	-3.044	-7.5	SURCHARGED*	4.002	11	5.900	5.695	0.19	0.440	6.063	1.0	SURCHARGED	1.004	04	5.800	5.071	0.44	0.011	13.868	2.3	OK
PN	US/MH Name	US/CL (m)	Water		Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)				Status																																																																																																										
			Level (m)	Flow / Cap.																																																																																																																	
1.000	RWP20	6.000	5.500	0.26	0.351	4.983	3.7	SURCHARGED*																																																																																																													
1.001	05	5.900	5.776	0.30	0.395	4.655	3.6	SURCHARGED																																																																																																													
2.000	06	6.000	5.739	0.85	0.053	6.046	5.1	SURCHARGED																																																																																																													
1.002	07	5.900	5.762	0.70	0.302	10.468	8.6	SURCHARGED																																																																																																													
3.000	5	5.700	5.667	-0.69	5.668	-2.299	-7.5	SURCHARGED*																																																																																																													
1.003	08	5.800	5.753	0.33	0.516	7.834	1.3	SURCHARGED																																																																																																													
4.000	09	6.000	5.703	0.43	0.047	6.664	5.8	SURCHARGED																																																																																																													
4.001	10	5.900	5.707	0.53	0.528	7.256	6.7	SURCHARGED																																																																																																													
5.000	9	5.700	5.679	-0.69	5.938	-3.044	-7.5	SURCHARGED*																																																																																																													
4.002	11	5.900	5.695	0.19	0.440	6.063	1.0	SURCHARGED																																																																																																													
1.004	04	5.800	5.071	0.44	0.011	13.868	2.3	OK																																																																																																													
©1982-2017 XP Solutions																																																																																																																					

Pringuer-James Consulting Engineers Limited							Page 1																																																																																																																
Overseas House Elm Grove London SW19 4HE				PRINGUER-JAMES CONSULTING ENGINEERS																																																																																																																			
Date 19/06/2018 11:16				Designed by vlad																																																																																																																			
File REDESIGN (REV D).MDX				Checked by																																																																																																																			
Innovyze				Network 2017.1.2																																																																																																																			
Summary of Results for 15 minute 30 year Summer (Storm) Margin for Flood Risk Warning (mm)5.0 Analysis Timestep 2.5 Second Increment (Extended) DTS StatusON DVD StatusOFF Inertia StatusON																																																																																																																							
<table><tr><th rowspan="2">PN</th><th rowspan="2">US/MH Name</th><th rowspan="2">US/CL (m)</th><th colspan="2">Water</th><th rowspan="2">Maximum Vol (m³)</th><th rowspan="2">Discharge Vol (m³)</th><th>Pipe</th><th rowspan="2">Status</th></tr><tr><th>Level (m)</th><th>Flow / Cap.</th><th>Flow (l/s)</th></tr><tr><td>1.000</td><td>RWP20</td><td>6.000</td><td>5.500</td><td>0.34</td><td>0.218</td><td>2.251</td><td>4.9</td><td>SURCHARGED*</td></tr><tr><td>1.001</td><td>05</td><td>5.900</td><td>5.552</td><td>0.41</td><td>0.359</td><td>2.046</td><td>4.9</td><td>SURCHARGED</td></tr><tr><td>2.000</td><td>06</td><td>5.900</td><td>5.656</td><td>1.04</td><td>0.640</td><td>2.808</td><td>6.3</td><td>SURCHARGED</td></tr><tr><td>1.002</td><td>07</td><td>5.900</td><td>5.538</td><td>0.89</td><td>0.266</td><td>4.652</td><td>11.1</td><td>SURCHARGED</td></tr><tr><td>3.000</td><td>5</td><td>5.700</td><td>5.525</td><td>-0.92</td><td>2.849</td><td>-0.881</td><td>-10.0</td><td>SURCHARGED*</td></tr><tr><td>1.003</td><td>08</td><td>5.800</td><td>5.526</td><td>0.29</td><td>0.414</td><td>3.430</td><td>1.1</td><td>SURCHARGED</td></tr><tr><td>4.000</td><td>09</td><td>6.000</td><td>5.552</td><td>0.51</td><td>0.023</td><td>3.054</td><td>6.9</td><td>OK</td></tr><tr><td>4.001</td><td>10</td><td>5.900</td><td>5.535</td><td>0.64</td><td>0.497</td><td>3.236</td><td>8.0</td><td>SURCHARGED</td></tr><tr><td>5.000</td><td>9</td><td>5.700</td><td>5.527</td><td>-0.88</td><td>2.889</td><td>-1.295</td><td>-9.5</td><td>SURCHARGED*</td></tr><tr><td>4.002</td><td>11</td><td>5.900</td><td>5.533</td><td>0.16</td><td>0.366</td><td>2.615</td><td>0.8</td><td>SURCHARGED</td></tr><tr><td>1.004</td><td>04</td><td>5.800</td><td>5.067</td><td>0.37</td><td>0.010</td><td>6.022</td><td>2.0</td><td>OK</td></tr></table>									PN	US/MH Name	US/CL (m)	Water		Maximum Vol (m³)	Discharge Vol (m³)	Pipe	Status	Level (m)	Flow / Cap.	Flow (l/s)	1.000	RWP20	6.000	5.500	0.34	0.218	2.251	4.9	SURCHARGED*	1.001	05	5.900	5.552	0.41	0.359	2.046	4.9	SURCHARGED	2.000	06	5.900	5.656	1.04	0.640	2.808	6.3	SURCHARGED	1.002	07	5.900	5.538	0.89	0.266	4.652	11.1	SURCHARGED	3.000	5	5.700	5.525	-0.92	2.849	-0.881	-10.0	SURCHARGED*	1.003	08	5.800	5.526	0.29	0.414	3.430	1.1	SURCHARGED	4.000	09	6.000	5.552	0.51	0.023	3.054	6.9	OK	4.001	10	5.900	5.535	0.64	0.497	3.236	8.0	SURCHARGED	5.000	9	5.700	5.527	-0.88	2.889	-1.295	-9.5	SURCHARGED*	4.002	11	5.900	5.533	0.16	0.366	2.615	0.8	SURCHARGED	1.004	04	5.800	5.067	0.37	0.010	6.022	2.0	OK
PN	US/MH Name	US/CL (m)	Water		Maximum Vol (m³)	Discharge Vol (m³)	Pipe	Status																																																																																																															
			Level (m)	Flow / Cap.			Flow (l/s)																																																																																																																
1.000	RWP20	6.000	5.500	0.34	0.218	2.251	4.9	SURCHARGED*																																																																																																															
1.001	05	5.900	5.552	0.41	0.359	2.046	4.9	SURCHARGED																																																																																																															
2.000	06	5.900	5.656	1.04	0.640	2.808	6.3	SURCHARGED																																																																																																															
1.002	07	5.900	5.538	0.89	0.266	4.652	11.1	SURCHARGED																																																																																																															
3.000	5	5.700	5.525	-0.92	2.849	-0.881	-10.0	SURCHARGED*																																																																																																															
1.003	08	5.800	5.526	0.29	0.414	3.430	1.1	SURCHARGED																																																																																																															
4.000	09	6.000	5.552	0.51	0.023	3.054	6.9	OK																																																																																																															
4.001	10	5.900	5.535	0.64	0.497	3.236	8.0	SURCHARGED																																																																																																															
5.000	9	5.700	5.527	-0.88	2.889	-1.295	-9.5	SURCHARGED*																																																																																																															
4.002	11	5.900	5.533	0.16	0.366	2.615	0.8	SURCHARGED																																																																																																															
1.004	04	5.800	5.067	0.37	0.010	6.022	2.0	OK																																																																																																															
©1982-2017 XP Solutions																																																																																																																							

Pringuer-James Consulting Engineers Limited		Page 1																																																																																																														
Overseas House Elm Grove London SW19 4HE	PRINGUER-JAMES CONSULTING ENGINEERS																																																																																																															
Date 19/06/2018 11:15 File REDESIGN (REV D).MDX	Designed by vlad Checked by																																																																																																															
Innovyze	Network 2017.1.2																																																																																																															
<u>Summary of Results for 30 minute 30 year Summer (Storm)</u> Margin for Flood Risk Warning (mm) 5.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status ON DVD Status OFF Inertia Status ON <table border="1"> <thead> <tr> <th rowspan="2">PN</th> <th rowspan="2">US/MH Name</th> <th rowspan="2">US/CL (m)</th> <th colspan="2">Water</th> <th rowspan="2">Maximum Vol (m³)</th> <th rowspan="2">Discharge Vol (m³)</th> <th rowspan="2">Pipe Flow (l/s)</th> <th rowspan="2">Status</th> </tr> <tr> <th>Level (m)</th> <th>Flow / Cap.</th> </tr> </thead> <tbody> <tr><td>1.000</td><td>RWP20</td><td>6.000</td><td>5.500</td><td>0.32</td><td>0.229</td><td>2.890</td><td>4.6</td><td>SURCHARGED*</td></tr> <tr><td>1.001</td><td>05</td><td>5.900</td><td>5.575</td><td>0.38</td><td>0.363</td><td>2.565</td><td>4.5</td><td>SURCHARGED</td></tr> <tr><td>2.000</td><td>06</td><td>6.000</td><td>5.631</td><td>0.97</td><td>0.036</td><td>3.683</td><td>5.8</td><td>SURCHARGED</td></tr> <tr><td>1.002</td><td>07</td><td>5.900</td><td>5.573</td><td>0.82</td><td>0.272</td><td>5.995</td><td>10.2</td><td>SURCHARGED</td></tr> <tr><td>3.000</td><td>5</td><td>5.700</td><td>5.567</td><td>-0.83</td><td>3.591</td><td>-2.064</td><td>-9.0</td><td>SURCHARGED*</td></tr> <tr><td>1.003</td><td>08</td><td>5.800</td><td>5.567</td><td>0.30</td><td>0.433</td><td>3.531</td><td>1.2</td><td>SURCHARGED</td></tr> <tr><td>4.000</td><td>09</td><td>6.000</td><td>5.581</td><td>0.46</td><td>0.027</td><td>4.004</td><td>6.3</td><td>SURCHARGED</td></tr> <tr><td>4.001</td><td>10</td><td>5.900</td><td>5.577</td><td>0.55</td><td>0.505</td><td>4.217</td><td>6.8</td><td>SURCHARGED</td></tr> <tr><td>5.000</td><td>9</td><td>5.700</td><td>5.573</td><td>-0.77</td><td>3.697</td><td>-2.467</td><td>-8.3</td><td>SURCHARGED*</td></tr> <tr><td>4.002</td><td>11</td><td>5.900</td><td>5.574</td><td>0.17</td><td>0.385</td><td>2.695</td><td>0.9</td><td>SURCHARGED</td></tr> <tr><td>1.004</td><td>04</td><td>5.800</td><td>5.068</td><td>0.39</td><td>0.011</td><td>6.200</td><td>2.1</td><td>OK</td></tr> </tbody> </table>			PN	US/MH Name	US/CL (m)	Water		Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status	Level (m)	Flow / Cap.	1.000	RWP20	6.000	5.500	0.32	0.229	2.890	4.6	SURCHARGED*	1.001	05	5.900	5.575	0.38	0.363	2.565	4.5	SURCHARGED	2.000	06	6.000	5.631	0.97	0.036	3.683	5.8	SURCHARGED	1.002	07	5.900	5.573	0.82	0.272	5.995	10.2	SURCHARGED	3.000	5	5.700	5.567	-0.83	3.591	-2.064	-9.0	SURCHARGED*	1.003	08	5.800	5.567	0.30	0.433	3.531	1.2	SURCHARGED	4.000	09	6.000	5.581	0.46	0.027	4.004	6.3	SURCHARGED	4.001	10	5.900	5.577	0.55	0.505	4.217	6.8	SURCHARGED	5.000	9	5.700	5.573	-0.77	3.697	-2.467	-8.3	SURCHARGED*	4.002	11	5.900	5.574	0.17	0.385	2.695	0.9	SURCHARGED	1.004	04	5.800	5.068	0.39	0.011	6.200	2.1	OK
PN	US/MH Name	US/CL (m)				Water						Maximum Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status																																																																																																	
			Level (m)	Flow / Cap.																																																																																																												
1.000	RWP20	6.000	5.500	0.32	0.229	2.890	4.6	SURCHARGED*																																																																																																								
1.001	05	5.900	5.575	0.38	0.363	2.565	4.5	SURCHARGED																																																																																																								
2.000	06	6.000	5.631	0.97	0.036	3.683	5.8	SURCHARGED																																																																																																								
1.002	07	5.900	5.573	0.82	0.272	5.995	10.2	SURCHARGED																																																																																																								
3.000	5	5.700	5.567	-0.83	3.591	-2.064	-9.0	SURCHARGED*																																																																																																								
1.003	08	5.800	5.567	0.30	0.433	3.531	1.2	SURCHARGED																																																																																																								
4.000	09	6.000	5.581	0.46	0.027	4.004	6.3	SURCHARGED																																																																																																								
4.001	10	5.900	5.577	0.55	0.505	4.217	6.8	SURCHARGED																																																																																																								
5.000	9	5.700	5.573	-0.77	3.697	-2.467	-8.3	SURCHARGED*																																																																																																								
4.002	11	5.900	5.574	0.17	0.385	2.695	0.9	SURCHARGED																																																																																																								
1.004	04	5.800	5.068	0.39	0.011	6.200	2.1	OK																																																																																																								
©1982-2017 XP Solutions																																																																																																																

Pringuer-James Consulting Engineers Limited						Page 1																																																																																																																		
Overseas House Elm Grove London SW19 4HE			 																																																																																																																					
Date 19/06/2018 11:14 File REDESIGN (REV D).MDX						Designed by vlad Checked by																																																																																																																		
Innovyze			Network 2017.1.2																																																																																																																					
<u>Summary of Results for 60 minute 30 year Summer (Storm)</u> Margin for Flood Risk Warning (mm) 5.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status ON <table border="1"> <thead> <tr> <th rowspan="2">PN</th> <th rowspan="2">US/MH Name</th> <th rowspan="2">US/CL (m)</th> <th colspan="2">Water</th> <th rowspan="2">Maximum Vol (m³)</th> <th rowspan="2">Discharge Vol (m³)</th> <th colspan="2">Pipe</th> <th rowspan="2">Status</th> </tr> <tr> <th>Level (m)</th> <th>Flow / Cap.</th> <th>Flow (l/s)</th> <th>Flow (l/s)</th> </tr> </thead> <tbody> <tr> <td>1.000</td> <td>RWP20</td> <td>6.000</td> <td>5.500</td> <td>0.23</td> <td>0.266</td> <td>3.794</td> <td>3.3</td> <td>SURCHARGED*</td> </tr> <tr> <td>1.001</td> <td>05</td> <td>5.900</td> <td>5.683</td> <td>0.26</td> <td>0.380</td> <td>3.607</td> <td>3.2</td> <td>SURCHARGED</td> </tr> <tr> <td>2.000</td> <td>06</td> <td>6.000</td> <td>5.633</td> <td>0.70</td> <td>0.036</td> <td>4.725</td> <td>4.2</td> <td>SURCHARGED</td> </tr> <tr> <td>1.002</td> <td>07</td> <td>5.900</td> <td>5.677</td> <td>0.59</td> <td>0.288</td> <td>8.138</td> <td>7.3</td> <td>SURCHARGED</td> </tr> <tr> <td>3.000</td> <td>5</td> <td>5.700</td> <td>5.587</td> <td>-0.57</td> <td>3.969</td> <td>-0.769</td> <td>-6.2</td> <td>SURCHARGED*</td> </tr> <tr> <td>1.003</td> <td>08</td> <td>5.800</td> <td>5.696</td> <td>0.31</td> <td>0.491</td> <td>7.036</td> <td>1.2</td> <td>SURCHARGED</td> </tr> <tr> <td>4.000</td> <td>09</td> <td>6.000</td> <td>5.620</td> <td>0.32</td> <td>0.033</td> <td>5.220</td> <td>4.3</td> <td>SURCHARGED</td> </tr> <tr> <td>4.001</td> <td>10</td> <td>5.900</td> <td>5.644</td> <td>0.40</td> <td>0.518</td> <td>5.739</td> <td>5.0</td> <td>SURCHARGED</td> </tr> <tr> <td>5.000</td> <td>9</td> <td>5.700</td> <td>5.593</td> <td>-0.49</td> <td>4.080</td> <td>-1.575</td> <td>-5.3</td> <td>SURCHARGED*</td> </tr> <tr> <td>4.002</td> <td>11</td> <td>5.900</td> <td>5.649</td> <td>0.17</td> <td>0.419</td> <td>5.468</td> <td>0.9</td> <td>SURCHARGED</td> </tr> <tr> <td>1.004</td> <td>04</td> <td>5.800</td> <td>5.069</td> <td>0.40</td> <td>0.011</td> <td>12.479</td> <td>2.1</td> <td>OK</td> </tr> </tbody> </table>								PN	US/MH Name	US/CL (m)	Water		Maximum Vol (m³)	Discharge Vol (m³)	Pipe		Status	Level (m)	Flow / Cap.	Flow (l/s)	Flow (l/s)	1.000	RWP20	6.000	5.500	0.23	0.266	3.794	3.3	SURCHARGED*	1.001	05	5.900	5.683	0.26	0.380	3.607	3.2	SURCHARGED	2.000	06	6.000	5.633	0.70	0.036	4.725	4.2	SURCHARGED	1.002	07	5.900	5.677	0.59	0.288	8.138	7.3	SURCHARGED	3.000	5	5.700	5.587	-0.57	3.969	-0.769	-6.2	SURCHARGED*	1.003	08	5.800	5.696	0.31	0.491	7.036	1.2	SURCHARGED	4.000	09	6.000	5.620	0.32	0.033	5.220	4.3	SURCHARGED	4.001	10	5.900	5.644	0.40	0.518	5.739	5.0	SURCHARGED	5.000	9	5.700	5.593	-0.49	4.080	-1.575	-5.3	SURCHARGED*	4.002	11	5.900	5.649	0.17	0.419	5.468	0.9	SURCHARGED	1.004	04	5.800	5.069	0.40	0.011	12.479	2.1	OK
PN	US/MH Name	US/CL (m)	Water		Maximum Vol (m³)	Discharge Vol (m³)	Pipe				Status																																																																																																													
			Level (m)	Flow / Cap.			Flow (l/s)	Flow (l/s)																																																																																																																
1.000	RWP20	6.000	5.500	0.23	0.266	3.794	3.3	SURCHARGED*																																																																																																																
1.001	05	5.900	5.683	0.26	0.380	3.607	3.2	SURCHARGED																																																																																																																
2.000	06	6.000	5.633	0.70	0.036	4.725	4.2	SURCHARGED																																																																																																																
1.002	07	5.900	5.677	0.59	0.288	8.138	7.3	SURCHARGED																																																																																																																
3.000	5	5.700	5.587	-0.57	3.969	-0.769	-6.2	SURCHARGED*																																																																																																																
1.003	08	5.800	5.696	0.31	0.491	7.036	1.2	SURCHARGED																																																																																																																
4.000	09	6.000	5.620	0.32	0.033	5.220	4.3	SURCHARGED																																																																																																																
4.001	10	5.900	5.644	0.40	0.518	5.739	5.0	SURCHARGED																																																																																																																
5.000	9	5.700	5.593	-0.49	4.080	-1.575	-5.3	SURCHARGED*																																																																																																																
4.002	11	5.900	5.649	0.17	0.419	5.468	0.9	SURCHARGED																																																																																																																
1.004	04	5.800	5.069	0.40	0.011	12.479	2.1	OK																																																																																																																
©1982-2017 XP Solutions																																																																																																																								

Pringuer-James Consulting Engineers Limited							Page 1																																																																																																																		
Overseas House Elm Grove London SW19 4HE			 																																																																																																																						
Date 19/06/2018 11:16 File REDESIGN (REV D).MDX							Designed by vlad Checked by																																																																																																																		
Innovyze			Network 2017.1.2																																																																																																																						
<u>Summary of Results for 15 minute 1 year Summer (Storm)</u> Margin for Flood Risk Warning (mm) 5.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status ON DVD Status OFF Inertia Status ON																																																																																																																									
<table border="1"> <thead> <tr> <th rowspan="2">PN</th> <th rowspan="2">US/MH Name</th> <th rowspan="2">US/CL (m)</th> <th colspan="2">Water</th> <th colspan="3">Pipe</th> <th rowspan="2">Status</th> </tr> <tr> <th>Level (m)</th> <th>Flow / Cap.</th> <th>Maximum Vol (m³)</th> <th>Discharge Vol (m³)</th> <th>Flow (l/s)</th> </tr> </thead> <tbody> <tr> <td>1.000</td> <td>RWP20</td> <td>6.000</td> <td>5.405</td> <td>0.12</td> <td>0.050</td> <td>0.754</td> <td>1.7</td> <td>OK*</td> </tr> <tr> <td>1.001</td> <td>05</td> <td>5.900</td> <td>5.400</td> <td>0.10</td> <td>0.230</td> <td>0.754</td> <td>1.2</td> <td>SURCHARGED</td> </tr> <tr> <td>2.000</td> <td>06</td> <td>6.000</td> <td>5.441</td> <td>0.35</td> <td>0.006</td> <td>0.919</td> <td>2.1</td> <td>OK</td> </tr> <tr> <td>1.002</td> <td>07</td> <td>5.900</td> <td>5.396</td> <td>0.19</td> <td>0.206</td> <td>1.674</td> <td>2.4</td> <td>SURCHARGED</td> </tr> <tr> <td>3.000</td> <td>5</td> <td>5.700</td> <td>5.345</td> <td>-0.13</td> <td>0.425</td> <td>-0.002</td> <td>-1.5</td> <td>OK*</td> </tr> <tr> <td>1.003</td> <td>08</td> <td>5.800</td> <td>5.387</td> <td>0.23</td> <td>0.333</td> <td>1.670</td> <td>0.9</td> <td>SURCHARGED</td> </tr> <tr> <td>4.000</td> <td>09</td> <td>6.000</td> <td>5.446</td> <td>0.17</td> <td>0.006</td> <td>1.003</td> <td>2.3</td> <td>OK</td> </tr> <tr> <td>4.001</td> <td>10</td> <td>5.900</td> <td>5.389</td> <td>0.18</td> <td>0.233</td> <td>1.171</td> <td>2.2</td> <td>SURCHARGED</td> </tr> <tr> <td>5.000</td> <td>9</td> <td>5.700</td> <td>5.359</td> <td>-0.19</td> <td>0.570</td> <td>-0.007</td> <td>-2.0</td> <td>OK*</td> </tr> <tr> <td>4.002</td> <td>11</td> <td>5.900</td> <td>5.381</td> <td>0.12</td> <td>0.288</td> <td>1.491</td> <td>0.6</td> <td>SURCHARGED</td> </tr> <tr> <td>1.004</td> <td>04</td> <td>5.800</td> <td>5.062</td> <td>0.29</td> <td>0.009</td> <td>3.162</td> <td>1.6</td> <td>OK</td> </tr> </tbody> </table>									PN	US/MH Name	US/CL (m)	Water		Pipe			Status	Level (m)	Flow / Cap.	Maximum Vol (m³)	Discharge Vol (m³)	Flow (l/s)	1.000	RWP20	6.000	5.405	0.12	0.050	0.754	1.7	OK*	1.001	05	5.900	5.400	0.10	0.230	0.754	1.2	SURCHARGED	2.000	06	6.000	5.441	0.35	0.006	0.919	2.1	OK	1.002	07	5.900	5.396	0.19	0.206	1.674	2.4	SURCHARGED	3.000	5	5.700	5.345	-0.13	0.425	-0.002	-1.5	OK*	1.003	08	5.800	5.387	0.23	0.333	1.670	0.9	SURCHARGED	4.000	09	6.000	5.446	0.17	0.006	1.003	2.3	OK	4.001	10	5.900	5.389	0.18	0.233	1.171	2.2	SURCHARGED	5.000	9	5.700	5.359	-0.19	0.570	-0.007	-2.0	OK*	4.002	11	5.900	5.381	0.12	0.288	1.491	0.6	SURCHARGED	1.004	04	5.800	5.062	0.29	0.009	3.162	1.6	OK
PN	US/MH Name	US/CL (m)	Water		Pipe			Status																																																																																																																	
			Level (m)	Flow / Cap.	Maximum Vol (m³)	Discharge Vol (m³)	Flow (l/s)																																																																																																																		
1.000	RWP20	6.000	5.405	0.12	0.050	0.754	1.7	OK*																																																																																																																	
1.001	05	5.900	5.400	0.10	0.230	0.754	1.2	SURCHARGED																																																																																																																	
2.000	06	6.000	5.441	0.35	0.006	0.919	2.1	OK																																																																																																																	
1.002	07	5.900	5.396	0.19	0.206	1.674	2.4	SURCHARGED																																																																																																																	
3.000	5	5.700	5.345	-0.13	0.425	-0.002	-1.5	OK*																																																																																																																	
1.003	08	5.800	5.387	0.23	0.333	1.670	0.9	SURCHARGED																																																																																																																	
4.000	09	6.000	5.446	0.17	0.006	1.003	2.3	OK																																																																																																																	
4.001	10	5.900	5.389	0.18	0.233	1.171	2.2	SURCHARGED																																																																																																																	
5.000	9	5.700	5.359	-0.19	0.570	-0.007	-2.0	OK*																																																																																																																	
4.002	11	5.900	5.381	0.12	0.288	1.491	0.6	SURCHARGED																																																																																																																	
1.004	04	5.800	5.062	0.29	0.009	3.162	1.6	OK																																																																																																																	
©1982-2017 XP Solutions																																																																																																																									

Pringuer-James Consulting Engineers Limited		Page 1																																																																																																																
Overseas House Elm Grove London SW19 4HE	PRINGUER-JAMES CONSULTING ENGINEERS																																																																																																																	
Date 19/06/2018 11:17 File REDESIGN (REV D).MDX	Designed by vlad Checked by																																																																																																																	
Innovyze	Network 2017.1.2																																																																																																																	
<u>Summary of Results for 30 minute 1 year Summer (Storm)</u> Margin for Flood Risk Warning (mm) 5.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status ON DVD Status OFF Inertia Status ON <table border="1"> <thead> <tr> <th rowspan="2">PN</th> <th rowspan="2">US/MH Name</th> <th rowspan="2">US/CL (m)</th> <th colspan="2">Water</th> <th colspan="2">Pipe</th> <th rowspan="2">Status</th> </tr> <tr> <th>Level (m)</th> <th>Flow / Cap.</th> <th>Maximum Vol (m³)</th> <th>Discharge Vol (m³)</th> <th>Flow (l/s)</th> </tr> </thead> <tbody> <tr><td>1.000</td><td>RWP20</td><td>6.000</td><td>5.407</td><td>0.10</td><td>0.052</td><td>1.000</td><td>1.5</td><td>OK*</td></tr> <tr><td>1.001</td><td>05</td><td>5.900</td><td>5.402</td><td>0.09</td><td>0.236</td><td>1.001</td><td>1.1</td><td>SURCHARGED</td></tr> <tr><td>2.000</td><td>06</td><td>6.000</td><td>5.439</td><td>0.32</td><td>0.005</td><td>1.220</td><td>1.9</td><td>OK</td></tr> <tr><td>1.002</td><td>07</td><td>5.900</td><td>5.399</td><td>0.20</td><td>0.208</td><td>2.222</td><td>2.4</td><td>SURCHARGED</td></tr> <tr><td>3.000</td><td>5</td><td>5.700</td><td>5.354</td><td>-0.14</td><td>0.524</td><td>-0.021</td><td>-1.5</td><td>OK*</td></tr> <tr><td>1.003</td><td>08</td><td>5.800</td><td>5.389</td><td>0.23</td><td>0.335</td><td>2.184</td><td>0.9</td><td>SURCHARGED</td></tr> <tr><td>4.000</td><td>09</td><td>6.000</td><td>5.444</td><td>0.15</td><td>0.005</td><td>1.331</td><td>2.1</td><td>OK</td></tr> <tr><td>4.001</td><td>10</td><td>5.900</td><td>5.389</td><td>0.17</td><td>0.234</td><td>1.531</td><td>2.1</td><td>SURCHARGED</td></tr> <tr><td>5.000</td><td>9</td><td>5.700</td><td>5.368</td><td>-0.18</td><td>0.675</td><td>-0.060</td><td>-2.0</td><td>OK*</td></tr> <tr><td>4.002</td><td>11</td><td>5.900</td><td>5.382</td><td>0.12</td><td>0.288</td><td>1.782</td><td>0.7</td><td>SURCHARGED</td></tr> <tr><td>1.004</td><td>04</td><td>5.800</td><td>5.062</td><td>0.30</td><td>0.009</td><td>3.957</td><td>1.6</td><td>OK</td></tr> </tbody> </table>			PN	US/MH Name	US/CL (m)	Water		Pipe		Status	Level (m)	Flow / Cap.	Maximum Vol (m³)	Discharge Vol (m³)	Flow (l/s)	1.000	RWP20	6.000	5.407	0.10	0.052	1.000	1.5	OK*	1.001	05	5.900	5.402	0.09	0.236	1.001	1.1	SURCHARGED	2.000	06	6.000	5.439	0.32	0.005	1.220	1.9	OK	1.002	07	5.900	5.399	0.20	0.208	2.222	2.4	SURCHARGED	3.000	5	5.700	5.354	-0.14	0.524	-0.021	-1.5	OK*	1.003	08	5.800	5.389	0.23	0.335	2.184	0.9	SURCHARGED	4.000	09	6.000	5.444	0.15	0.005	1.331	2.1	OK	4.001	10	5.900	5.389	0.17	0.234	1.531	2.1	SURCHARGED	5.000	9	5.700	5.368	-0.18	0.675	-0.060	-2.0	OK*	4.002	11	5.900	5.382	0.12	0.288	1.782	0.7	SURCHARGED	1.004	04	5.800	5.062	0.30	0.009	3.957	1.6	OK
PN	US/MH Name	US/CL (m)				Water		Pipe			Status																																																																																																							
			Level (m)	Flow / Cap.	Maximum Vol (m³)	Discharge Vol (m³)	Flow (l/s)																																																																																																											
1.000	RWP20	6.000	5.407	0.10	0.052	1.000	1.5	OK*																																																																																																										
1.001	05	5.900	5.402	0.09	0.236	1.001	1.1	SURCHARGED																																																																																																										
2.000	06	6.000	5.439	0.32	0.005	1.220	1.9	OK																																																																																																										
1.002	07	5.900	5.399	0.20	0.208	2.222	2.4	SURCHARGED																																																																																																										
3.000	5	5.700	5.354	-0.14	0.524	-0.021	-1.5	OK*																																																																																																										
1.003	08	5.800	5.389	0.23	0.335	2.184	0.9	SURCHARGED																																																																																																										
4.000	09	6.000	5.444	0.15	0.005	1.331	2.1	OK																																																																																																										
4.001	10	5.900	5.389	0.17	0.234	1.531	2.1	SURCHARGED																																																																																																										
5.000	9	5.700	5.368	-0.18	0.675	-0.060	-2.0	OK*																																																																																																										
4.002	11	5.900	5.382	0.12	0.288	1.782	0.7	SURCHARGED																																																																																																										
1.004	04	5.800	5.062	0.30	0.009	3.957	1.6	OK																																																																																																										
©1982-2017 XP Solutions																																																																																																																		

Pringuer-James Consulting Engineers Limited							Page 1																																																																																																																			
Overseas House Elm Grove London SW19 4HE				PRINGUER-JAMES CONSULTING ENGINEERS																																																																																																																						
Date 19/06/2018 11:17																																																																																																																										
File REDESIGN (REV D).MDX				Designed by vlad																																																																																																																						
				Checked by																																																																																																																						
Innovyze				Network 2017.1.2																																																																																																																						
Summary of Results for 60 minute 1 year Summer (Storm)																																																																																																																										
Margin for Flood Risk Warning (mm)							5.0																																																																																																																			
Analysis Timestep 2.5 Second Increment (Extended)																																																																																																																										
DTS Status							ON																																																																																																																			
DVD Status							OFF																																																																																																																			
Inertia Status							ON																																																																																																																			
<table><tr><th rowspan="2">PN</th><th rowspan="2">US/MH Name</th><th rowspan="2">US/CL (m)</th><th colspan="2">Water</th><th colspan="2">Flow / Maximum</th><th colspan="2">Pipe</th><th rowspan="2">Status</th></tr><tr><th>Level (m)</th><th>Cap.</th><th>Vol (m³)</th><th>Discharge Vol (m³)</th><th>Flow (l/s)</th></tr><tr><td>1.000</td><td>RWP20</td><td>6.000</td><td>5.392</td><td>0.08</td><td>0.037</td><td>1.295</td><td>1.1</td><td>OK*</td></tr><tr><td>1.001</td><td>05</td><td>5.900</td><td>5.388</td><td>0.08</td><td>0.206</td><td>1.297</td><td>0.9</td><td>SURCHARGED</td></tr><tr><td>2.000</td><td>06</td><td>6.000</td><td>5.433</td><td>0.24</td><td>0.005</td><td>1.583</td><td>1.4</td><td>OK</td></tr><tr><td>1.002</td><td>07</td><td>5.900</td><td>5.385</td><td>0.17</td><td>0.199</td><td>2.879</td><td>2.1</td><td>SURCHARGED</td></tr><tr><td>3.000</td><td>5</td><td>5.700</td><td>5.354</td><td>-0.11</td><td>0.516</td><td>-0.005</td><td>-1.2</td><td>OK*</td></tr><tr><td>1.003</td><td>08</td><td>5.800</td><td>5.378</td><td>0.23</td><td>0.326</td><td>2.875</td><td>0.9</td><td>SURCHARGED</td></tr><tr><td>4.000</td><td>09</td><td>6.000</td><td>5.439</td><td>0.11</td><td>0.005</td><td>1.728</td><td>1.5</td><td>OK</td></tr><tr><td>4.001</td><td>10</td><td>5.900</td><td>5.380</td><td>0.13</td><td>0.209</td><td>2.020</td><td>1.7</td><td>OK</td></tr><tr><td>5.000</td><td>9</td><td>5.700</td><td>5.370</td><td>-0.14</td><td>0.696</td><td>-0.005</td><td>-1.5</td><td>OK*</td></tr><tr><td>4.002</td><td>11</td><td>5.900</td><td>5.375</td><td>0.12</td><td>0.284</td><td>2.592</td><td>0.6</td><td>SURCHARGED</td></tr><tr><td>1.004</td><td>04</td><td>5.800</td><td>5.062</td><td>0.29</td><td>0.009</td><td>5.466</td><td>1.5</td><td>OK</td></tr></table>									PN	US/MH Name	US/CL (m)	Water		Flow / Maximum		Pipe		Status	Level (m)	Cap.	Vol (m³)	Discharge Vol (m³)	Flow (l/s)	1.000	RWP20	6.000	5.392	0.08	0.037	1.295	1.1	OK*	1.001	05	5.900	5.388	0.08	0.206	1.297	0.9	SURCHARGED	2.000	06	6.000	5.433	0.24	0.005	1.583	1.4	OK	1.002	07	5.900	5.385	0.17	0.199	2.879	2.1	SURCHARGED	3.000	5	5.700	5.354	-0.11	0.516	-0.005	-1.2	OK*	1.003	08	5.800	5.378	0.23	0.326	2.875	0.9	SURCHARGED	4.000	09	6.000	5.439	0.11	0.005	1.728	1.5	OK	4.001	10	5.900	5.380	0.13	0.209	2.020	1.7	OK	5.000	9	5.700	5.370	-0.14	0.696	-0.005	-1.5	OK*	4.002	11	5.900	5.375	0.12	0.284	2.592	0.6	SURCHARGED	1.004	04	5.800	5.062	0.29	0.009	5.466	1.5	OK
PN	US/MH Name	US/CL (m)	Water		Flow / Maximum		Pipe					Status																																																																																																														
			Level (m)	Cap.	Vol (m³)	Discharge Vol (m³)	Flow (l/s)																																																																																																																			
1.000	RWP20	6.000	5.392	0.08	0.037	1.295	1.1	OK*																																																																																																																		
1.001	05	5.900	5.388	0.08	0.206	1.297	0.9	SURCHARGED																																																																																																																		
2.000	06	6.000	5.433	0.24	0.005	1.583	1.4	OK																																																																																																																		
1.002	07	5.900	5.385	0.17	0.199	2.879	2.1	SURCHARGED																																																																																																																		
3.000	5	5.700	5.354	-0.11	0.516	-0.005	-1.2	OK*																																																																																																																		
1.003	08	5.800	5.378	0.23	0.326	2.875	0.9	SURCHARGED																																																																																																																		
4.000	09	6.000	5.439	0.11	0.005	1.728	1.5	OK																																																																																																																		
4.001	10	5.900	5.380	0.13	0.209	2.020	1.7	OK																																																																																																																		
5.000	9	5.700	5.370	-0.14	0.696	-0.005	-1.5	OK*																																																																																																																		
4.002	11	5.900	5.375	0.12	0.284	2.592	0.6	SURCHARGED																																																																																																																		
1.004	04	5.800	5.062	0.29	0.009	5.466	1.5	OK																																																																																																																		
©1982-2017 XP Solutions																																																																																																																										

Appendix C - Maintenance plan

The following components will require maintenance over the lifetime of the development:

- Detention Basin
- Permeable Pavements
- Hydro-brake

All above elements will be maintained in accordance with CIRIA (C753) The SuDS Manual recommendation as detailed below. Reputable maintenance company will be commissioned to undertake maintenance once relevant products are installed.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass and manage other vegetation	Monthly during growing season
	Inspect inlets/outlets for blockages, inspect banksides, structures, pipework for evident of physical damage	Monthly
	Tidy up all dead growth before start of growing season	Annually
Occasional maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years or as required.
	Remove sediment from inlets/outlets, and main basin when required	Every 5 years or as required.
Remedial Actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets/outlets	As required
	Relevel uneven surfaces and reinstate design levels.	As required

Permeable Pavements

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Check pavement for loose stone and re-instate where required.	Once a year or as required.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds and management of any weeds in the pavement or adjacent.	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Rehabilitation of surface and upper structure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance reduced due to significant clogging)
Monitoring	Initial Inspection	Monthly for three month after installation
	Inspect for evidence of poor operation and/or weed growth – take remedial action if required.	Three-monthly, 48h after large storms in first six months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor inspection chambers	Annually

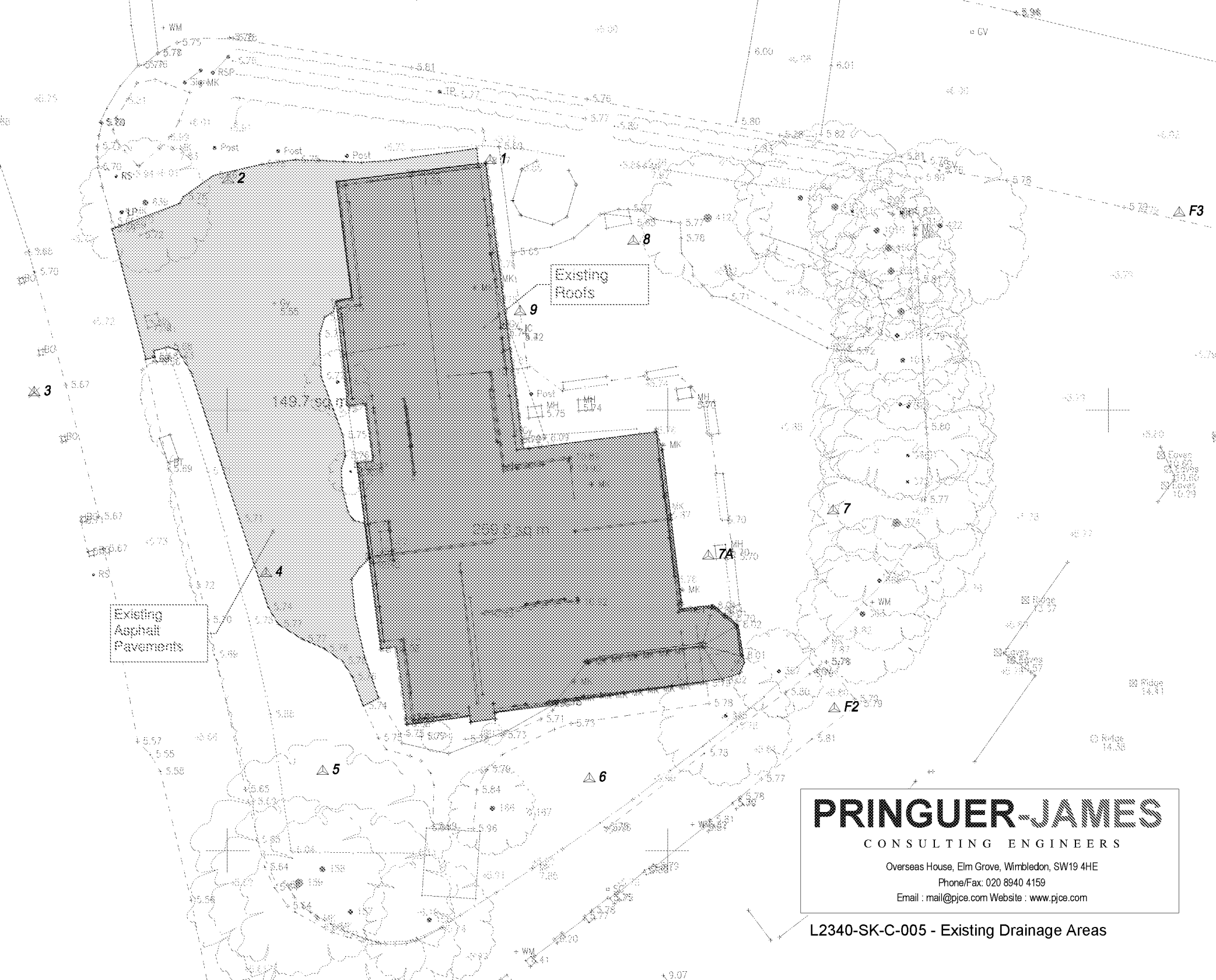
Orifice Plate

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Check and Empty sump pit. Check Orifice Plate for any blockages. If fault is identified during routine inspection/monitoring, undertake remedial action.	Every 6 month.
Remedial Action	Repair and/or replace orifice plate	As required
Monitoring	Inspection to check orifice performance, condition of the system and to identify any faults.	Every 3 to 6 month

Appendix D – Sketches and Drawings

L2340-SK-C-005 – Existing Site drainage areas

L2340-C-52-750 – Drainage for Planning



PRINGUER-JAMES

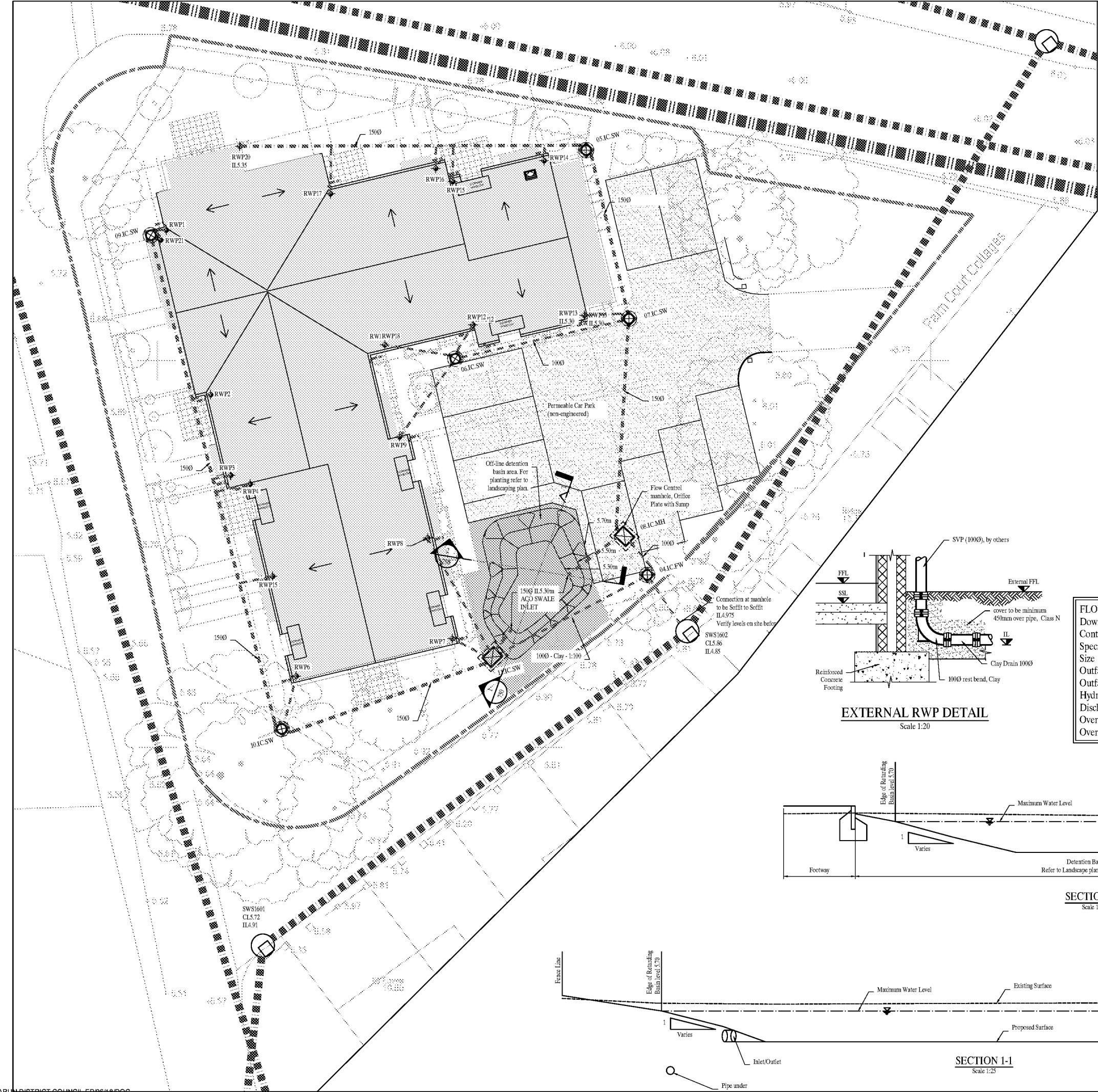
CONSULTING ENGINEERS

Overseas House, Elm Grove, Wimbledon, SW19 4HE

Phone/Fax: 020 8940 4159

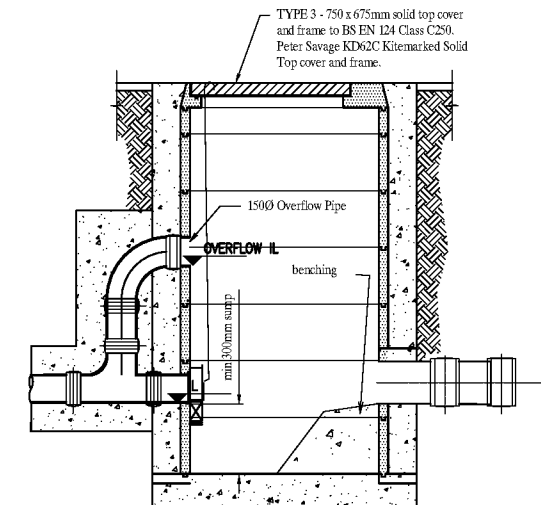
Email : mail@pjce.com Website : www.pjce.com

L2340-SK-C-005 - Existing Drainage Areas



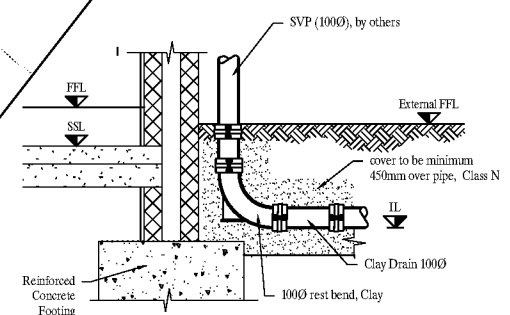
Ref.	FFL	IL	Internal size	Specification	Cover Size	Cover Type	Notes:
04.IC.FW	TBC	5.025	4500	SIA Type 3 - B.16	450 x 450	Type 1	-
05.IC.SW	TBC	5.230	4500	SIA Type 3 - B.16	450 x 450	Type 1	-
06.IC.SW	TBC	5.400	4500	SIA Type 3 - B.16	450 x 450	Type 1	-
07.IC.SW	TBC	5.170	4500	SIA Type 3 - B.16	450 x 450	Type 1	-
08.MH.SW	TBC	See Notes	750 x 600	SIA Type 4 - B.21	750 x 600	Type 1	Sump - ILA.800 Outfall - IL.5.100 Overflow - IL.5.800 Basin two-way pipe IL - 5.25 Flow-Control - Specification 1
09.IC.SW	TBC	5.405	4500	SIA Type 3 - B.16	450 x 450	Type 2	-
10.IC.SW	TBC	5.230	4500	SIA Type 4 - B.21	450 x 450	Type 2	-
11.MH.SW	TBC	See Notes	750 x 600	SIA Type 3 - B.18	750 x 600	Type 2	Sump - ILA.800 Outfall - IL.5.157 Overflow - IL.5.800 Basin two-way pipe IL - 5.25 Flow-Control - Specification 2

- Notes:
- All chamber to be to adoptable standards, SFA - Sewers for Adoption, 7th Edition.
 - Check existing sewer invert levels on site prior to start.
 - Confirm FFL with Architect before installation



FLOW CONTROL CHAMBER DETAIL
Scale 1:20

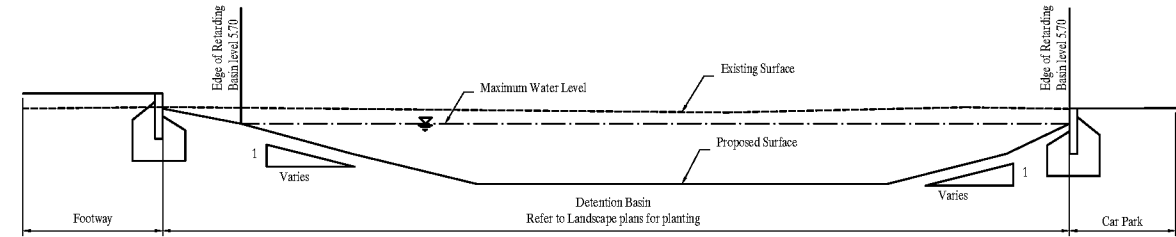
Key	
	Surface Water Pipe
	Inspection Chamber - Flexible To Adoptable Standards
	Inspection Chamber, Concrete
	RWP stack
	Rodding eye



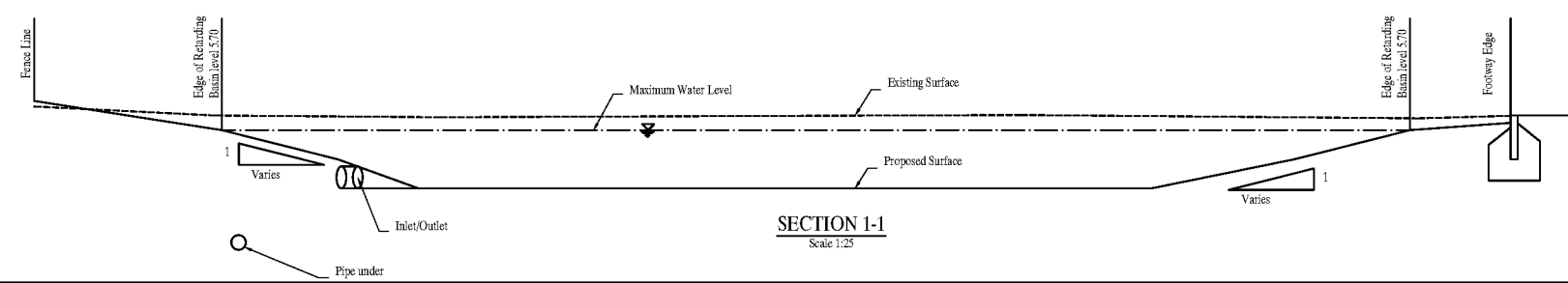
EXTERNAL RWP DETAIL
Scale 1:20

FLOW CONTROL SPECIFICATION	
Downstream Manhole	- 11.IC.SW
Control Mechanism	- Orifice Plate
Specification	- ACO Q-Plate
Size	- 0.026 m
Outfall pipe size	- 100mm
Outfall I.L.	- 5.156 m
Hydraulic Head	- 0.544 m
Discharge Rate	- 1.0 l/s
Overflow Pipe	- 100mm
Overflow Pipe I.L.	- 5.800m

FLOW CONTROL SPECIFICATION	
Manhole	- 08.IC.SW
Control Mechanism	- Orifice Plate
Specification	- ACO Q-Plate
Size	- 0.029 m
Outfall pipe size	- 100mm
Outfall I.L.	- 5.100 m
Hydraulic Head	- 0.6 m
Discharge Rate	- 1.3 l/s
Overflow Pipe	- 100mm
Overflow Pipe I.L.	- 5.800m



SECTION 2-2
Scale 1:25



SECTION 1-1
Scale 1:25

- Notes:
- This drawing is for planning conditions discharge and is not for construction.
 - All dimensions are in millimetres unless otherwise stated. All levels are in metres unless otherwise stated.
 - This drawing should be read in conjunction with all relevant architects, structural engineers and m&e engineers drawings and specification.
 - Minimum Clay Pipe cover depth for use of Class N/D bedding and surround to be as following. Where minimum cover cannot be met the pipe to be concrete encased.
 - Grass areas: 300mm minimum
 - Footways: 400mm minimum
 - Roads: 800mm minimum
 - All stacks/swp/cwp are 1000 U.N.O. All pipes are 1000 unless noted otherwise.
 - All 1000 pipes to have minimum gradient 1:100 U.N.O.
 - All drains are to be laid in a constant gradient between manhole chambers.
 - New connection onto existing sewer to be in accordance with Southern Water requirements.
 - All road openings within the public highway to be agreed with the local authority.
 - All buried concrete products and mortars are to contain class 2 sulphate resisting cement.

02	20.06.2018	DA	Issued for Council Approval
01	30.05.2018	DA	Issued for Council Approval
Rev.	Date	Drawn	Amendment

PRINGUER-JAMES
CONSULTING ENGINEERS
Overseas House, Elm Grove, London, SW19 4HE
Phone/Fax : 020 8940 4159
Email : mail@pjce.com Website : www.pjce.com

ROCCO HOMES
TUDOR COTTAGE, SEA ROAD,
EAST PRESTON
DRAINAGE FOR PLANNING

Status :		APPROVAL	
Scales : as noted @ A1		Date : MAY.2018	
Drawn : DA	Engineer : VM	Checked : DL	
Drawing No. L2340-C-52-750		Revision 02	