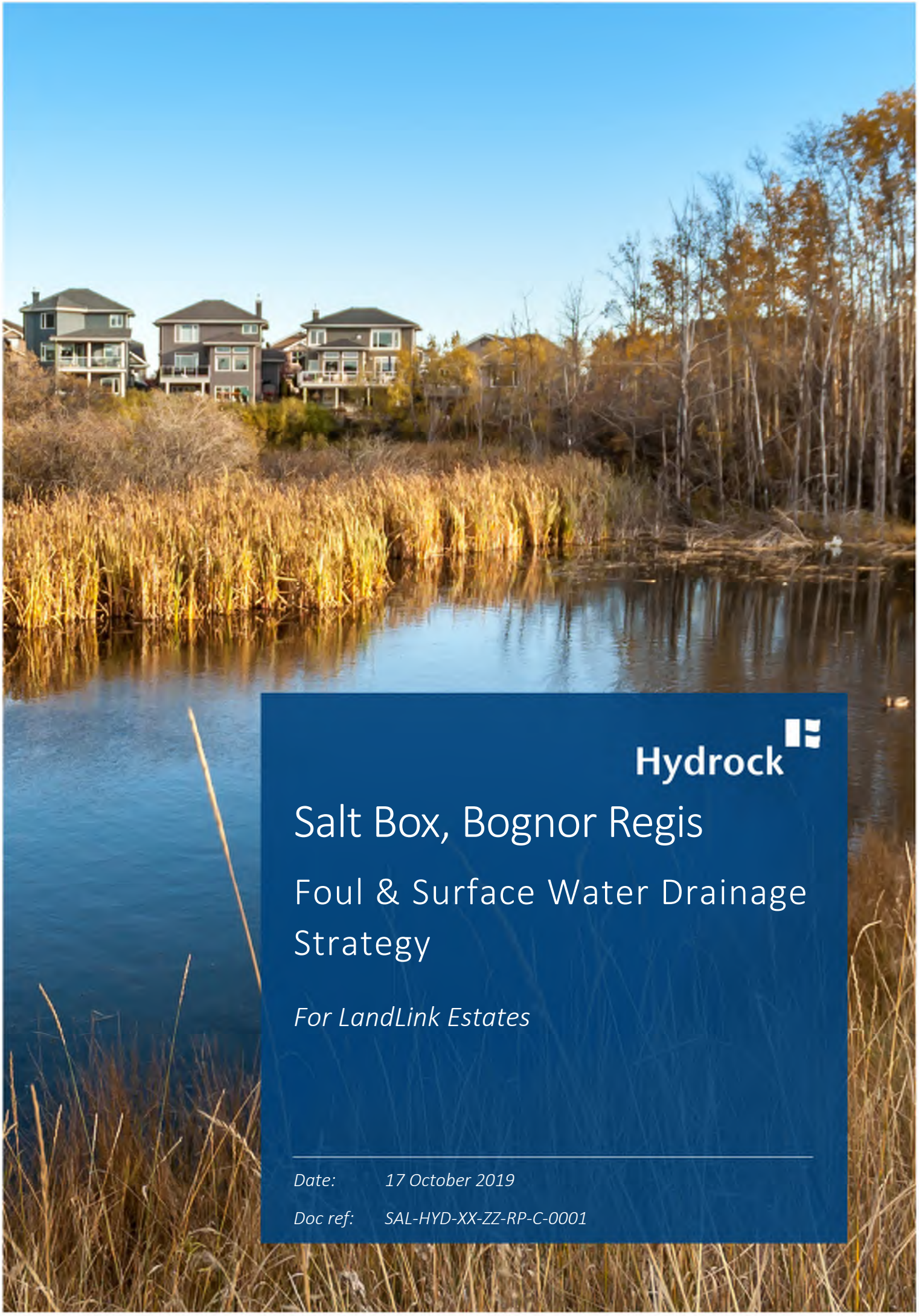

Hydrock

Salt Box, Bognor Regis

Foul & Surface Water Drainage Strategy

For LandLink Estates

Date: *17 October 2019*

Doc ref: *SAL-HYD-XX-ZZ-RP-C-0001*

DOCUMENT CONTROL SHEET

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Introduction

This report has been prepared by Hydrock Consultants Limited on behalf of our Landlink Estates, to be submitted to be Arun District Council for a new mixed-use development in Bognor Regis, West Sussex.

1. SCOPE

The intention of this report is to define the principles of the foul and surface water drainage for the whole development. Each phase or development unit will then be required to submit details of the foul and surface water drainage network which is in accordance with the principles defined in this report and agreed with Arun District Council through planning.

The development is to be brought forward in two phases. Each phase is split into unit plots along with the associated infrastructure required to brings those units into operation.

Mountford Pigott architects have produced a phasing plan 1744-P02-A which can be found in Appendix A of this report.

Phase 1
• Associated foul and surface water drainage and infrastructure for Unit 2, Units 4-8, and Unit 9. • Section 278 highways works to form new junction on existing roundabout off Shripney Road (A29) • Main estate road including associated surface water drainage network. • Foul water pumping station and rising main connection into public sewer. • Flood compensation ground re-profiling works.
Phase 2
• Associated drainage and infrastructure for Unit 1 and Unit 3.

1.1 Planning

Arun District Council Planning Ref: **BE135/18**

"Hybrid application comprising a) Full planning application for erection of Class B8 warehouse with fuel island and car parking; 2 No Class B1/B8 employment units with associated parking and servicing; Class A1 retail food store with car parking and servicing; 2 No drive thru units with car parking and servicing; car showroom, workshops (including MOT testing) vehicle storage, external display areas, service areas and parking; together with access roads, associated ground and engineering works, landscaping and ancillary works; and b) Outline planning application for the development of employment units, parking and servicing areas, landscaping and associated works."

The intention is that planning will be approved for both the full and outline elements of the application and the foul and surface water drainage will be conditioned for each unit plot. As each unit plot comes forward the developer will be required to submit information to Arun District Council to gain partial discharge of the associated drainage conditions for their respective unit plot.

2. SITE INFORMATION

2.1 Site Referencing Information

Site Address	Shripney Rd (A29)
	Bognor Regis
	West Sussex
	PO22 9PB (nearest)

2.2 Existing Situation

The site is located to the north of Bognor Regis on the southern outskirts of Shripney on land adjacent to Shripney Road (A29).

2.3 Topography

A topographical survey was carried out by Shaw Colegate in December 2017. The existing site has been identified as 'greenfield' with no permanent or temporary hardstanding or buildings located within the boundary.

The site falls approx. 1.7m from southeast to northwest with a high point in the southeast corner of 3.23mAOD and the low point in the northwest corner of 1.50mAOD. In the northwest corner of the site there is a 'depression' which creates a basin where the levels at the lowest are around 1.23mAOD.

Shripney Road runs adjacent to the eastern boundary of the site and there is an 'informal' access to the site approximately half way up Shripney Road.

There is a watercourse running east to west across the north of the site which is classified as a 'main river'. It turns south along the western boundary and approx. half way down it meets a water course / ditch classified as an 'ordinary watercourse' that flows south to north which eventually meets up with the Aldingbourne Rife to the west.

Document Ref: **Topographical Survey** – Shaw Colgate (Dated December 2017) located in **Appendix A.**

2.4 Geotechnical Assessment

The following Geo-Environmental Assessment have been carried out on the site:

Phase 1 Geo-Environmental Desk Study by EPS – Dated 9th June 2017

Phase 2 Geo-Environmental Assessment by EPS – Dated 3rd January 2018

Supplementary Ground Investigation Report by EPS – Dated 11th January 2019

2.4.1 Ground Conditions

The Phase 2 Geo-Environmental Assessment summarises the general strata encountered as follows:

Geological Strata	Maximum Depth to Base of Strata (m bgl)	Strata Thickness (m)
Topsoil	0.6	0.4-0.6
River Terrace Deposits	4.0	2.6-3.4
Lewes Nodular Chalk Formation	>20.0	Not Proven

Table extracted from Phase 2 Geo-Environmental Assessment Report

2.4.2 Groundwater

The underlying superficial geology is classified as a Secondary Aquifer with the Lewes Nodular Chalk Formation classified as a more sensitive Principal Aquifer.

The groundwater levels recorded by EPS in both the Phase 2 Geo-Environmental survey and the subsequent Supplementary Ground Investigation report have been converted into mAOD and plotted onto drawing **SAL-HYD-00-ZZ-SK-C-7704 Ground Water Levels** located in **Appendix A** for easy reference.

Phase 2 Geo-Environmental Survey (January 2018)

- Groundwater was encountered at BH1, BH2, TP4 and TP5 at between 1.8m and 4.0m below ground level (BGL), and resting at around 2.0m BGL upon completion of the investigation. Noted in green on drawing **C-7500**.
- Two ground water monitoring standpipes were installed at BH1 and BH2. Monitoring was carried out in Winter for 5 weeks between 22nd November 2018 and 22nd December 2018. Groundwater is shown to have fluctuated between approx. 1.37m BGL and 2.17m BGL during this period.

Supplementary Ground Investigation Report (January 2019)

- Groundwater was encountered in all borehole locations (BH03-BH13) and in a number of trial pit locations (TP03, TP06 and TP14). Noted in blue on drawing **C-7500**. The level of the initial water strike at each location has been summarised in the table below (extracted from Ground Investigation Report):

Position	Approximate Water Strike (mbgl)	Position	Approximate Water Strike (m bgl)
BH03	6.0	BH10	1.9
BH04	5.9	BH11	4.0
BH05	5.0	BH12	4.0
BH06	4.0	BH13	4.0
BH07	5.0	TP03	2.1
BH08	7.0	TP06	2.3
BH09	2.0	TP14	2.5

Table extracted from Supplementary Ground Investigation Report

The highest recorded groundwater level mAOD across both geo-environmental assessments is **1.5mAOD (1.1m BGL)** located in **BH07** from the **Supplementary Ground Investigation Report** (January 2019)

2.4.3 Infiltration

Infiltration testing was carried out during both the Phase 2 Geo-Environmental Assessment and Supplementary Ground Investigation (both by EPS). The results have been summarised below:

Phase 2 Geo-Environmental Assessment (January 2018)

Soakaway tests were carried out within 3 no. trial pits and in general accordance with BRE 365. The results have been extracted from the original report in the table below.

Location & Depth (mbgl)	Indicative Infiltration Rate (m/s)		
	Test 1	Test 2	Test 3
SA1 (2.0)	$4.71*10^{-7}$	$5.78*10^{-7}$	Not Calculable
SA2 (1.5)	$2.74*10^{-6}$	$2.57*10^{-6}$	$2.21*10^{-6}$
SA3 (1.0)	Not Calculable	Not Calculable	-
SA4 (1.5)	$1.58*10^{-6}$	$1.24*10^{-6}$	-
SA5 (1.0)	$1.51*10^{-6}$	$1.12*10^{-6}$	-

Table extracted from Phase 2 Geo-Environmental Assessment Report

The report concluded that:

'*The infiltration rates recorded are considered to be indicative of very low to practicably impermeable soils and are likely to have been influenced by the presence of both clay and groundwater*'

Supplementary Ground Investigation Report (January 2019)

Soakaway tests were carried out within 2 no. trial pits and in general accordance with BRE 365. The results have been extracted from the original report in the table below.

Trial Pit Location & Depth (mbgl)	Indicative Infiltration Rate (m/s)	Comments
TP01 (1.6)	$8.64*10^{-7}$	Some extrapolation required as the effective depth was not reached within a period of 30 hours.
TP02 (1.6)	$1.73*10^{-6}$	Over the duration of the test (29 hours) the depth of the pit was noted to decrease due to silting of the base. The final depth has been used to calculate the infiltration rate.

Table extracted from Supplementary Ground Investigation Report

The Supplementary Ground Investigation Report concluded that:

'.....the use of infiltration drainage is not likely to be suitable for the proposed development, and alternative methods should be explored'

The report also advises that if infiltration to ground was to be utilised on this development, soakaways should be located a min 10m away from existing or proposed structures to mitigate against the risk of potential dissolution features within the chalk strata.

2.4.4 Summary

Due to the low permeability values recorded across the site, and the presence of high groundwater, infiltration to ground is unlikely to be viable as the primary method of surface water disposal for this development. It may be feasible to utilise SuDS techniques such as, permeable paving, porous asphalt etc. however, there must be an allowance within the drainage network to accommodate run-off from all surface finishes should ground water levels be high or infiltration rates low.

The viability of infiltration to ground is to be investigated as each phase of the development comes forward either as the primary method of surface water disposal or to complement an alternative method of surface water disposal. The method of surface water disposal should always be considered in accordance with the hierarchical approach for sustainable drainage.

3. FLOODING / FLOOD RISK

Kirk Saunders Associates have produced a Flood Risk Assessment which takes into consideration the site-specific flood risk for the new development.

Document Ref: **Salt Box Site, Bognor Regis, Flood Risk Assessment** – Kirk Saunders Associates (Dated June 2017, Revision P8, July 2019)

The following is a summary of the report:

- Most of the site is located in Flood Zone 1. There is a small area of Unit 2 to the northwest and Unit 1 to the southwest located in Flood Zone 2. None of the development is shown to be in Flood Zone 3.
- The Environment Agency's modelled flood model indicates the following flood levels.
    - 1% AEP (1 in 100 year) level @ **1.35 mAOD** (Flood Zone 3)
    - 0.1% AEP (1 in 1000 year) level @ **2.1 mAOD** (Flood Zone 2)
    - 1% AEP + 45% (1 in 100 year + 45% allowance for climate change) level @ **1.85 mAOD** (Flood Zone 3 + 45% Climate Change)

3.1 Flood Compensation

When the effects of climate change are considered a small area of the proposed development is shown to be within Flood Zone 2 and as such levels will need to be raised locally to ensure the development is protected from future flooding and safe access and egress is achievable in a flood event. Due to the loss in flood storage cause by raising the levels out of the flood zone, ground levels are to be re-profiled to provided flood storage elsewhere on the development.

The Environment Agency have advised that the 1% AEP + 45% allowance climate change fluvial flood level of **1.85 mAOD** should be used when assessing flood compensation requirements.

Document Ref: **SAL-HYD-00-XX-DR-C-7410 Flood Compensation Layout** located in **Appendix B.**

4. PRE AND POST DEVELOPMENT SURFACE WATER DRAINAGE

The pre-developed site is considered to be 'Greenfield' with no specific drainage system serving the site. Surface water run-off from the most frequent storm events is expected to infiltrate to ground locally with some evapotranspiration through vegetation also likely.

4.1 Pre-Development Flood Exceedance

When the capacity of the ground is exceeded surface water run-off is expected to flow overland towards the ditches around the perimeter of the site. There is a 'depression' to the northeast of the site where levels are lower and water is likely to be held until it is able to infiltrate into the ground.

Document Ref: **SAL-HYD-00-ZZ-SK-C-7703 Flood Exceedance Pre-development** located in **Appendix B.**

4.2 Rainfall Characteristics

An assessment has been made of the pre-development surface water flows and volumes based on the following rainfall and site characteristics for the site.

Site Characteristics	
SAAR (mm)	849
Soil	0.470
Region	8

Rainfall Characteristics	
M5-60	19.000
Ratio R	0.350
CV (Summer)	0.750
CV (Winter)	0.840

4.3 Pre-development surface water run-off catchments

Summary of Pre-Development Drainage Catchments		
Pre-Development Catchment (ha)		
Phase 1	Phase 2	Total
8.618	3.386	12.004

Development areas have been taken from Mountford Pigott drawing **1744-P02-A** which can be found in **Appendix A** of this report.

Whilst the catchment areas noted above have been split into the post-development phases for reference, the existing site operates as a single catchment without any physical boundaries, such as hedges etc. and all surface water run-off is directed towards the existing ditches and watercourses around the perimeter of the site.

Document Ref: **SAL-HYD-00-XX-SK-C-9000 Pre-Development Catchment Areas** located in **Appendix C.**

4.4 Pre-development run-off rates

Pre-development greenfield run-off rates have been interpreted from the Kirk Saunders Flood Risk Assessment.

Greenfield Run-off Rates for Pre-Development Areas (interpreted from KSA FRA)

Storm Event	Rate (ltrs / sec / ha)	Phase 1	Phase 2	Total
1 in 1 Year	2.40	20.68	8.13	28.81
1 in 30 Year	6.50	56.02	22.00	78.02
1 in 100 Year	9.10	78.42	30.81	109.23
[1]QBar	2.90	24.99	9.82	34.81

[1]QBAR is the mean annual flood flow from a rural catchment in l/s (approximately 2.3-year return period).

4.5 Post-development surface water run-off discharge destinations

The discharge of surface water run-off has been considered in accordance with the hierarchical approach:

Infiltration

The Geo-Environmental Assessment carried out by EPS concluded that due to the low infiltration rates and high seasonal ground water levels, infiltration to ground would not be feasible as the primary method of surface water disposal for the new development.

Surface water body

Surface water run-off from the pre-developed site currently discharges primarily into the ditch / watercourse on the western boundary during the more extreme storm events when the ground becomes saturated. Therefore, in order to mimic the existing situation, discharge to a surface water body is the preferred method of surface water disposal for the new development.

To dedicated surface water sewer (public, highways or otherwise)

Southern Water asset mapping information indicates that there are no dedicated surface water sewers in close proximity to the site.

To a combined sewer

N/A.

4.6 Post-development surface water run-off catchments

For the purpose of this drainage strategy the development has been split into 'Developed Impermeable Catchment' and 'Developed Permeable Catchment'.

Only the area noted as 'Developed Impermeable Catchment' has been considered within the drainage network calculations. The area noted as 'Permeable Developed Catchment' is considered to have the same infiltration characteristics as 'greenfield' and has therefore not been included.

Developed Impermeable Catchment	7.90 ha
Consists of: • All buildings and infrastructure for both Phase 1 and Phase 2.	

Developed Permeable Catchment	4.11 ha
Consists of: • 'Landscaped areas to the East, West and South. • Village 'buffer' area north of the development. • Area designated for Flood Compensation ground reprofiling (located within village 'buffer')	

Document Ref: **SAL-HYD-00-ZZ-SK-C-7701 Post Development Catchment Area** located in **Appendix C.**

The 'Developed Impermeable Catchment' has been split into three separate drainage networks as follows:

Surface Water Network 1
• Unit 2 • Unit 3 • Units 4-8
Description: Unit 3 and Units 4-8 will connect into Surface Water Network 1 on the western side of each of their respective plots. A carrier drain will then take flows northwards within the estate road, across the top of Unit 2, before out falling into the existing watercourse on the western boundary of the development. Unit 2 surface water will connect into Surface Water Network 1 at a location upstream of the outfall.
Surface Water Network 2
• Main estate road including footpaths, verges and bell mouths to each unit / plot.
Description: Surface water run-off will be collected from the estate roads and associated footpaths to be discharged into Surface Water Network 2 located within the road which runs east to west across the development before out falling into the existing watercourse on the western boundary.
Surface Water Network 3
• Unit 1 • Unit 9
Description: Surface Water Network 3 collects run-off from Unit 9 into a carrier drain which runs along the south of Unit 1 before out falling into the existing watercourse/ditch on the western boundary.

The following table indicates the catchments for each surface water network based on the individual unit plots being 100% impermeable as noted above.

Network Ref:	Catchment (ha)
Surface Water Network 1	
Unit 2	1.33
Unit 3	0.49
Unit 4-8	1.24
Total	3.06
Surface Water Network 2	
Estate Road (inc Footpaths, verges, and bell mouths)	1.09
Surface Water Network 3	
Unit 1	2.90
Unit 9	0.85
Total	3.75
Developed Impermeable Catchment Total	7.90

Document Ref: SAL-HYD-00-ZZ-SK-C-7702 Proposed Catchment Area located in Appendix C.

4.7 Post-development run-off rates

In accordance with current guidance the peak runoff rate from the development for the 1 in 1-year rainfall event and the 1 in 100-year rainfall event should be restricted to a rate which is as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event.

However, due to the increase in impermeable area it is expected that the volume of surface water run-off discharging from the site will increase from the pre-developed situation. And as such, the requirement is that flows must be restricted to a rate which does not adversely affect flood risk, this is considered to be QBAR.

The Kirk Saunders Flood Risk Assessment indicates that the Greenfield QBAR rate for this development is 2.90 ltr/sec/ha.

Based on the QBAR rate for this development the following post-development flow rates for each unit plot catchment is noted in the following table.

Network Ref:	Post-development flow rate (l/s)
Surface Water Network 1	
Unit 2	3.86
Unit 3	1.42 ([1] 2.00)
Unit 4-8	3.59 ([1] 3.01)
Total	**8.87**
Surface Water Network 2	
Estate Road (inc Footpaths, verges, and bell mouths)	**3.16**
Surface Water Network 3	
Unit 1	8.41
Unit 9	2.46
Total	**10.87**

[1] Using the QBAR rate of **2.90 ltr/sec/ha** the Unit 3 post-development discharge rate will be **1.45 ltr/sec**. This has been increased to **2.0 ltr/sec** in order to mitigate the risk of blockage. Unit 4-8 discharge rate has been reduced to **3.01 ltr/sec** accordingly.

Each unit plot will be required to design a drainage system which limits surface water discharge in accordance with the flow rates noted in the table above.

4.8 Surface Water Drainage Strategy

A site wide foul and surface water drainage strategy drawing has been produced for the whole development.

Document Ref: **SAL-HYD-00-ZZ-DR-C-7000 Site Drainage strategy** located in **Appendix C.**

Each unit plot catchment is required to demonstrate that an appropriate level of surface water attenuation has been provided to ensure that:

- No flooding will occur during the 1 in 100-year rainfall event in any part of the building, or in any utility plant susceptible to water.
- Surface water for the 100-year rainfall event is contained within each catchment boundary.
- An allowance for **40%** climate change is applied to the 100-year rainfall event and incorporated into the surface water drainage design in accordance with local and national planning policy.

Based on 100% impermeable catchment areas the following preliminary estimates for attenuation have been calculated:

Network Ref:	Attenuation Requirements (m^3)
Surface Water Network 1	
Unit 2	1,710
Unit 3	380
Unit 4-8	1,330
Total	**3,420**
Surface Water Network 2	
Estate Road (inc Footpaths, verges, and bell mouths)	**500**
Surface Water Network 3	
Unit 1	2,850
Unit 9	712
Total	**3,562**

Indicative locations of attenuation for each catchment are shown on the site wide drainage strategy drawing in order to demonstrate that the volume of attenuation can practically be achieved within the constraints of the unit plot.

It is expected that the exact arrangement of each catchment's drainage network will change through detailed design but the principles will remain the same.

The three surface water drainage networks have been modelled and simulated using MicroDrainage. Each catchment has been modelled with an attenuation tank and flow control at the head of the run to demonstrate that the network has capacity for the extreme 100 year plus 40% climate change storm event.

Document Ref: **MicroDrainage Surface Water Calculations** located in **Appendix D.**

4.9 Surcharged Outfall

The surface water drainage network has also been modelled to take into consideration the effects surcharge should an extreme storm event occur at the same time as high flood levels from the adjacent water course.

The 100 year plus 45% climate change fluvial flood level of **1.85 mAOD** has specified at the outfall of each network and rainfall simulated for all storm events up to and including the 100 year plus 40% climate change. The calculations demonstrate that all surface water can be retained within the development boundary.

4.10 Post-Development Exceedance routes

Should rainfall exceed the 1 in 100-year storm event or the system failure through lack of maintenance, surface water run-off is to be directed via designated exceedance routes away buildings and/or critical infrastructure.

Each unit plot is required to produce a specific flood exceedance plan that demonstrates that flows can be routed away without impacting on adjacent properties. It is envisaged that this would either be into the road and pick up by the road drainage system, or towards ditches around the perimeter of the site.

4.11 Water quality

Consideration will need to be given to post-development water quality treatment and ensure that water quality is not impacted by the new development.

4.11.1 Quality of Surface Water Run-off: Post-Development

Each plot catchment will need to make an assessment of the potential sources of pollution based on the anticipated usage and incorporate an appropriate level of treatment prior to discharge of surface water run-off into the watercourse.

The use of SuDS is strongly recommended where feasible and when designed appropriately in accordance with CIRIA C753, porous paving, swales, and filter strips etc. can provide treatment to surface water run-off.

It is recommended that catch pit manholes and gullys with silt traps are incorporated into the drainage design to capture silts. Where there is a risk of oil pollution from roads, hardstanding and yard areas, then interceptors should be specified where a sufficient level of treatment cannot be achieved by SuDS alone, or if treatment by way of SuDS techniques is not feasible due to site constraints.

Interceptors should be sized in accordance with Environment Agency Document PPG3 (withdrawn but still referenced). Where the risk of pollution is considered higher, Class I Full Retention interceptors are to be specified. Interceptors should have alarms which are either link to a kiosk or control panel located within a building.

Each phase should give consideration to pollution control in accordance with CIRIA SuDS Manual C753 guidance. Appropriates methods for the removal of pollutants, and in particular heavy metals and hydrocarbons, should be incorporated into both the drainage design and maintenance strategy on site specific basis.

Pollution control is to be achieved through the following principles:

Pollution Prevention - Stopping contaminants mixing with run-off. For example, regular road sweeping, bunds for oil tanks and controlling sediment.

Interception - Preventing run-off and its associated pollution load entering the drainage system / watercourse from the smaller more frequent storm events through the use of permeable paving, bio-retention and vegetated collection systems and by also capturing pollutants in suspended solids using silt traps, catch pits and gully pots.

Treatment - Incorporating SuDS components in a treatment process that reduce contaminants to an acceptable level.

Maintenance and remedial work - Removing the captured pollutants and disposing in accordance with the appropriate regulations.

5. PRE AND POST DEVELOPMENT FOUL WATER DRAINAGE

In the pre-developed situation, the site is considered to be 'greenfield' and as such it is anticipated not to have any existing foul drainage serving the site.

5.1 Post-development foul water drainage.

Foul water drainage from each unit plot will discharge into a new sewer located within the estate roads. Flows will be directed towards the north of the development where they will then be pumped from a new foul pumping station offsite via a rising main into the Southern Water Foul Sewer at Manhole ref 8801 to the north east in Shripney Road.

6. MAINTANENCE & OWNERSHIP

The key elements of the foul and surface water drainage system will require periodic maintenance to prevent failure of the system and/or a reduction in capacity of the networks as a whole.

Each unit catchment will be required to produce a schedule of maintenance tasks which sets out the various drainage items to be maintained, identifies whose is responsible and the frequency of maintenance.

It is anticipated that the drainage within each unit plot will be maintained privately by a management company appointed by the owner / occupier. Drainage which serves the wider development will be maintained by site wide management company.

7. SUMMARY / CONCLUSION

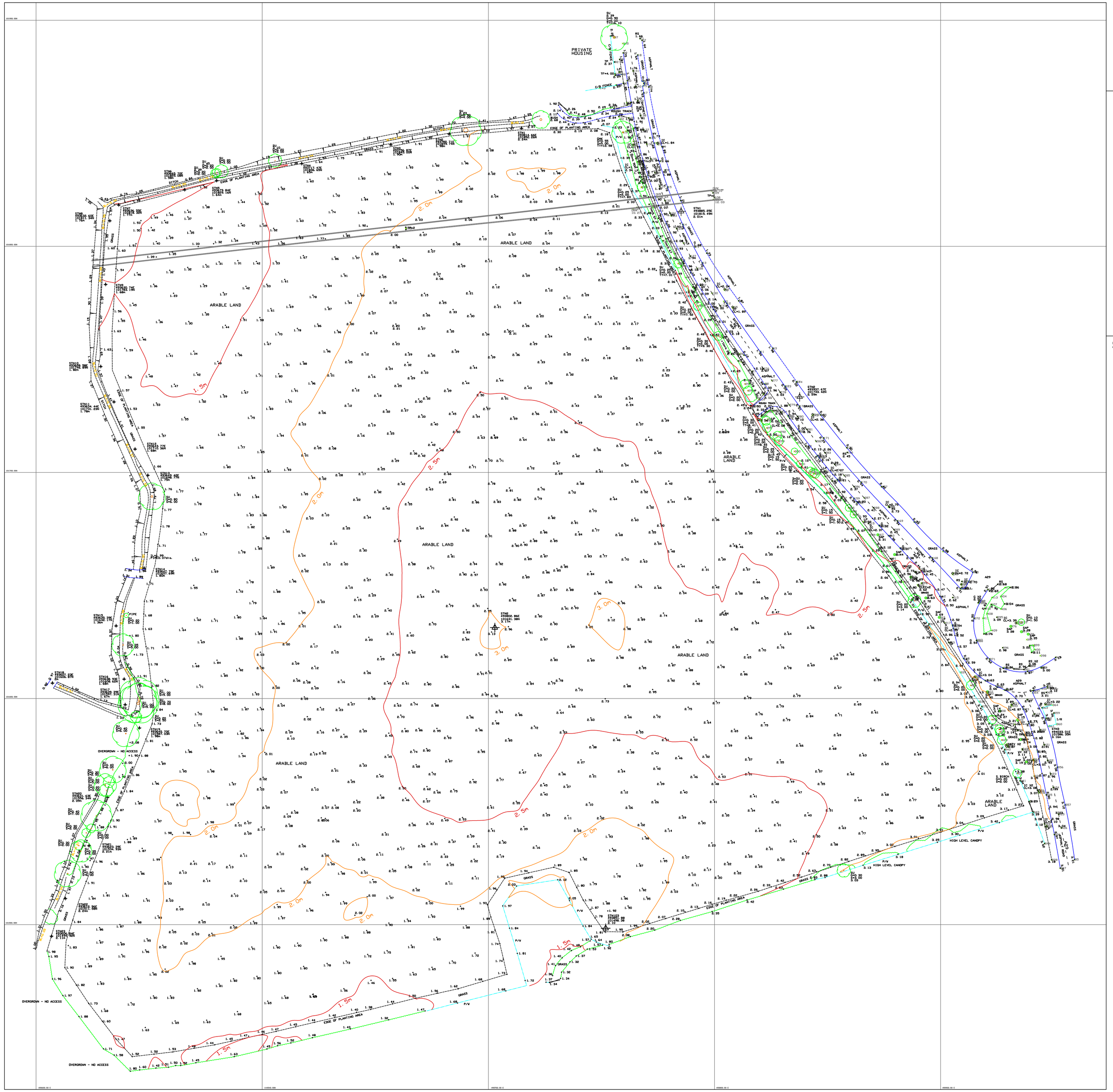
This report concludes that the foul and surface water drainage strategy for the Salt Box development will be designed accordance with both national and local standards and best practice. The following key items have been summarised below.

- The loss of flood storage as a result of the development will be compensated elsewhere within the development boundary to ensure that the existing flood / flow characteristics of the adjacent water course remains the same in the post-development situation.
- The post-development surface water flow rates have been set at 'greenfield' so as to not adversely impact downstream flooding of the site as a result of the new development.
- All surface water run-off from storm events up to and including the 100 year plus 40% climate change will be retained within the site and each development catchment is required to provide sufficient attenuation for their respective unit plot.
- The effects of a surcharged outfall have been considered and it has been demonstrated that the surface water network has sufficient capacity in the unlikely event of the 100 year plus 40% climate change rainfall event occurs simultaneously with the 100 year plus 45% climate change fluvial flood level.

- The requirement for sufficient pollution control for each development plot has been identified and is to be specified in accordance with the risk of pollution for that individual catchment.

Appendix A Development Information

- Development Phasing Layout
- Topographical Survey
- Southern Water Sewer Map
- Ground Water Levels



NOTES :

ALL LEVELS RELATIVE TO O.S. DATUM (FROM GPS)
SURVEY GRID ORIENTATED TO OS NATIONAL GRID

WHILE ALL POSSIBLE EFFORT HAS BEEN MADE TO IDENTIFY SERVICES, WE ARE UNABLE TO DETAIL COVERS BURIED OR OBSCURED AT THE TIME OF SURVEY.

ALL LEVELS AND DIMENSIONS SHOULD BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF WORKS.

TREES SHOWN IDENTIFIED TO BEST OF SURVEYORS ABILITY. SEEK CONFIRMATION IF SPECIES CRITICAL.

ROOFLINE DETAIL IS INDICATIVE ONLY

GPS:
GPS LEVELS AND GRID ARE OBTAINED USING INDUSTRY STANDARD GUIDELINES AND CAN VARY ACCORDING TO THE QUALITY OF THE GPS NETWORK AVAILABLE. ALL GPS DETAIL IS THEREFORE RELATIVE TO THE TIME AND DATE OF THE SURVEY.

KEY :

BB	- BELISHA BEACON	OHW	- OVERHEAD WIRE
BIN	- LITTER BIN	OH	- OVERHEAD
BL	- BED LEVEL	PL	- PILLAR
BOLL	- BOLLARD	PL	- PAVEMENT LIGHT
BRW	- BRICK WALL	POT	- TELECOM
BS	- BUS STOP	R.EYE	- ROCKING EYE
CATV	- CABLE TELEVISION	RS	- ROAD SIGN
CL	- COVER LEVEL	RTW	- RETAINING WALL
CONC	- CONCRETE	RWP	- RAIN WATER PIPE
ELEC	- ELECTRIC	SAP	- SAPLING
EP	- ELECTRICITY POLE	SB	- SIGN BOARD
FB	- FLOWER BED	SL	- SILT LEVEL
FFL	- FINISHED FLOOR LEVEL	SU	- SPECIES UNKNOWN
FH	- FIRE HYDRANT	SVP	- SOIL VENT PIPE
FP	- FLAG POLE	TBM	- TEMPORARY BENCH MARK
G	- GULLY	TCB	- TELEPHONE CALL BOX
GL	- GROUND LEVEL	TP	- TOP OF FENCE
GV	- GAS VALVE	TH	- TOP OF HEDGE
HT	- HEIGHT	TL	- TRAFFIC LIGHT
IC	- INSPECTION COVER	TP	- TELEGRAPH POLE
IL	- INVERT LEVEL	TT	- TOP OF TREE
LB	- LETTER BOX	TW	- TOP OF WALL
LP	- LAMP POST	US	- UNDERSIDE CEILING
LT	- LIGHT	UTL	- UNABLE TO LIFT
MH	- MANHOLE	WL	- WATER LEVEL
MKR	- MARKER	WV	- WATER VALVE

FENCE TYPES :

B/W	- BARBED WIRE	I/R	- IRON RAILING
C/B	- CLOSE BOARD	P/R	- POST & RAIL
C/L	- CHAIN LINK	P/W	- POST & WIRE
C/P	- CHESTNUT PALING		

STN1 — SURVEY STATION
ANCILLARY BUILDING
SLOPE DIRECTION
GATE
ROOF LEVELS
TREE SPECIES GIRTH (diameter)
ASH — SPREAD (radius)

FENCE
WALL
BANKPATH
OVERHEAD
SHRUBBERY
BUILDING
OH WIRE
SECTION
KERB
TRACK
DROP KERB
HIGH LVL CANOPY

DRAINAGE :

FOUL DRAINAGE
STORM (SURFACE WATER) DRAINAGE
100Ø = 100mm DIAMETER PIPE

REV A:
ADDITIONAL ROAD DETAIL

N

SCALE 1:500

ISO 9001 REGISTERED FIRM

Shaw Colegate
LAND & BUILDING SURVEYORS
Unit 9B, The Old Flour Mill, Queen Street, Emsworth, Hants, PO10 7BT
Tel : (01243) 371472 Email : mail@shawcolegate.com
Fax: (01243) 378940 Web : www.shawcolegate.com

Title :	FIELDS AT SALTBOX, SHRIPNEY TOPOGRAPHIC SURVEY
Job No. :	11817_TP_COMBINED_REV_A
Original Scale :	1:500
Sheet Size :	A0_OVERSIZE
Surveyed By :	VARIOUS
Drawn By :	VARIOUS
Date :	DECEMBER 2017
Date :	DECEMBER 2017
Client:	Landlink Estates Ham Farm, Main Road, Bosham West Sussex, PO18 8EH

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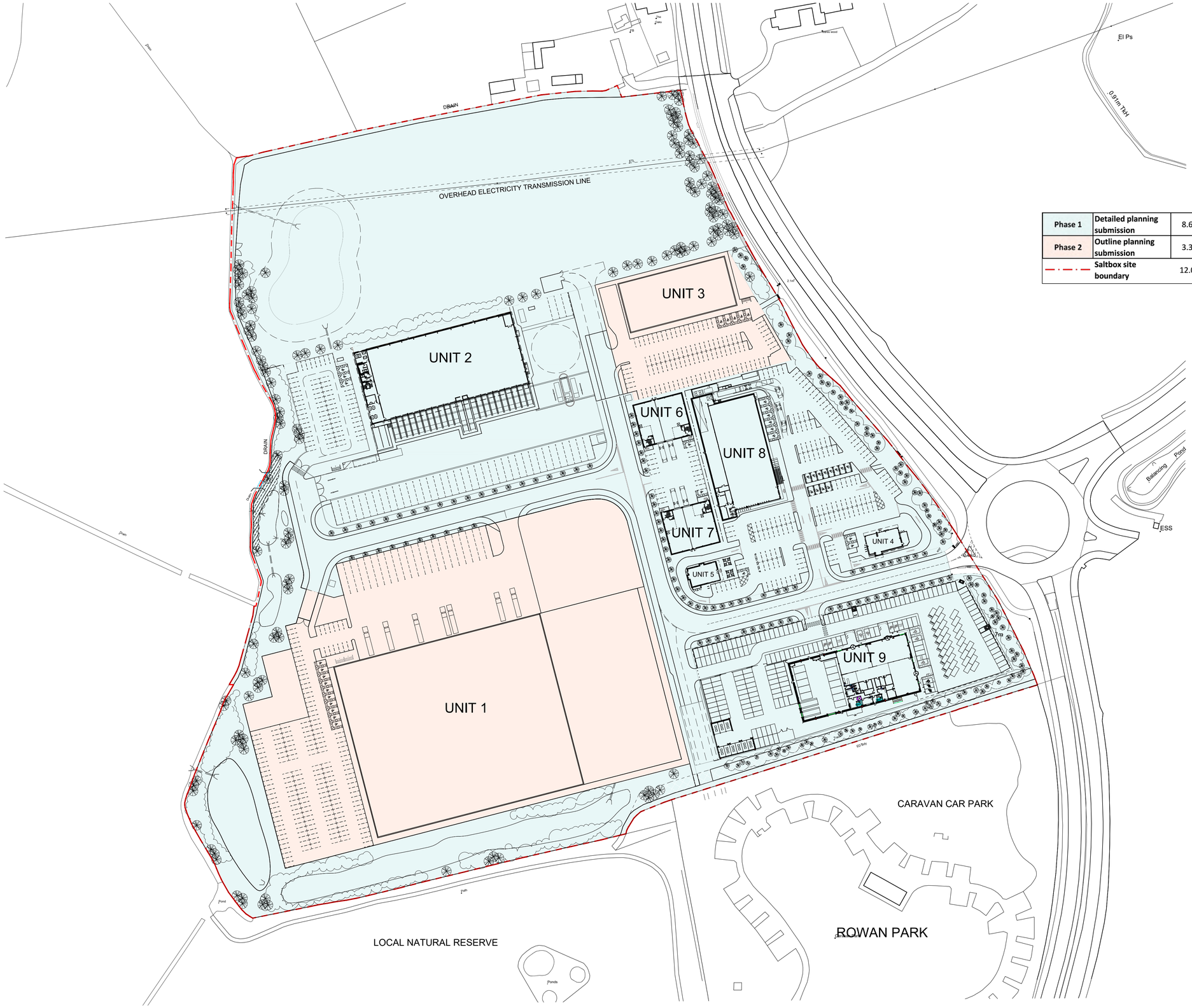
LIST OF INFORMANTS :

OS MAP
BOYLE & SUMMERS DRAWINGS

REVISIONS	DATE	DRN	REV
UNITS 4 & 5 REVISED, UNIT 7 MOVED NORTH 2M	11.03.19	MW	A



Phase 1	Detailed planning submission	8.618 hectares
Phase 2	Outline planning submission	3.386 hectares
— · — · —	Saltbox site boundary	12.004 hectares

This drawing contains critical information in colour. To ensure this information is legible, only print or copy this drawing in full colour.

North

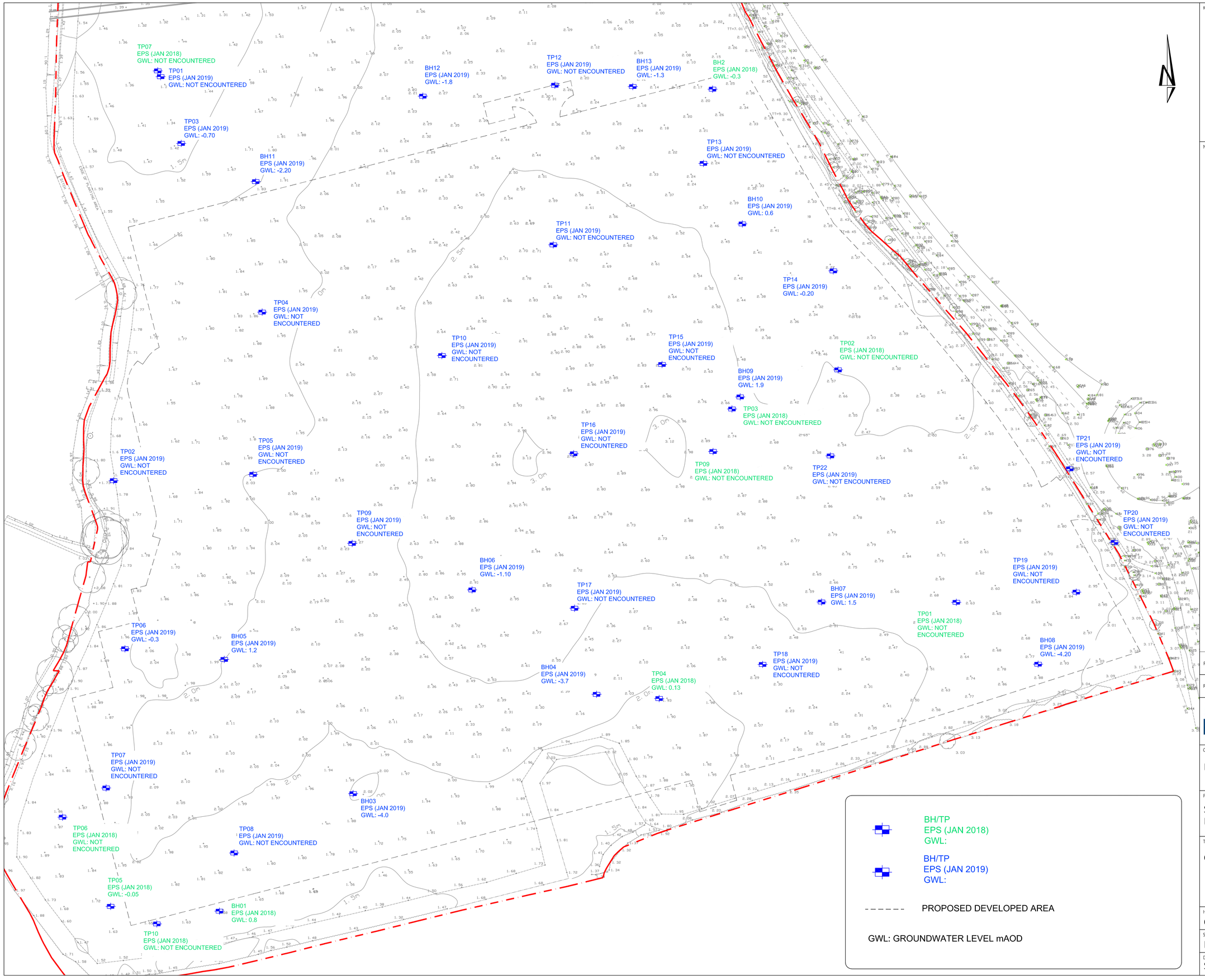
0m 10m 20m 30m 40m

MountfordPigott
Architecture Masterplanning Design

SITE MASTERPLAN
PHASING PLAN
1744-P02-A

1:1000 @ A1 07.12.18
DRAWN BY MW

SALTBOX - BOGNOR REGIS



KEY PLAN

NOTES

REV	ISSUED FOR INFORMATION					
P01	R.HUNT	11/10/19	M.GRIFFIN	11/10/19	M.GRIFFIN	11/10/19
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT
LANDLINK ESTATES

PROJECT
SALTBOX
BOGNOR REGIS

TITLE
GROUNDWATER LEVELS

HYDROCK PROJECT NO.	SCALE @ A1
C-13319-C	NTS

STATUS DESCRIPTION	STATUS
INFORMATION	S2

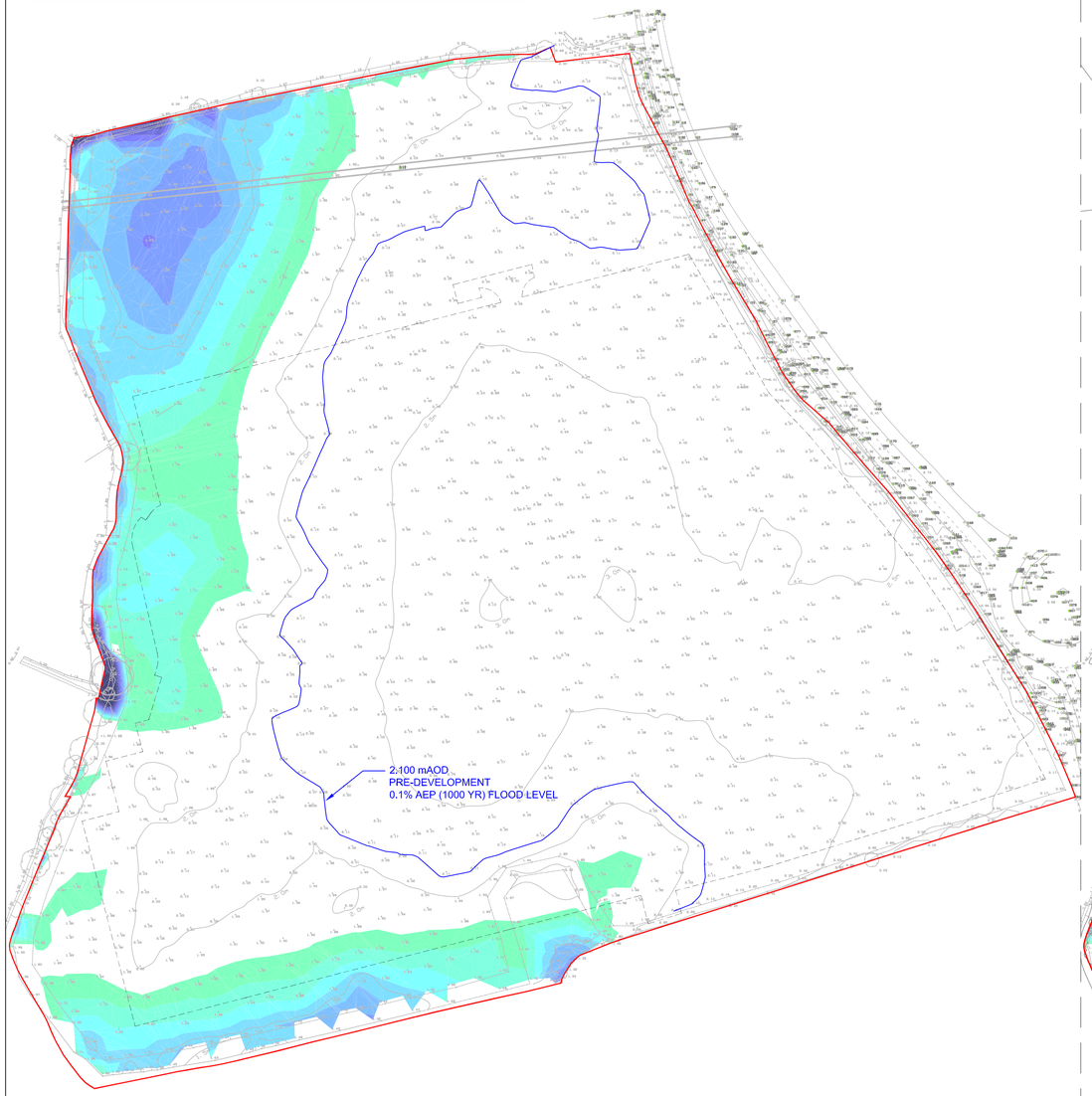
DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
SAL-HYD-00-ZZ-SK-C-7704	P01

Shripney
Shripney Manor
Shripney Garden Carvan Park
Carvan Site
Pondersbridge Leisure Homes (Carvan Site)
Manor Farm
Woodpecker Nursery
Southern Cross Industrial Estate
Orlando Farm
Lake Cottage
Sam Jure Cottage
Willow Cottage
Lake House
Shripney Manor
Bury Farm
Bury Cottage
Bury Barn
Bury Lodge
Bury Stable
Bury Cottage
Bury Farmhouse
Bury Pond
Bury Pond Cottage
Bury Pond Barn
Bury Pond Stable
Bury Pond Farmhouse
Bury Pond Lodge

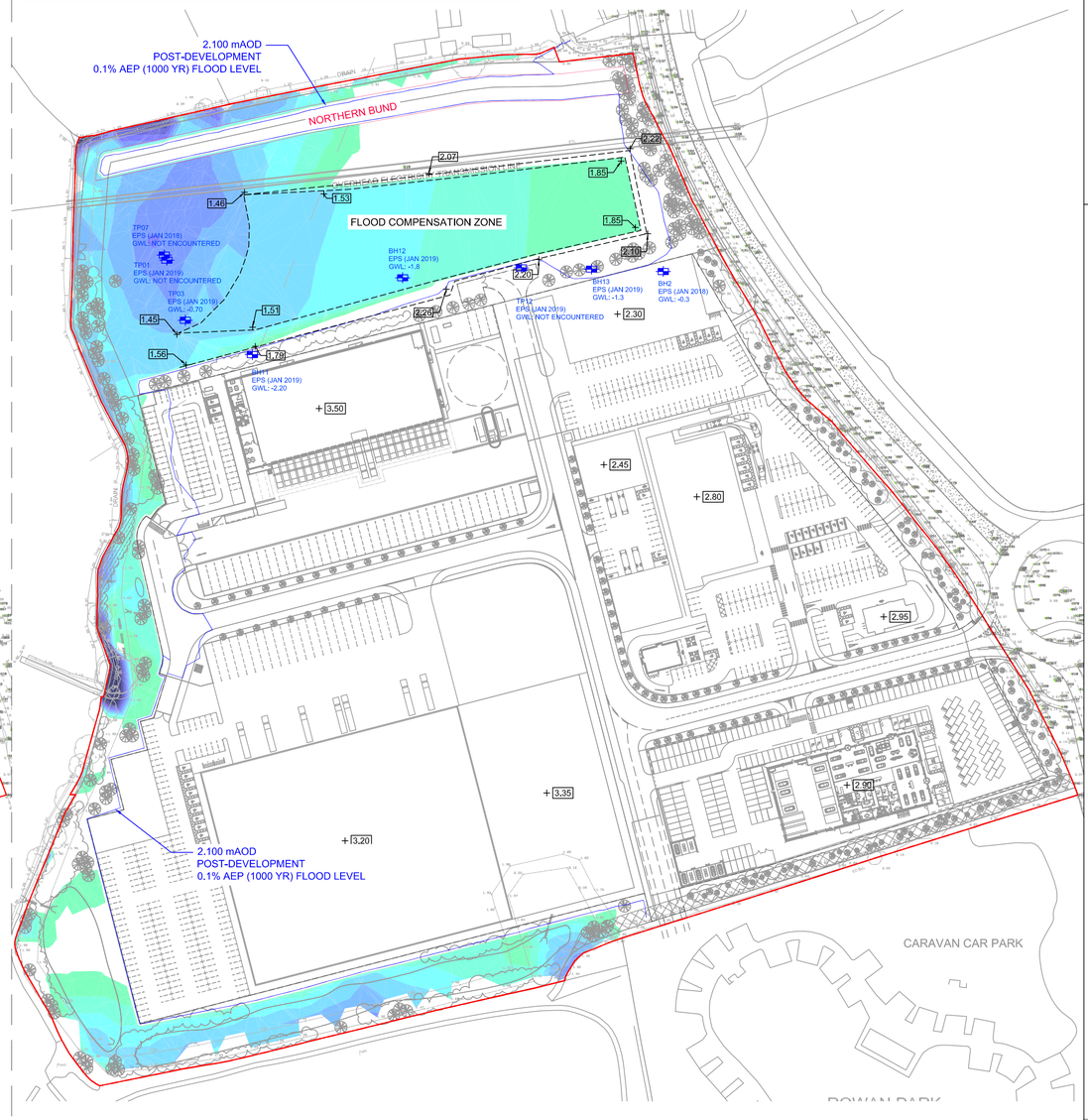
Appendix B Flood Compensation & Exceedance

- Flood Compensation Layout
- Flood Exceedance Pre-development

PRE DEVELOPMENT FLOOD COMPENSATION



POST DEVELOPMENT FLOOD COMPENSATION



Pre-Development Flood Compensation Volumes

FLOOD VOLUMES @ 100mm INTERVALS				
Number	Minimum Elevation	Maximum Elevation	Color	Volumes (cu.m)
1	1.750	1.850		2207.7
2	1.650	1.750		1572.8
3	1.550	1.650		1110.9
4	1.450	1.550		687.6
5	1.350	1.450		340.7
6	1.250	1.350		104.8
7	1.150	1.250		43.2
8	1.050	1.150		31.2
9	0.950	1.050		21.9
10	0.850	0.950		14.3
11	0.750	0.850		9.6
12	0.650	0.750		6.8
13	0.550	0.650		5.0
14	0.450	0.550		3.5
15	0.350	0.450		2.2
16	0.250	0.350		1.1
17	0.150	0.250		0.4
18	0.050	0.150		0.1
19	0.000	0.050		0.0

PRE DEVELOPMENT FLOOD COMPENSATION VOLUME = 6163m³

Post-Development Flood Compensation Volumes

FLOOD VOLUMES @ 100mm INTERVALS				
Number	Minimum Elevation	Maximum Elevation	Color	Volumes (cu.m)
1	1.750	1.850		2043.7
2	1.650	1.750		1663.4
3	1.550	1.650		1253.8
4	1.450	1.550		738.2
5	1.350	1.450		317.9
6	1.250	1.350		102.5
7	1.150	1.250		43.1
8	1.050	1.150		31.2
9	0.950	1.050		21.9
10	0.850	0.950		14.3
11	0.750	0.850		9.6
12	0.650	0.750		6.8
13	0.550	0.650		5.0
14	0.450	0.550		3.5
15	0.350	0.450		2.2
16	0.250	0.350		1.1
17	0.150	0.250		0.4
18	0.050	0.150		0.1
19	0.000	0.050		0.0

POST DEVELOPMENT FLOOD COMPENSATION VOLUME = 6258m³

FLOOD COMPENSATION PROVIDED AT 1.850M AOD 1% AEP (100YR) + 45% CLIMATE CHANGE FLOOD LEVEL

KEY PLAN

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
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3. Note that all care has been taken with the export of DWG files and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.
4. Levels shown in metres above Ordnance Datum (mAOD).

REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	PRELIMINARY ISSUE					
	J.MAGEE	27/09/19	J.MAGEE	27/09/19	M.GRIFFIN	27/09/19

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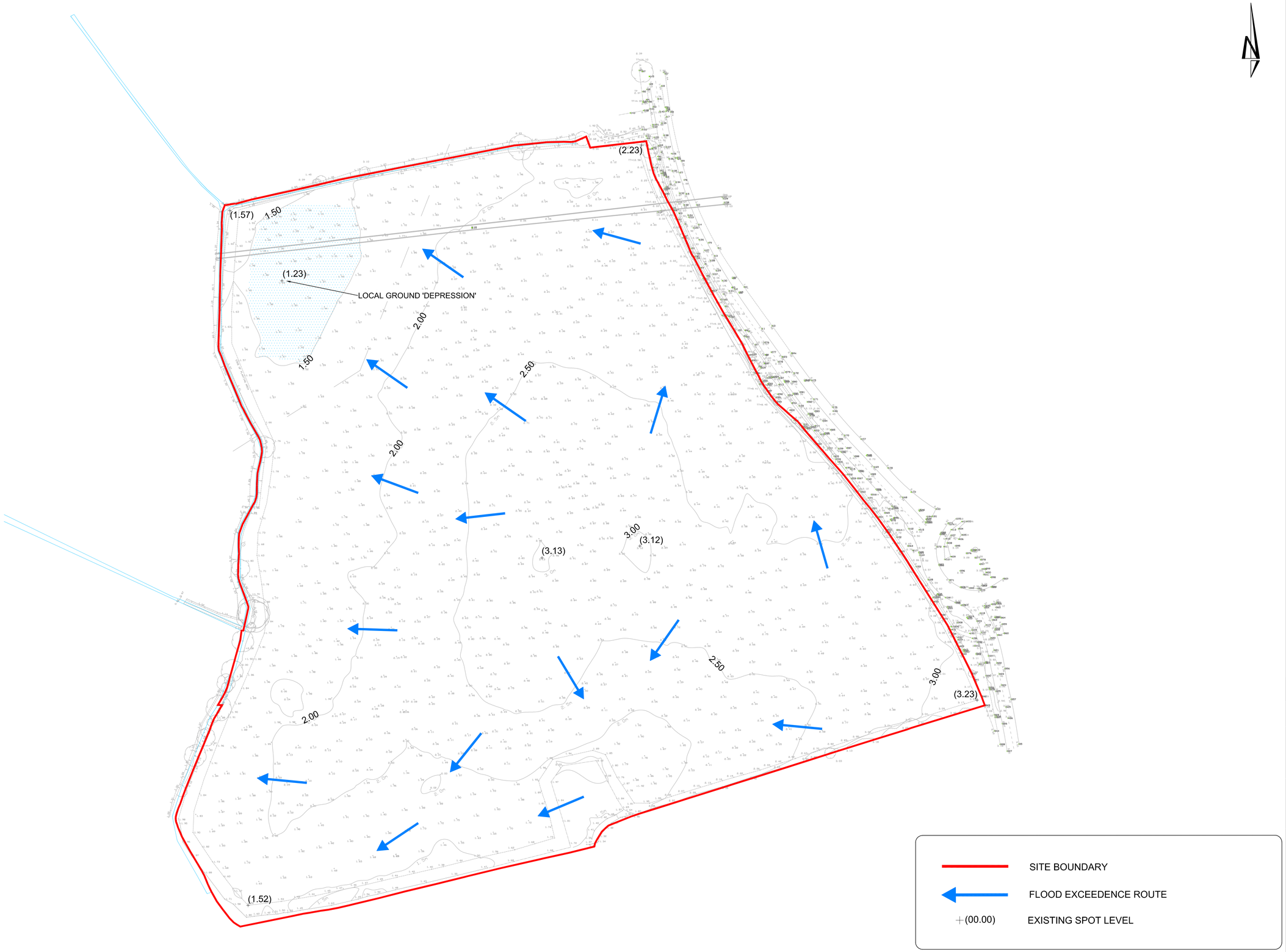
PROJECT
SALTBOX SITE
BOGNOR REGIS

TITLE
FLOOD COMPENSATION LAYOUT

HYDROCK PROJECT NO.	SCALE @ A1
C-13319-C	NTS

STATUS DESCRIPTION	STATUS
INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
SAL-HYD-00-ZZ-DR-C-7410	P01



KEY PLAN

NOTES

REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	ISSUED FOR INFORMATION					
	R.HUNT	11/10/19	M.GRIFFIN	11/10/19	M.GRIFFIN	11/10/19

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PROJECT
SALTBOX
BOGNOR REGIS

TITLE
FLOOD EXCEEDANCE
PRE-DEVELOPMENT

HYDROCK PROJECT NO.
C-13319-C

SCALE @ A1
1:1000

STATUS DESCRIPTION
INFORMATION

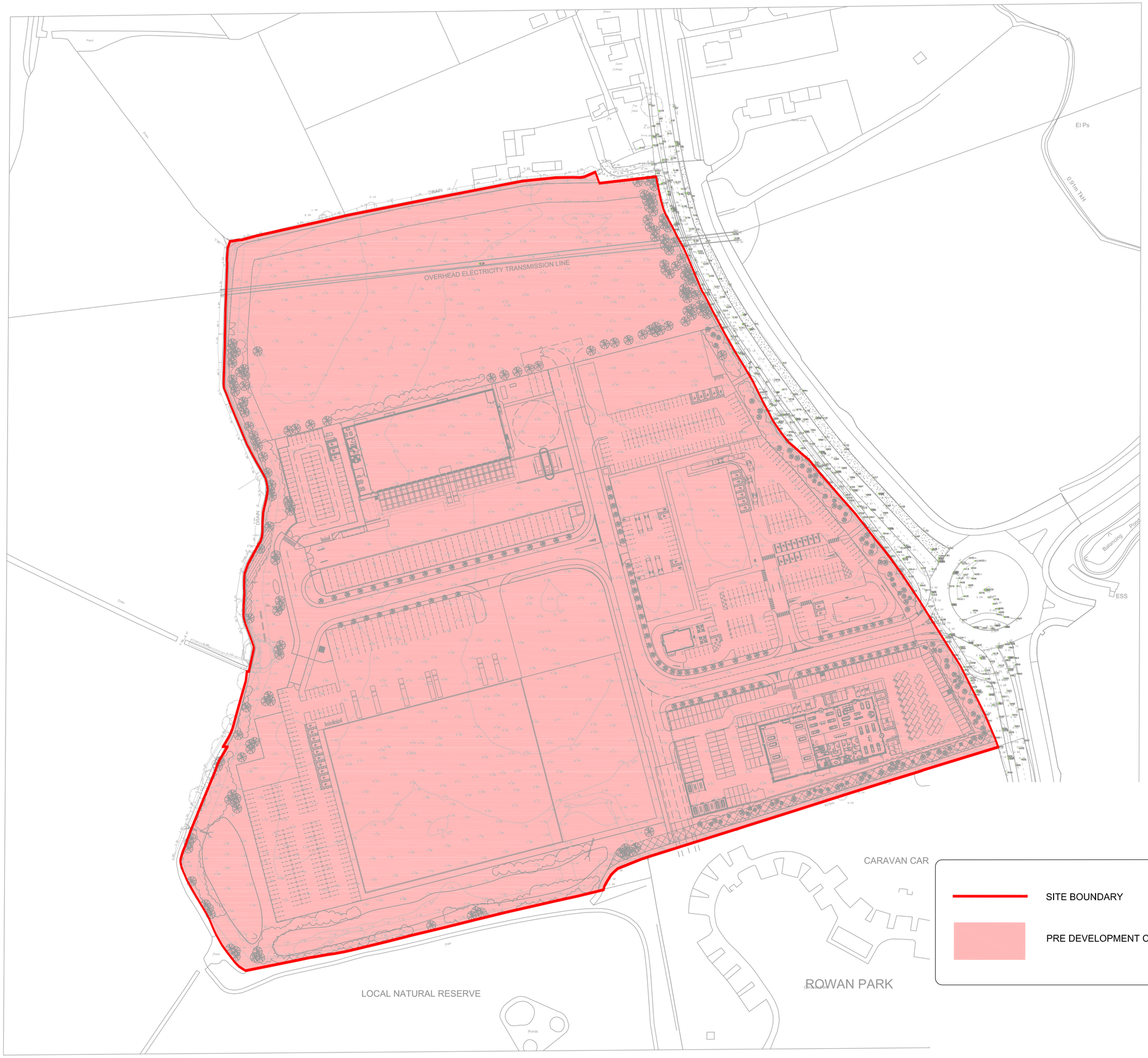
STATUS
S2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
SAL-HYD-00-ZZ-SK-C-7703

REVISION
P01

Appendix C Surface Water Drainage

- Pre-Development Catchment Areas.
- Post-Development Impermeable and Permeable Catchment Areas
- Post-Development Unit Plot Catchment Areas
- Site Wide Drainage Strategy



SITE BOUNDARY

PRE DEVELOPMENT CATCHMENT AREA = 12ha

KEY PLAN

NOTES

REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	ISSUED FOR INFORMATION					
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PROJECT
SALTBOX
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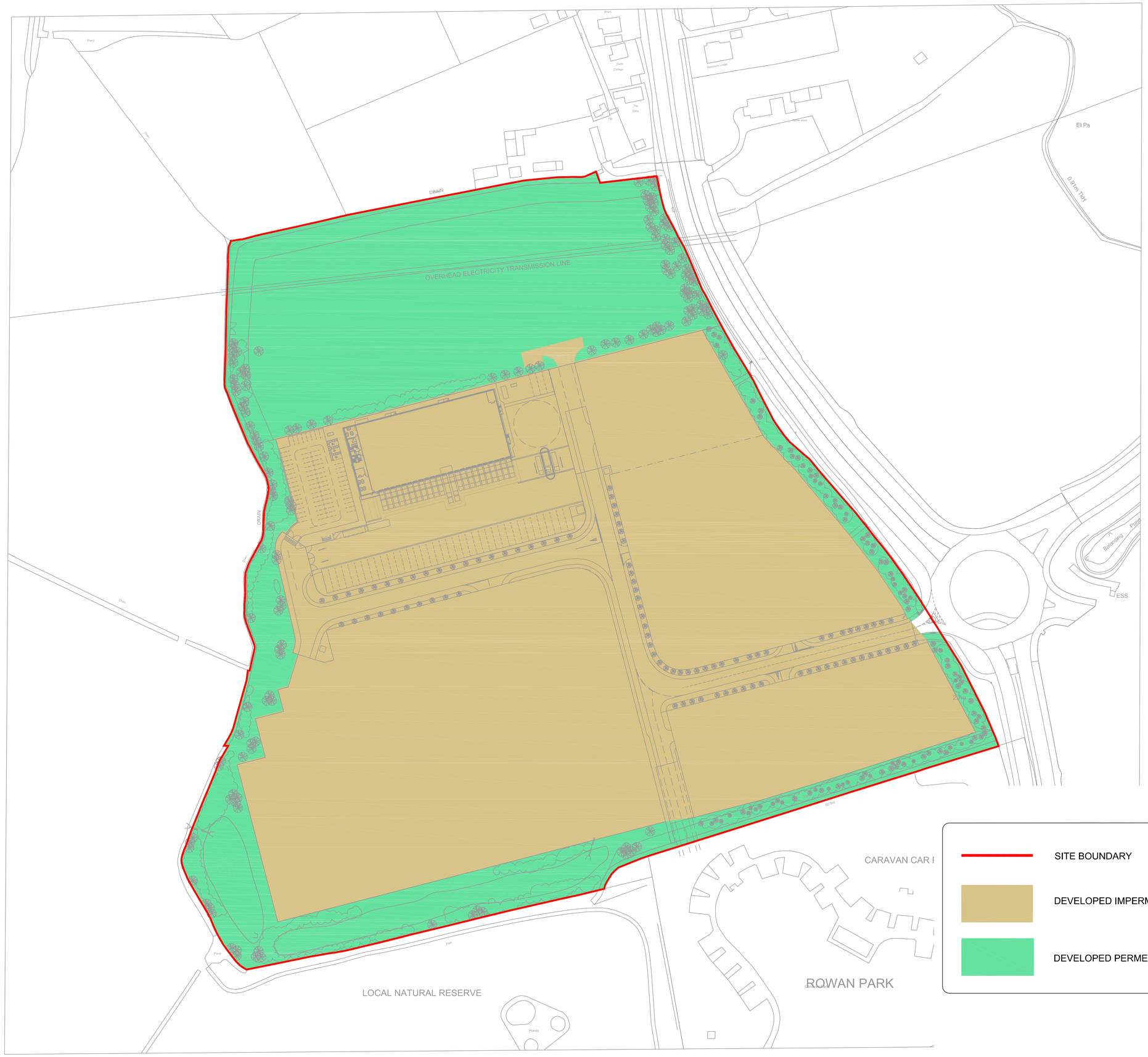
TITLE
PRE DEVELOPMENT CATCHMENT AREA

HYDROCK PROJECT NO.	SCALE @ A1
C-13319-C	1:1000

STATUS DESCRIPTION	STATUS
INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
SAL-HYD-00-ZZ-SK-C-7700	P01



SITE BOUNDARY

DEVELOPED IMPERMEABLE CATCHMENT = 7.91ha

DEVELOPED PERMEABLE CATCHMENT = 4.11ha

KEY PLAN

NOTES

REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	ISSUED FOR INFORMATION					
	R.HUNT	11/10/19	M.GRIFFIN	11/10/19	M.GRIFFIN	11/10/19

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PROJECT

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BOGNOR REGIS

TITLE

POST DEVELOPMENT CATCHMENT AREAS
IMPERMEABLE AND PERMEABLE CATCHMENTS

HYDROCK PROJECT NO.	SCALE @ A1
C-13319-C	1:1000

STATUS DESCRIPTION	STATUS
INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
SAL-HYD-00-ZZ-SK-C-7701	P01

KEY PLAN

NOTES

REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	ISSUED FOR INFORMATION					
	R.HUNT	11/10/19	M.GRIFFIN	11/10/19	M.GRIFFIN	11/10/19

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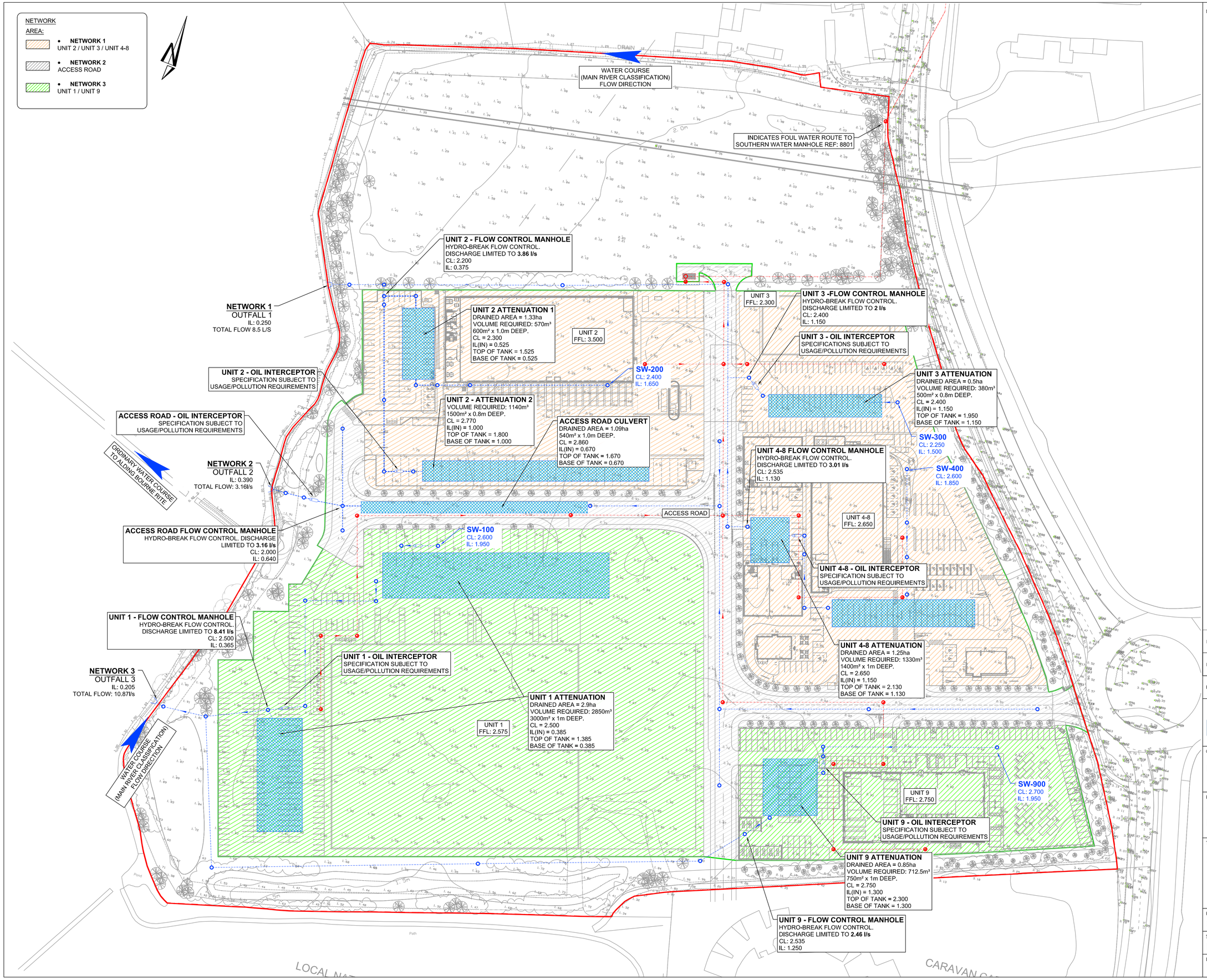
PROJECT
SALTBOX
BOGNOR REGIS

TITLE
POST DEVELOPMENT
UNIT PLOT CATCHMENT AREAS

HYDROCK PROJECT NO.	SCALE @ A1
C-13319-C	NTS

STATUS DESCRIPTION	STATUS
INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
SAL-HYD-00-ZZ-SK-C-7702	P01



NOTES

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3. Note that all care has been taken with the export of DWG files and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.
4. All levels are shown in metres above Ordnance Datum (m AOD).
5. All private drainage to comply with current Building Regulations, BS EN-752 Drain and Sewer systems outside Buildings and other relevant British Standards and Codes of Practices.
6. Drainage pipework routes under building footprint will require Co-ordination with foundations.
7. Final foul pipe connection routes and manholes are subject to confirmation of above ground drainage design discharge points at ground level by others to allow final pipe sizes, configuration and connections.
8. Door threshold drainage channel requirements to be advised by others.
9. Surface water drainage RWP locations to be confirmed by Architect.
10. External levels shown on this drawing relating to the civils, drainage works etc are to be confirmed on receipt of final external levels drawing (by others).
11. Foul drainage shown indicative subject to detailed design.

REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P02	PLANNING ISSUE					
	D. GALLIMORE	17/10/19	M. GRIFFIN	17/10/19	M. GRIFFIN	17/10/19
P01	PLANNING ISSUE					
	D. GALLIMORE	11/10/19	M. GRIFFIN	11/10/19	M. GRIFFIN	11/10/19

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CLIENT
LANDLINK ESTATES

PROJECT
SALTBOX
BOGNOR REGIS

TITLE
SITE DRAINAGE STRATEGY

HYDROCK PROJECT NO.	SCALE @ A1
C-13319-C	1:750

STATUS DESCRIPTION	STATUS
PLANNING	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
SAL-HYD-00-ZZ-DR-C-7000	P02

Appendix D Calculations

- Site Wide Surface Water Drainage MicroDrainage Calculations.

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.576	4-8	1.927	8-12	0.557

Total Area Contributing (ha) = 3.060

Total Pipe Volume (m³) = 98.736

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S7.000	20.043	0.100	200.4	1.240	5.00	0.0	0.600	o	600	Pipe/Conduit	
S7.001	8.843	0.050	176.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S7.002	65.823	0.250	263.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S8.000	7.553	0.100	75.5	0.490	5.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S7.000	50.00	5.19	1.230	1.240	0.0	0.0	0.0	1.72	485.3	167.9
S7.001	50.00	5.29	1.130	1.240	0.0	0.0	0.0	1.53	242.6	167.9
S7.002	50.00	6.17	1.080	1.240	0.0	0.0	0.0	1.25	198.5	167.9
S8.000	50.00	5.04	1.250	0.490	0.0	0.0	0.0	2.80	792.9	66.4

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S8.001	10.045	0.100	100.5	0.000	0.00	0.0	0.600	o	350	Pipe/Conduit	
S8.002	9.498	0.220	43.2	0.000	0.00	0.0	0.600	o	350	Pipe/Conduit	
S7.003	41.247	0.170	242.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S7.004	73.070	0.150	487.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S7.005	78.835	0.160	492.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S9.000	43.259	0.360	120.2	0.060	5.00	0.0	0.600	o	400	Pipe/Conduit	
S9.001	62.530	0.525	119.1	0.170	0.00	0.0	0.600	o	400	Pipe/Conduit	
S9.002	12.393	0.140	88.5	0.134	0.00	0.0	0.600	o	400	Pipe/Conduit	
S10.000	4.013	0.205	19.6	0.047	5.00	0.0	0.600	o	400	Pipe/Conduit	
S9.003	12.904	0.065	198.5	0.151	0.00	0.0	0.600	o	400	Pipe/Conduit	
S9.004	31.560	0.155	203.6	0.180	0.00	0.0	0.600	o	400	Pipe/Conduit	
S9.005	45.909	0.150	306.1	0.070	0.00	0.0	0.600	o	400	Pipe/Conduit	
S11.000	60.744	0.600	101.2	0.110	5.00	0.0	0.600	o	300	Pipe/Conduit	
S11.001	12.701	0.175	72.6	0.135	0.00	0.0	0.600	o	300	Pipe/Conduit	
S11.002	11.217	0.075	149.6	0.087	0.00	0.0	0.600	o	300	Pipe/Conduit	
S11.003	39.348	0.005	7869.6	0.000	0.00	0.0	0.600	o	400	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S8.001	50.00	5.14	1.150	0.490	0.0	0.0	0.0	1.73	166.5	66.4
S8.002	50.00	5.20	1.050	0.490	0.0	0.0	0.0	2.65	254.6	66.4
S7.003	50.00	6.70	0.830	1.730	0.0	0.0	0.0	1.30	206.9«	234.3
S7.004	50.00	8.03	0.660	1.730	0.0	0.0	0.0	0.91	145.4«	234.3
S7.005	50.00	9.48	0.510	1.730	0.0	0.0	0.0	0.91	144.6«	234.3
S9.000	50.00	5.42	1.820	0.060	0.0	0.0	0.0	1.72	216.2	8.1
S9.001	50.00	6.02	1.460	0.230	0.0	0.0	0.0	1.73	217.2	31.1
S9.002	50.00	6.12	0.935	0.364	0.0	0.0	0.0	2.01	252.2	49.3
S10.000	50.00	5.02	1.000	0.047	0.0	0.0	0.0	4.28	538.1	6.4
S9.003	50.00	6.29	0.795	0.562	0.0	0.0	0.0	1.34	167.9	76.1
S9.004	50.00	6.68	0.730	0.742	0.0	0.0	0.0	1.32	165.7	100.5
S9.005	50.00	7.40	0.525	0.812	0.0	0.0	0.0	1.07	134.9	110.0
S11.000	50.00	5.65	1.450	0.110	0.0	0.0	0.0	1.56	110.4	14.9
S11.001	50.00	5.76	0.850	0.245	0.0	0.0	0.0	1.85	130.6	33.2
S11.002	50.00	5.91	0.600	0.332	0.0	0.0	0.0	1.28	90.7	45.0
S11.003	50.00	9.13	0.525	0.332	0.0	0.0	0.0	0.20	25.5«	45.0

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S12.000	71.633	0.750	95.5	0.080	5.00	0.0	0.600	o	225	Pipe/Conduit	
S12.001	4.209	0.100	42.1	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
S12.002	7.139	0.180	39.7	0.079	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.004	14.057	0.145	96.9	0.000	0.00	0.0	0.600	o	400	Pipe/Conduit	
S9.006	5.079	0.025	203.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S7.006	15.307	0.050	306.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S7.007	7.715	0.050	154.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S12.000	50.00	5.89	1.725	0.080	0.0	0.0	0.0	1.34	53.2	10.8
S12.001	50.00	5.93	0.975	0.107	0.0	0.0	0.0	2.02	80.4	14.4
S12.002	50.00	5.98	0.875	0.186	0.0	0.0	0.0	2.08	82.8	25.2
S11.004	50.00	9.26	0.520	0.518	0.0	0.0	0.0	1.92	240.9	70.2
S9.006	50.00	9.38	0.375	1.330	0.0	0.0	0.0	0.70	12.4«	180.1
S7.006	50.00	9.70	0.350	3.060	0.0	0.0	0.0	1.16	184.0«	414.4
S7.007	50.00	9.78	0.300	3.060	0.0	0.0	0.0	1.63	259.9«	414.4

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S18	2.700	1.470	Open Manhole	1500	S7.000	1.230	600				
S19	2.535	1.405	Open Manhole	1500	S7.001	1.130	450	S7.000	1.130	600	
S20	2.840	1.760	Open Manhole	1350	S7.002	1.080	450	S7.001	1.080	450	
S21	2.400	1.150	Open Manhole	1500	S8.000	1.250	600				
S22	2.250	1.100	Open Manhole	1500	S8.001	1.150	350	S8.000	1.150	600	
S23	2.250	1.200	Open Manhole	1200	S8.002	1.050	350	S8.001	1.050	350	
S21	2.440	1.610	Open Manhole	1350	S7.003	0.830	450	S7.002	0.830	450	
								S8.002	0.830	350	
S22	2.925	2.265	Open Manhole	1350	S7.004	0.660	450	S7.003	0.660	450	
S23	2.240	1.730	Open Manhole	1350	S7.005	0.510	450	S7.004	0.510	450	
S10	2.660	0.840	Open Manhole	1350	S9.000	1.820	400				
S11	2.660	1.200	Open Manhole	1350	S9.001	1.460	400	S9.000	1.460	400	
S12	2.660	1.725	Open Manhole	1350	S9.002	0.935	400	S9.001	0.935	400	
S13	2.660	1.660	Open Manhole	1350	S10.000	1.000	400				
S13	2.900	2.105	Open Manhole	1350	S9.003	0.795	400	S9.002	0.795	400	
								S10.000	0.795	400	
S14	2.900	2.170	Open Manhole	1350	S9.004	0.730	400	S9.003	0.730	400	
S15	2.100	1.575	Open Manhole	1350	S9.005	0.525	400	S9.004	0.575	400	50
S17	2.400	0.950	Open Manhole	1200	S11.000	1.450	300				
S18	2.400	1.550	Open Manhole	1200	S11.001	0.850	300	S11.000	0.850	300	
S19	3.330	2.730	Open Manhole	1200	S11.002	0.600	300	S11.001	0.675	300	75
S20	2.780	2.255	Open Manhole	1350	S11.003	0.525	400	S11.002	0.525	300	
S19	3.300	1.575	Open Manhole	1200	S12.000	1.725	225				
S20	3.300	2.325	Open Manhole	1200	S12.001	0.975	225	S12.000	0.975	225	
S24	2.500	1.625	Open Manhole	1200	S12.002	0.875	225	S12.001	0.875	225	
S21	2.500	1.980	Open Manhole	1350	S11.004	0.520	400	S11.003	0.520	400	
								S12.002	0.695	225	
S17	2.200	1.825	Open Manhole	1350	S9.006	0.375	150	S9.005	0.375	400	
								S11.004	0.375	400	
S9	2.200	1.850	Open Manhole	1350	S7.006	0.350	450	S7.005	0.350	450	
								S9.006	0.350	150	
S10	2.200	1.900	Open Manhole	1350	S7.007	0.300	450	S7.006	0.300	450	
S	1.600	1.350	Open Manhole	0		OUTFALL		S7.007	0.250	450	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.000	o	600	S18	2.700	1.230	0.870	Open Manhole	1500
S7.001	o	450	S19	2.535	1.130	0.955	Open Manhole	1500
S7.002	o	450	S20	2.840	1.080	1.310	Open Manhole	1350
S8.000	o	600	S21	2.400	1.250	0.550	Open Manhole	1500
S8.001	o	350	S22	2.250	1.150	0.750	Open Manhole	1500
S8.002	o	350	S23	2.250	1.050	0.850	Open Manhole	1200
S7.003	o	450	S21	2.440	0.830	1.160	Open Manhole	1350
S7.004	o	450	S22	2.925	0.660	1.815	Open Manhole	1350
S7.005	o	450	S23	2.240	0.510	1.280	Open Manhole	1350
S9.000	o	400	S10	2.660	1.820	0.440	Open Manhole	1350
S9.001	o	400	S11	2.660	1.460	0.800	Open Manhole	1350
S9.002	o	400	S12	2.660	0.935	1.325	Open Manhole	1350
S10.000	o	400	S13	2.660	1.000	1.260	Open Manhole	1350
S9.003	o	400	S13	2.900	0.795	1.705	Open Manhole	1350
S9.004	o	400	S14	2.900	0.730	1.770	Open Manhole	1350
S9.005	o	400	S15	2.100	0.525	1.175	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S7.000	20.043	200.4	S19	2.535	1.130	0.805	Open Manhole	1500
S7.001	8.843	176.9	S20	2.840	1.080	1.310	Open Manhole	1350
S7.002	65.823	263.3	S21	2.440	0.830	1.160	Open Manhole	1350
S8.000	7.553	75.5	S22	2.250	1.150	0.500	Open Manhole	1500
S8.001	10.045	100.5	S23	2.250	1.050	0.850	Open Manhole	1200
S8.002	9.498	43.2	S21	2.440	0.830	1.260	Open Manhole	1350
S7.003	41.247	242.6	S22	2.925	0.660	1.815	Open Manhole	1350
S7.004	73.070	487.1	S23	2.240	0.510	1.280	Open Manhole	1350
S7.005	78.835	492.7	S9	2.200	0.350	1.400	Open Manhole	1350
S9.000	43.259	120.2	S11	2.660	1.460	0.800	Open Manhole	1350
S9.001	62.530	119.1	S12	2.660	0.935	1.325	Open Manhole	1350
S9.002	12.393	88.5	S13	2.900	0.795	1.705	Open Manhole	1350
S10.000	4.013	19.6	S13	2.900	0.795	1.705	Open Manhole	1350
S9.003	12.904	198.5	S14	2.900	0.730	1.770	Open Manhole	1350
S9.004	31.560	203.6	S15	2.100	0.575	1.125	Open Manhole	1350
S9.005	45.909	306.1	S17	2.200	0.375	1.425	Open Manhole	1350

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S11.000	o	300	S17	2.400	1.450	0.650	Open Manhole	1200
S11.001	o	300	S18	2.400	0.850	1.250	Open Manhole	1200
S11.002	o	300	S19	3.330	0.600	2.430	Open Manhole	1200
S11.003	o	400	S20	2.780	0.525	1.855	Open Manhole	1350
S12.000	o	225	S19	3.300	1.725	1.350	Open Manhole	1200
S12.001	o	225	S20	3.300	0.975	2.100	Open Manhole	1200
S12.002	o	225	S24	2.500	0.875	1.400	Open Manhole	1200
S11.004	o	400	S21	2.500	0.520	1.580	Open Manhole	1350
S9.006	o	150	S17	2.200	0.375	1.675	Open Manhole	1350
S7.006	o	450	S9	2.200	0.350	1.400	Open Manhole	1350
S7.007	o	450	S10	2.200	0.300	1.450	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S11.000	60.744	101.2	S18	2.400	0.850	1.250	Open Manhole	1200
S11.001	12.701	72.6	S19	3.330	0.675	2.355	Open Manhole	1200
S11.002	11.217	149.6	S20	2.780	0.525	1.955	Open Manhole	1350
S11.003	39.348	7869.6	S21	2.500	0.520	1.580	Open Manhole	1350
S12.000	71.633	95.5	S20	3.300	0.975	2.100	Open Manhole	1200
S12.001	4.209	42.1	S24	2.500	0.875	1.400	Open Manhole	1200
S12.002	7.139	39.7	S21	2.500	0.695	1.580	Open Manhole	1350
S11.004	14.057	96.9	S17	2.200	0.375	1.425	Open Manhole	1350
S9.006	5.079	203.2	S9	2.200	0.350	1.700	Open Manhole	1350
S7.006	15.307	306.1	S10	2.200	0.300	1.450	Open Manhole	1350
S7.007	7.715	154.3	S	1.600	0.250	0.900	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
7.000	-	-	100	1.240	1.240	1.240
7.001	-	-	100	0.000	0.000	0.000
7.002	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.490	0.490	0.490
8.001	-	-	100	0.000	0.000	0.000
8.002	-	-	100	0.000	0.000	0.000
7.003	-	-	100	0.000	0.000	0.000
7.004	-	-	100	0.000	0.000	0.000
7.005	-	-	100	0.000	0.000	0.000
9.000	-	-	100	0.060	0.060	0.060
9.001	-	-	100	0.170	0.170	0.170
9.002	-	-	100	0.134	0.134	0.134
10.000	-	-	100	0.047	0.047	0.047
9.003	-	-	100	0.151	0.151	0.151
9.004	-	-	100	0.180	0.180	0.180
9.005	-	-	100	0.070	0.070	0.070
11.000	-	-	100	0.110	0.110	0.110
11.001	User	-	100	0.056	0.056	0.056
	User	-	100	0.080	0.080	0.135
11.002	-	-	100	0.087	0.087	0.087
11.003	-	-	100	0.000	0.000	0.000
12.000	User	-	100	0.080	0.080	0.080
12.001	-	-	100	0.027	0.027	0.027
12.002	User	-	100	0.079	0.079	0.079
11.004	-	-	100	0.000	0.000	0.000
9.006	-	-	100	0.000	0.000	0.000
7.006	-	-	100	0.000	0.000	0.000
7.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				3.060	3.060	3.060

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S7.007	S	1.600	0.250	0.000	0	0

Datum (m) 0.000 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1	1.600	6	1.600	11	1.600	16	1.600	21	1.600	26	1.600
2	1.600	7	1.600	12	1.600	17	1.600	22	1.600	27	1.600
3	1.600	8	1.600	13	1.600	18	1.600	23	1.600	28	1.600
4	1.600	9	1.600	14	1.600	19	1.600	24	1.600	29	1.600
5	1.600	10	1.600	15	1.600	20	1.600	25	1.600	30	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
31	1.600	81	1.600	131	1.600	181	1.600	231	1.600	281	1.600
32	1.600	82	1.600	132	1.600	182	1.600	232	1.600	282	1.600
33	1.600	83	1.600	133	1.600	183	1.600	233	1.600	283	1.600
34	1.600	84	1.600	134	1.600	184	1.600	234	1.600	284	1.600
35	1.600	85	1.600	135	1.600	185	1.600	235	1.600	285	1.600
36	1.600	86	1.600	136	1.600	186	1.600	236	1.600	286	1.600
37	1.600	87	1.600	137	1.600	187	1.600	237	1.600	287	1.600
38	1.600	88	1.600	138	1.600	188	1.600	238	1.600	288	1.600
39	1.600	89	1.600	139	1.600	189	1.600	239	1.600	289	1.600
40	1.600	90	1.600	140	1.600	190	1.600	240	1.600	290	1.600
41	1.600	91	1.600	141	1.600	191	1.600	241	1.600	291	1.600
42	1.600	92	1.600	142	1.600	192	1.600	242	1.600	292	1.600
43	1.600	93	1.600	143	1.600	193	1.600	243	1.600	293	1.600
44	1.600	94	1.600	144	1.600	194	1.600	244	1.600	294	1.600
45	1.600	95	1.600	145	1.600	195	1.600	245	1.600	295	1.600
46	1.600	96	1.600	146	1.600	196	1.600	246	1.600	296	1.600
47	1.600	97	1.600	147	1.600	197	1.600	247	1.600	297	1.600
48	1.600	98	1.600	148	1.600	198	1.600	248	1.600	298	1.600
49	1.600	99	1.600	149	1.600	199	1.600	249	1.600	299	1.600
50	1.600	100	1.600	150	1.600	200	1.600	250	1.600	300	1.600
51	1.600	101	1.600	151	1.600	201	1.600	251	1.600	301	1.600
52	1.600	102	1.600	152	1.600	202	1.600	252	1.600	302	1.600
53	1.600	103	1.600	153	1.600	203	1.600	253	1.600	303	1.600
54	1.600	104	1.600	154	1.600	204	1.600	254	1.600	304	1.600
55	1.600	105	1.600	155	1.600	205	1.600	255	1.600	305	1.600
56	1.600	106	1.600	156	1.600	206	1.600	256	1.600	306	1.600
57	1.600	107	1.600	157	1.600	207	1.600	257	1.600	307	1.600
58	1.600	108	1.600	158	1.600	208	1.600	258	1.600	308	1.600
59	1.600	109	1.600	159	1.600	209	1.600	259	1.600	309	1.600
60	1.600	110	1.600	160	1.600	210	1.600	260	1.600	310	1.600
61	1.600	111	1.600	161	1.600	211	1.600	261	1.600	311	1.600
62	1.600	112	1.600	162	1.600	212	1.600	262	1.600	312	1.600
63	1.600	113	1.600	163	1.600	213	1.600	263	1.600	313	1.600
64	1.600	114	1.600	164	1.600	214	1.600	264	1.600	314	1.600
65	1.600	115	1.600	165	1.600	215	1.600	265	1.600	315	1.600
66	1.600	116	1.600	166	1.600	216	1.600	266	1.600	316	1.600
67	1.600	117	1.600	167	1.600	217	1.600	267	1.600	317	1.600
68	1.600	118	1.600	168	1.600	218	1.600	268	1.600	318	1.600
69	1.600	119	1.600	169	1.600	219	1.600	269	1.600	319	1.600
70	1.600	120	1.600	170	1.600	220	1.600	270	1.600	320	1.600
71	1.600	121	1.600	171	1.600	221	1.600	271	1.600	321	1.600
72	1.600	122	1.600	172	1.600	222	1.600	272	1.600	322	1.600
73	1.600	123	1.600	173	1.600	223	1.600	273	1.600	323	1.600
74	1.600	124	1.600	174	1.600	224	1.600	274	1.600	324	1.600
75	1.600	125	1.600	175	1.600	225	1.600	275	1.600	325	1.600
76	1.600	126	1.600	176	1.600	226	1.600	276	1.600	326	1.600
77	1.600	127	1.600	177	1.600	227	1.600	277	1.600	327	1.600
78	1.600	128	1.600	178	1.600	228	1.600	278	1.600	328	1.600
79	1.600	129	1.600	179	1.600	229	1.600	279	1.600	329	1.600
80	1.600	130	1.600	180	1.600	230	1.600	280	1.600	330	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
331	1.600	381	1.600	431	1.600	481	1.600	531	1.600	581	1.600
332	1.600	382	1.600	432	1.600	482	1.600	532	1.600	582	1.600
333	1.600	383	1.600	433	1.600	483	1.600	533	1.600	583	1.600
334	1.600	384	1.600	434	1.600	484	1.600	534	1.600	584	1.600
335	1.600	385	1.600	435	1.600	485	1.600	535	1.600	585	1.600
336	1.600	386	1.600	436	1.600	486	1.600	536	1.600	586	1.600
337	1.600	387	1.600	437	1.600	487	1.600	537	1.600	587	1.600
338	1.600	388	1.600	438	1.600	488	1.600	538	1.600	588	1.600
339	1.600	389	1.600	439	1.600	489	1.600	539	1.600	589	1.600
340	1.600	390	1.600	440	1.600	490	1.600	540	1.600	590	1.600
341	1.600	391	1.600	441	1.600	491	1.600	541	1.600	591	1.600
342	1.600	392	1.600	442	1.600	492	1.600	542	1.600	592	1.600
343	1.600	393	1.600	443	1.600	493	1.600	543	1.600	593	1.600
344	1.600	394	1.600	444	1.600	494	1.600	544	1.600	594	1.600
345	1.600	395	1.600	445	1.600	495	1.600	545	1.600	595	1.600
346	1.600	396	1.600	446	1.600	496	1.600	546	1.600	596	1.600
347	1.600	397	1.600	447	1.600	497	1.600	547	1.600	597	1.600
348	1.600	398	1.600	448	1.600	498	1.600	548	1.600	598	1.600
349	1.600	399	1.600	449	1.600	499	1.600	549	1.600	599	1.600
350	1.600	400	1.600	450	1.600	500	1.600	550	1.600	600	1.600
351	1.600	401	1.600	451	1.600	501	1.600	551	1.600	601	1.600
352	1.600	402	1.600	452	1.600	502	1.600	552	1.600	602	1.600
353	1.600	403	1.600	453	1.600	503	1.600	553	1.600	603	1.600
354	1.600	404	1.600	454	1.600	504	1.600	554	1.600	604	1.600
355	1.600	405	1.600	455	1.600	505	1.600	555	1.600	605	1.600
356	1.600	406	1.600	456	1.600	506	1.600	556	1.600	606	1.600
357	1.600	407	1.600	457	1.600	507	1.600	557	1.600	607	1.600
358	1.600	408	1.600	458	1.600	508	1.600	558	1.600	608	1.600
359	1.600	409	1.600	459	1.600	509	1.600	559	1.600	609	1.600
360	1.600	410	1.600	460	1.600	510	1.600	560	1.600	610	1.600
361	1.600	411	1.600	461	1.600	511	1.600	561	1.600	611	1.600
362	1.600	412	1.600	462	1.600	512	1.600	562	1.600	612	1.600
363	1.600	413	1.600	463	1.600	513	1.600	563	1.600	613	1.600
364	1.600	414	1.600	464	1.600	514	1.600	564	1.600	614	1.600
365	1.600	415	1.600	465	1.600	515	1.600	565	1.600	615	1.600
366	1.600	416	1.600	466	1.600	516	1.600	566	1.600	616	1.600
367	1.600	417	1.600	467	1.600	517	1.600	567	1.600	617	1.600
368	1.600	418	1.600	468	1.600	518	1.600	568	1.600	618	1.600
369	1.600	419	1.600	469	1.600	519	1.600	569	1.600	619	1.600
370	1.600	420	1.600	470	1.600	520	1.600	570	1.600	620	1.600
371	1.600	421	1.600	471	1.600	521	1.600	571	1.600	621	1.600
372	1.600	422	1.600	472	1.600	522	1.600	572	1.600	622	1.600
373	1.600	423	1.600	473	1.600	523	1.600	573	1.600	623	1.600
374	1.600	424	1.600	474	1.600	524	1.600	574	1.600	624	1.600
375	1.600	425	1.600	475	1.600	525	1.600	575	1.600	625	1.600
376	1.600	426	1.600	476	1.600	526	1.600	576	1.600	626	1.600
377	1.600	427	1.600	477	1.600	527	1.600	577	1.600	627	1.600
378	1.600	428	1.600	478	1.600	528	1.600	578	1.600	628	1.600
379	1.600	429	1.600	479	1.600	529	1.600	579	1.600	629	1.600
380	1.600	430	1.600	480	1.600	530	1.600	580	1.600	630	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
631	1.600	681	1.600	731	1.600	781	1.600	831	1.600	881	1.600
632	1.600	682	1.600	732	1.600	782	1.600	832	1.600	882	1.600
633	1.600	683	1.600	733	1.600	783	1.600	833	1.600	883	1.600
634	1.600	684	1.600	734	1.600	784	1.600	834	1.600	884	1.600
635	1.600	685	1.600	735	1.600	785	1.600	835	1.600	885	1.600
636	1.600	686	1.600	736	1.600	786	1.600	836	1.600	886	1.600
637	1.600	687	1.600	737	1.600	787	1.600	837	1.600	887	1.600
638	1.600	688	1.600	738	1.600	788	1.600	838	1.600	888	1.600
639	1.600	689	1.600	739	1.600	789	1.600	839	1.600	889	1.600
640	1.600	690	1.600	740	1.600	790	1.600	840	1.600	890	1.600
641	1.600	691	1.600	741	1.600	791	1.600	841	1.600	891	1.600
642	1.600	692	1.600	742	1.600	792	1.600	842	1.600	892	1.600
643	1.600	693	1.600	743	1.600	793	1.600	843	1.600	893	1.600
644	1.600	694	1.600	744	1.600	794	1.600	844	1.600	894	1.600
645	1.600	695	1.600	745	1.600	795	1.600	845	1.600	895	1.600
646	1.600	696	1.600	746	1.600	796	1.600	846	1.600	896	1.600
647	1.600	697	1.600	747	1.600	797	1.600	847	1.600	897	1.600
648	1.600	698	1.600	748	1.600	798	1.600	848	1.600	898	1.600
649	1.600	699	1.600	749	1.600	799	1.600	849	1.600	899	1.600
650	1.600	700	1.600	750	1.600	800	1.600	850	1.600	900	1.600
651	1.600	701	1.600	751	1.600	801	1.600	851	1.600	901	1.600
652	1.600	702	1.600	752	1.600	802	1.600	852	1.600	902	1.600
653	1.600	703	1.600	753	1.600	803	1.600	853	1.600	903	1.600
654	1.600	704	1.600	754	1.600	804	1.600	854	1.600	904	1.600
655	1.600	705	1.600	755	1.600	805	1.600	855	1.600	905	1.600
656	1.600	706	1.600	756	1.600	806	1.600	856	1.600	906	1.600
657	1.600	707	1.600	757	1.600	807	1.600	857	1.600	907	1.600
658	1.600	708	1.600	758	1.600	808	1.600	858	1.600	908	1.600
659	1.600	709	1.600	759	1.600	809	1.600	859	1.600	909	1.600
660	1.600	710	1.600	760	1.600	810	1.600	860	1.600	910	1.600
661	1.600	711	1.600	761	1.600	811	1.600	861	1.600	911	1.600
662	1.600	712	1.600	762	1.600	812	1.600	862	1.600	912	1.600
663	1.600	713	1.600	763	1.600	813	1.600	863	1.600	913	1.600
664	1.600	714	1.600	764	1.600	814	1.600	864	1.600	914	1.600
665	1.600	715	1.600	765	1.600	815	1.600	865	1.600	915	1.600
666	1.600	716	1.600	766	1.600	816	1.600	866	1.600	916	1.600
667	1.600	717	1.600	767	1.600	817	1.600	867	1.600	917	1.600
668	1.600	718	1.600	768	1.600	818	1.600	868	1.600	918	1.600
669	1.600	719	1.600	769	1.600	819	1.600	869	1.600	919	1.600
670	1.600	720	1.600	770	1.600	820	1.600	870	1.600	920	1.600
671	1.600	721	1.600	771	1.600	821	1.600	871	1.600	921	1.600
672	1.600	722	1.600	772	1.600	822	1.600	872	1.600	922	1.600
673	1.600	723	1.600	773	1.600	823	1.600	873	1.600	923	1.600
674	1.600	724	1.600	774	1.600	824	1.600	874	1.600	924	1.600
675	1.600	725	1.600	775	1.600	825	1.600	875	1.600	925	1.600
676	1.600	726	1.600	776	1.600	826	1.600	876	1.600	926	1.600
677	1.600	727	1.600	777	1.600	827	1.600	877	1.600	927	1.600
678	1.600	728	1.600	778	1.600	828	1.600	878	1.600	928	1.600
679	1.600	729	1.600	779	1.600	829	1.600	879	1.600	929	1.600
680	1.600	730	1.600	780	1.600	830	1.600	880	1.600	930	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
931	1.600	981	1.600	1031	1.600	1081	1.600	1131	1.600	1181	1.600
932	1.600	982	1.600	1032	1.600	1082	1.600	1132	1.600	1182	1.600
933	1.600	983	1.600	1033	1.600	1083	1.600	1133	1.600	1183	1.600
934	1.600	984	1.600	1034	1.600	1084	1.600	1134	1.600	1184	1.600
935	1.600	985	1.600	1035	1.600	1085	1.600	1135	1.600	1185	1.600
936	1.600	986	1.600	1036	1.600	1086	1.600	1136	1.600	1186	1.600
937	1.600	987	1.600	1037	1.600	1087	1.600	1137	1.600	1187	1.600
938	1.600	988	1.600	1038	1.600	1088	1.600	1138	1.600	1188	1.600
939	1.600	989	1.600	1039	1.600	1089	1.600	1139	1.600	1189	1.600
940	1.600	990	1.600	1040	1.600	1090	1.600	1140	1.600	1190	1.600
941	1.600	991	1.600	1041	1.600	1091	1.600	1141	1.600	1191	1.600
942	1.600	992	1.600	1042	1.600	1092	1.600	1142	1.600	1192	1.600
943	1.600	993	1.600	1043	1.600	1093	1.600	1143	1.600	1193	1.600
944	1.600	994	1.600	1044	1.600	1094	1.600	1144	1.600	1194	1.600
945	1.600	995	1.600	1045	1.600	1095	1.600	1145	1.600	1195	1.600
946	1.600	996	1.600	1046	1.600	1096	1.600	1146	1.600	1196	1.600
947	1.600	997	1.600	1047	1.600	1097	1.600	1147	1.600	1197	1.600
948	1.600	998	1.600	1048	1.600	1098	1.600	1148	1.600	1198	1.600
949	1.600	999	1.600	1049	1.600	1099	1.600	1149	1.600	1199	1.600
950	1.600	1000	1.600	1050	1.600	1100	1.600	1150	1.600	1200	1.600
951	1.600	1001	1.600	1051	1.600	1101	1.600	1151	1.600	1201	1.600
952	1.600	1002	1.600	1052	1.600	1102	1.600	1152	1.600	1202	1.600
953	1.600	1003	1.600	1053	1.600	1103	1.600	1153	1.600	1203	1.600
954	1.600	1004	1.600	1054	1.600	1104	1.600	1154	1.600	1204	1.600
955	1.600	1005	1.600	1055	1.600	1105	1.600	1155	1.600	1205	1.600
956	1.600	1006	1.600	1056	1.600	1106	1.600	1156	1.600	1206	1.600
957	1.600	1007	1.600	1057	1.600	1107	1.600	1157	1.600	1207	1.600
958	1.600	1008	1.600	1058	1.600	1108	1.600	1158	1.600	1208	1.600
959	1.600	1009	1.600	1059	1.600	1109	1.600	1159	1.600	1209	1.600
960	1.600	1010	1.600	1060	1.600	1110	1.600	1160	1.600	1210	1.600
961	1.600	1011	1.600	1061	1.600	1111	1.600	1161	1.600	1211	1.600
962	1.600	1012	1.600	1062	1.600	1112	1.600	1162	1.600	1212	1.600
963	1.600	1013	1.600	1063	1.600	1113	1.600	1163	1.600	1213	1.600
964	1.600	1014	1.600	1064	1.600	1114	1.600	1164	1.600	1214	1.600
965	1.600	1015	1.600	1065	1.600	1115	1.600	1165	1.600	1215	1.600
966	1.600	1016	1.600	1066	1.600	1116	1.600	1166	1.600	1216	1.600
967	1.600	1017	1.600	1067	1.600	1117	1.600	1167	1.600	1217	1.600
968	1.600	1018	1.600	1068	1.600	1118	1.600	1168	1.600	1218	1.600
969	1.600	1019	1.600	1069	1.600	1119	1.600	1169	1.600	1219	1.600
970	1.600	1020	1.600	1070	1.600	1120	1.600	1170	1.600	1220	1.600
971	1.600	1021	1.600	1071	1.600	1121	1.600	1171	1.600	1221	1.600
972	1.600	1022	1.600	1072	1.600	1122	1.600	1172	1.600	1222	1.600
973	1.600	1023	1.600	1073	1.600	1123	1.600	1173	1.600	1223	1.600
974	1.600	1024	1.600	1074	1.600	1124	1.600	1174	1.600	1224	1.600
975	1.600	1025	1.600	1075	1.600	1125	1.600	1175	1.600	1225	1.600
976	1.600	1026	1.600	1076	1.600	1126	1.600	1176	1.600	1226	1.600
977	1.600	1027	1.600	1077	1.600	1127	1.600	1177	1.600	1227	1.600
978	1.600	1028	1.600	1078	1.600	1128	1.600	1178	1.600	1228	1.600
979	1.600	1029	1.600	1079	1.600	1129	1.600	1179	1.600	1229	1.600
980	1.600	1030	1.600	1080	1.600	1130	1.600	1180	1.600	1230	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1231	1.600	1281	1.600	1331	1.600	1381	1.600	1431	1.600	1481	1.600
1232	1.600	1282	1.600	1332	1.600	1382	1.600	1432	1.600	1482	1.600
1233	1.600	1283	1.600	1333	1.600	1383	1.600	1433	1.600	1483	1.600
1234	1.600	1284	1.600	1334	1.600	1384	1.600	1434	1.600	1484	1.600
1235	1.600	1285	1.600	1335	1.600	1385	1.600	1435	1.600	1485	1.600
1236	1.600	1286	1.600	1336	1.600	1386	1.600	1436	1.600	1486	1.600
1237	1.600	1287	1.600	1337	1.600	1387	1.600	1437	1.600	1487	1.600
1238	1.600	1288	1.600	1338	1.600	1388	1.600	1438	1.600	1488	1.600
1239	1.600	1289	1.600	1339	1.600	1389	1.600	1439	1.600	1489	1.600
1240	1.600	1290	1.600	1340	1.600	1390	1.600	1440	1.600	1490	1.600
1241	1.600	1291	1.600	1341	1.600	1391	1.600	1441	1.600	1491	1.600
1242	1.600	1292	1.600	1342	1.600	1392	1.600	1442	1.600	1492	1.600
1243	1.600	1293	1.600	1343	1.600	1393	1.600	1443	1.600	1493	1.600
1244	1.600	1294	1.600	1344	1.600	1394	1.600	1444	1.600	1494	1.600
1245	1.600	1295	1.600	1345	1.600	1395	1.600	1445	1.600	1495	1.600
1246	1.600	1296	1.600	1346	1.600	1396	1.600	1446	1.600	1496	1.600
1247	1.600	1297	1.600	1347	1.600	1397	1.600	1447	1.600	1497	1.600
1248	1.600	1298	1.600	1348	1.600	1398	1.600	1448	1.600	1498	1.600
1249	1.600	1299	1.600	1349	1.600	1399	1.600	1449	1.600	1499	1.600
1250	1.600	1300	1.600	1350	1.600	1400	1.600	1450	1.600	1500	1.600
1251	1.600	1301	1.600	1351	1.600	1401	1.600	1451	1.600	1501	1.600
1252	1.600	1302	1.600	1352	1.600	1402	1.600	1452	1.600	1502	1.600
1253	1.600	1303	1.600	1353	1.600	1403	1.600	1453	1.600	1503	1.600
1254	1.600	1304	1.600	1354	1.600	1404	1.600	1454	1.600	1504	1.600
1255	1.600	1305	1.600	1355	1.600	1405	1.600	1455	1.600	1505	1.600
1256	1.600	1306	1.600	1356	1.600	1406	1.600	1456	1.600	1506	1.600
1257	1.600	1307	1.600	1357	1.600	1407	1.600	1457	1.600	1507	1.600
1258	1.600	1308	1.600	1358	1.600	1408	1.600	1458	1.600	1508	1.600
1259	1.600	1309	1.600	1359	1.600	1409	1.600	1459	1.600	1509	1.600
1260	1.600	1310	1.600	1360	1.600	1410	1.600	1460	1.600	1510	1.600
1261	1.600	1311	1.600	1361	1.600	1411	1.600	1461	1.600	1511	1.600
1262	1.600	1312	1.600	1362	1.600	1412	1.600	1462	1.600	1512	1.600
1263	1.600	1313	1.600	1363	1.600	1413	1.600	1463	1.600	1513	1.600
1264	1.600	1314	1.600	1364	1.600	1414	1.600	1464	1.600	1514	1.600
1265	1.600	1315	1.600	1365	1.600	1415	1.600	1465	1.600	1515	1.600
1266	1.600	1316	1.600	1366	1.600	1416	1.600	1466	1.600	1516	1.600
1267	1.600	1317	1.600	1367	1.600	1417	1.600	1467	1.600	1517	1.600
1268	1.600	1318	1.600	1368	1.600	1418	1.600	1468	1.600	1518	1.600
1269	1.600	1319	1.600	1369	1.600	1419	1.600	1469	1.600	1519	1.600
1270	1.600	1320	1.600	1370	1.600	1420	1.600	1470	1.600	1520	1.600
1271	1.600	1321	1.600	1371	1.600	1421	1.600	1471	1.600	1521	1.600
1272	1.600	1322	1.600	1372	1.600	1422	1.600	1472	1.600	1522	1.600
1273	1.600	1323	1.600	1373	1.600	1423	1.600	1473	1.600	1523	1.600
1274	1.600	1324	1.600	1374	1.600	1424	1.600	1474	1.600	1524	1.600
1275	1.600	1325	1.600	1375	1.600	1425	1.600	1475	1.600	1525	1.600
1276	1.600	1326	1.600	1376	1.600	1426	1.600	1476	1.600	1526	1.600
1277	1.600	1327	1.600	1377	1.600	1427	1.600	1477	1.600	1527	1.600
1278	1.600	1328	1.600	1378	1.600	1428	1.600	1478	1.600	1528	1.600
1279	1.600	1329	1.600	1379	1.600	1429	1.600	1479	1.600	1529	1.600
1280	1.600	1330	1.600	1380	1.600	1430	1.600	1480	1.600	1530	1.600

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Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1531	1.600	1581	1.600	1631	1.600	1681	1.600	1731	1.600	1781	1.600
1532	1.600	1582	1.600	1632	1.600	1682	1.600	1732	1.600	1782	1.600
1533	1.600	1583	1.600	1633	1.600	1683	1.600	1733	1.600	1783	1.600
1534	1.600	1584	1.600	1634	1.600	1684	1.600	1734	1.600	1784	1.600
1535	1.600	1585	1.600	1635	1.600	1685	1.600	1735	1.600	1785	1.600
1536	1.600	1586	1.600	1636	1.600	1686	1.600	1736	1.600	1786	1.600
1537	1.600	1587	1.600	1637	1.600	1687	1.600	1737	1.600	1787	1.600
1538	1.600	1588	1.600	1638	1.600	1688	1.600	1738	1.600	1788	1.600
1539	1.600	1589	1.600	1639	1.600	1689	1.600	1739	1.600	1789	1.600
1540	1.600	1590	1.600	1640	1.600	1690	1.600	1740	1.600	1790	1.600
1541	1.600	1591	1.600	1641	1.600	1691	1.600	1741	1.600	1791	1.600
1542	1.600	1592	1.600	1642	1.600	1692	1.600	1742	1.600	1792	1.600
1543	1.600	1593	1.600	1643	1.600	1693	1.600	1743	1.600	1793	1.600
1544	1.600	1594	1.600	1644	1.600	1694	1.600	1744	1.600	1794	1.600
1545	1.600	1595	1.600	1645	1.600	1695	1.600	1745	1.600	1795	1.600
1546	1.600	1596	1.600	1646	1.600	1696	1.600	1746	1.600	1796	1.600
1547	1.600	1597	1.600	1647	1.600	1697	1.600	1747	1.600	1797	1.600
1548	1.600	1598	1.600	1648	1.600	1698	1.600	1748	1.600	1798	1.600
1549	1.600	1599	1.600	1649	1.600	1699	1.600	1749	1.600	1799	1.600
1550	1.600	1600	1.600	1650	1.600	1700	1.600	1750	1.600	1800	1.600
1551	1.600	1601	1.600	1651	1.600	1701	1.600	1751	1.600	1801	1.600
1552	1.600	1602	1.600	1652	1.600	1702	1.600	1752	1.600	1802	1.600
1553	1.600	1603	1.600	1653	1.600	1703	1.600	1753	1.600	1803	1.600
1554	1.600	1604	1.600	1654	1.600	1704	1.600	1754	1.600	1804	1.600
1555	1.600	1605	1.600	1655	1.600	1705	1.600	1755	1.600	1805	1.600
1556	1.600	1606	1.600	1656	1.600	1706	1.600	1756	1.600	1806	1.600
1557	1.600	1607	1.600	1657	1.600	1707	1.600	1757	1.600	1807	1.600
1558	1.600	1608	1.600	1658	1.600	1708	1.600	1758	1.600	1808	1.600
1559	1.600	1609	1.600	1659	1.600	1709	1.600	1759	1.600	1809	1.600
1560	1.600	1610	1.600	1660	1.600	1710	1.600	1760	1.600	1810	1.600
1561	1.600	1611	1.600	1661	1.600	1711	1.600	1761	1.600	1811	1.600
1562	1.600	1612	1.600	1662	1.600	1712	1.600	1762	1.600	1812	1.600
1563	1.600	1613	1.600	1663	1.600	1713	1.600	1763	1.600	1813	1.600
1564	1.600	1614	1.600	1664	1.600	1714	1.600	1764	1.600	1814	1.600
1565	1.600	1615	1.600	1665	1.600	1715	1.600	1765	1.600	1815	1.600
1566	1.600	1616	1.600	1666	1.600	1716	1.600	1766	1.600	1816	1.600
1567	1.600	1617	1.600	1667	1.600	1717	1.600	1767	1.600	1817	1.600
1568	1.600	1618	1.600	1668	1.600	1718	1.600	1768	1.600	1818	1.600
1569	1.600	1619	1.600	1669	1.600	1719	1.600	1769	1.600	1819	1.600
1570	1.600	1620	1.600	1670	1.600	1720	1.600	1770	1.600	1820	1.600
1571	1.600	1621	1.600	1671	1.600	1721	1.600	1771	1.600	1821	1.600
1572	1.600	1622	1.600	1672	1.600	1722	1.600	1772	1.600	1822	1.600
1573	1.600	1623	1.600	1673	1.600	1723	1.600	1773	1.600	1823	1.600
1574	1.600	1624	1.600	1674	1.600	1724	1.600	1774	1.600	1824	1.600
1575	1.600	1625	1.600	1675	1.600	1725	1.600	1775	1.600	1825	1.600
1576	1.600	1626	1.600	1676	1.600	1726	1.600	1776	1.600	1826	1.600
1577	1.600	1627	1.600	1677	1.600	1727	1.600	1777	1.600	1827	1.600
1578	1.600	1628	1.600	1678	1.600	1728	1.600	1778	1.600	1828	1.600
1579	1.600	1629	1.600	1679	1.600	1729	1.600	1779	1.600	1829	1.600
1580	1.600	1630	1.600	1680	1.600	1730	1.600	1780	1.600	1830	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1831	1.600	1881	1.600	1931	1.600	1981	1.600	2031	1.600	2081	1.600
1832	1.600	1882	1.600	1932	1.600	1982	1.600	2032	1.600	2082	1.600
1833	1.600	1883	1.600	1933	1.600	1983	1.600	2033	1.600	2083	1.600
1834	1.600	1884	1.600	1934	1.600	1984	1.600	2034	1.600	2084	1.600
1835	1.600	1885	1.600	1935	1.600	1985	1.600	2035	1.600	2085	1.600
1836	1.600	1886	1.600	1936	1.600	1986	1.600	2036	1.600	2086	1.600
1837	1.600	1887	1.600	1937	1.600	1987	1.600	2037	1.600	2087	1.600
1838	1.600	1888	1.600	1938	1.600	1988	1.600	2038	1.600	2088	1.600
1839	1.600	1889	1.600	1939	1.600	1989	1.600	2039	1.600	2089	1.600
1840	1.600	1890	1.600	1940	1.600	1990	1.600	2040	1.600	2090	1.600
1841	1.600	1891	1.600	1941	1.600	1991	1.600	2041	1.600	2091	1.600
1842	1.600	1892	1.600	1942	1.600	1992	1.600	2042	1.600	2092	1.600
1843	1.600	1893	1.600	1943	1.600	1993	1.600	2043	1.600	2093	1.600
1844	1.600	1894	1.600	1944	1.600	1994	1.600	2044	1.600	2094	1.600
1845	1.600	1895	1.600	1945	1.600	1995	1.600	2045	1.600	2095	1.600
1846	1.600	1896	1.600	1946	1.600	1996	1.600	2046	1.600	2096	1.600
1847	1.600	1897	1.600	1947	1.600	1997	1.600	2047	1.600	2097	1.600
1848	1.600	1898	1.600	1948	1.600	1998	1.600	2048	1.600	2098	1.600
1849	1.600	1899	1.600	1949	1.600	1999	1.600	2049	1.600	2099	1.600
1850	1.600	1900	1.600	1950	1.600	2000	1.600	2050	1.600	2100	1.600
1851	1.600	1901	1.600	1951	1.600	2001	1.600	2051	1.600	2101	1.600
1852	1.600	1902	1.600	1952	1.600	2002	1.600	2052	1.600	2102	1.600
1853	1.600	1903	1.600	1953	1.600	2003	1.600	2053	1.600	2103	1.600
1854	1.600	1904	1.600	1954	1.600	2004	1.600	2054	1.600	2104	1.600
1855	1.600	1905	1.600	1955	1.600	2005	1.600	2055	1.600	2105	1.600
1856	1.600	1906	1.600	1956	1.600	2006	1.600	2056	1.600	2106	1.600
1857	1.600	1907	1.600	1957	1.600	2007	1.600	2057	1.600	2107	1.600
1858	1.600	1908	1.600	1958	1.600	2008	1.600	2058	1.600	2108	1.600
1859	1.600	1909	1.600	1959	1.600	2009	1.600	2059	1.600	2109	1.600
1860	1.600	1910	1.600	1960	1.600	2010	1.600	2060	1.600	2110	1.600
1861	1.600	1911	1.600	1961	1.600	2011	1.600	2061	1.600	2111	1.600
1862	1.600	1912	1.600	1962	1.600	2012	1.600	2062	1.600	2112	1.600
1863	1.600	1913	1.600	1963	1.600	2013	1.600	2063	1.600	2113	1.600
1864	1.600	1914	1.600	1964	1.600	2014	1.600	2064	1.600	2114	1.600
1865	1.600	1915	1.600	1965	1.600	2015	1.600	2065	1.600	2115	1.600
1866	1.600	1916	1.600	1966	1.600	2016	1.600	2066	1.600	2116	1.600
1867	1.600	1917	1.600	1967	1.600	2017	1.600	2067	1.600	2117	1.600
1868	1.600	1918	1.600	1968	1.600	2018	1.600	2068	1.600	2118	1.600
1869	1.600	1919	1.600	1969	1.600	2019	1.600	2069	1.600	2119	1.600
1870	1.600	1920	1.600	1970	1.600	2020	1.600	2070	1.600	2120	1.600
1871	1.600	1921	1.600	1971	1.600	2021	1.600	2071	1.600	2121	1.600
1872	1.600	1922	1.600	1972	1.600	2022	1.600	2072	1.600	2122	1.600
1873	1.600	1923	1.600	1973	1.600	2023	1.600	2073	1.600	2123	1.600
1874	1.600	1924	1.600	1974	1.600	2024	1.600	2074	1.600	2124	1.600
1875	1.600	1925	1.600	1975	1.600	2025	1.600	2075	1.600	2125	1.600
1876	1.600	1926	1.600	1976	1.600	2026	1.600	2076	1.600	2126	1.600
1877	1.600	1927	1.600	1977	1.600	2027	1.600	2077	1.600	2127	1.600
1878	1.600	1928	1.600	1978	1.600	2028	1.600	2078	1.600	2128	1.600
1879	1.600	1929	1.600	1979	1.600	2029	1.600	2079	1.600	2129	1.600
1880	1.600	1930	1.600	1980	1.600	2030	1.600	2080	1.600	2130	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2131	1.600	2181	1.600	2231	1.600	2281	1.600	2331	1.600	2381	1.600
2132	1.600	2182	1.600	2232	1.600	2282	1.600	2332	1.600	2382	1.600
2133	1.600	2183	1.600	2233	1.600	2283	1.600	2333	1.600	2383	1.600
2134	1.600	2184	1.600	2234	1.600	2284	1.600	2334	1.600	2384	1.600
2135	1.600	2185	1.600	2235	1.600	2285	1.600	2335	1.600	2385	1.600
2136	1.600	2186	1.600	2236	1.600	2286	1.600	2336	1.600	2386	1.600
2137	1.600	2187	1.600	2237	1.600	2287	1.600	2337	1.600	2387	1.600
2138	1.600	2188	1.600	2238	1.600	2288	1.600	2338	1.600	2388	1.600
2139	1.600	2189	1.600	2239	1.600	2289	1.600	2339	1.600	2389	1.600
2140	1.600	2190	1.600	2240	1.600	2290	1.600	2340	1.600	2390	1.600
2141	1.600	2191	1.600	2241	1.600	2291	1.600	2341	1.600	2391	1.600
2142	1.600	2192	1.600	2242	1.600	2292	1.600	2342	1.600	2392	1.600
2143	1.600	2193	1.600	2243	1.600	2293	1.600	2343	1.600	2393	1.600
2144	1.600	2194	1.600	2244	1.600	2294	1.600	2344	1.600	2394	1.600
2145	1.600	2195	1.600	2245	1.600	2295	1.600	2345	1.600	2395	1.600
2146	1.600	2196	1.600	2246	1.600	2296	1.600	2346	1.600	2396	1.600
2147	1.600	2197	1.600	2247	1.600	2297	1.600	2347	1.600	2397	1.600
2148	1.600	2198	1.600	2248	1.600	2298	1.600	2348	1.600	2398	1.600
2149	1.600	2199	1.600	2249	1.600	2299	1.600	2349	1.600	2399	1.600
2150	1.600	2200	1.600	2250	1.600	2300	1.600	2350	1.600	2400	1.600
2151	1.600	2201	1.600	2251	1.600	2301	1.600	2351	1.600	2401	1.600
2152	1.600	2202	1.600	2252	1.600	2302	1.600	2352	1.600	2402	1.600
2153	1.600	2203	1.600	2253	1.600	2303	1.600	2353	1.600	2403	1.600
2154	1.600	2204	1.600	2254	1.600	2304	1.600	2354	1.600	2404	1.600
2155	1.600	2205	1.600	2255	1.600	2305	1.600	2355	1.600	2405	1.600
2156	1.600	2206	1.600	2256	1.600	2306	1.600	2356	1.600	2406	1.600
2157	1.600	2207	1.600	2257	1.600	2307	1.600	2357	1.600	2407	1.600
2158	1.600	2208	1.600	2258	1.600	2308	1.600	2358	1.600	2408	1.600
2159	1.600	2209	1.600	2259	1.600	2309	1.600	2359	1.600	2409	1.600
2160	1.600	2210	1.600	2260	1.600	2310	1.600	2360	1.600	2410	1.600
2161	1.600	2211	1.600	2261	1.600	2311	1.600	2361	1.600	2411	1.600
2162	1.600	2212	1.600	2262	1.600	2312	1.600	2362	1.600	2412	1.600
2163	1.600	2213	1.600	2263	1.600	2313	1.600	2363	1.600	2413	1.600
2164	1.600	2214	1.600	2264	1.600	2314	1.600	2364	1.600	2414	1.600
2165	1.600	2215	1.600	2265	1.600	2315	1.600	2365	1.600	2415	1.600
2166	1.600	2216	1.600	2266	1.600	2316	1.600	2366	1.600	2416	1.600
2167	1.600	2217	1.600	2267	1.600	2317	1.600	2367	1.600	2417	1.600
2168	1.600	2218	1.600	2268	1.600	2318	1.600	2368	1.600	2418	1.600
2169	1.600	2219	1.600	2269	1.600	2319	1.600	2369	1.600	2419	1.600
2170	1.600	2220	1.600	2270	1.600	2320	1.600	2370	1.600	2420	1.600
2171	1.600	2221	1.600	2271	1.600	2321	1.600	2371	1.600	2421	1.600
2172	1.600	2222	1.600	2272	1.600	2322	1.600	2372	1.600	2422	1.600
2173	1.600	2223	1.600	2273	1.600	2323	1.600	2373	1.600	2423	1.600
2174	1.600	2224	1.600	2274	1.600	2324	1.600	2374	1.600	2424	1.600
2175	1.600	2225	1.600	2275	1.600	2325	1.600	2375	1.600	2425	1.600
2176	1.600	2226	1.600	2276	1.600	2326	1.600	2376	1.600	2426	1.600
2177	1.600	2227	1.600	2277	1.600	2327	1.600	2377	1.600	2427	1.600
2178	1.600	2228	1.600	2278	1.600	2328	1.600	2378	1.600	2428	1.600
2179	1.600	2229	1.600	2279	1.600	2329	1.600	2379	1.600	2429	1.600
2180	1.600	2230	1.600	2280	1.600	2330	1.600	2380	1.600	2430	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2431	1.600	2481	1.600	2531	1.600	2581	1.600	2631	1.600	2681	1.600
2432	1.600	2482	1.600	2532	1.600	2582	1.600	2632	1.600	2682	1.600
2433	1.600	2483	1.600	2533	1.600	2583	1.600	2633	1.600	2683	1.600
2434	1.600	2484	1.600	2534	1.600	2584	1.600	2634	1.600	2684	1.600
2435	1.600	2485	1.600	2535	1.600	2585	1.600	2635	1.600	2685	1.600
2436	1.600	2486	1.600	2536	1.600	2586	1.600	2636	1.600	2686	1.600
2437	1.600	2487	1.600	2537	1.600	2587	1.600	2637	1.600	2687	1.600
2438	1.600	2488	1.600	2538	1.600	2588	1.600	2638	1.600	2688	1.600
2439	1.600	2489	1.600	2539	1.600	2589	1.600	2639	1.600	2689	1.600
2440	1.600	2490	1.600	2540	1.600	2590	1.600	2640	1.600	2690	1.600
2441	1.600	2491	1.600	2541	1.600	2591	1.600	2641	1.600	2691	1.600
2442	1.600	2492	1.600	2542	1.600	2592	1.600	2642	1.600	2692	1.600
2443	1.600	2493	1.600	2543	1.600	2593	1.600	2643	1.600	2693	1.600
2444	1.600	2494	1.600	2544	1.600	2594	1.600	2644	1.600	2694	1.600
2445	1.600	2495	1.600	2545	1.600	2595	1.600	2645	1.600	2695	1.600
2446	1.600	2496	1.600	2546	1.600	2596	1.600	2646	1.600	2696	1.600
2447	1.600	2497	1.600	2547	1.600	2597	1.600	2647	1.600	2697	1.600
2448	1.600	2498	1.600	2548	1.600	2598	1.600	2648	1.600	2698	1.600
2449	1.600	2499	1.600	2549	1.600	2599	1.600	2649	1.600	2699	1.600
2450	1.600	2500	1.600	2550	1.600	2600	1.600	2650	1.600	2700	1.600
2451	1.600	2501	1.600	2551	1.600	2601	1.600	2651	1.600	2701	1.600
2452	1.600	2502	1.600	2552	1.600	2602	1.600	2652	1.600	2702	1.600
2453	1.600	2503	1.600	2553	1.600	2603	1.600	2653	1.600	2703	1.600
2454	1.600	2504	1.600	2554	1.600	2604	1.600	2654	1.600	2704	1.600
2455	1.600	2505	1.600	2555	1.600	2605	1.600	2655	1.600	2705	1.600
2456	1.600	2506	1.600	2556	1.600	2606	1.600	2656	1.600	2706	1.600
2457	1.600	2507	1.600	2557	1.600	2607	1.600	2657	1.600	2707	1.600
2458	1.600	2508	1.600	2558	1.600	2608	1.600	2658	1.600	2708	1.600
2459	1.600	2509	1.600	2559	1.600	2609	1.600	2659	1.600	2709	1.600
2460	1.600	2510	1.600	2560	1.600	2610	1.600	2660	1.600	2710	1.600
2461	1.600	2511	1.600	2561	1.600	2611	1.600	2661	1.600	2711	1.600
2462	1.600	2512	1.600	2562	1.600	2612	1.600	2662	1.600	2712	1.600
2463	1.600	2513	1.600	2563	1.600	2613	1.600	2663	1.600	2713	1.600
2464	1.600	2514	1.600	2564	1.600	2614	1.600	2664	1.600	2714	1.600
2465	1.600	2515	1.600	2565	1.600	2615	1.600	2665	1.600	2715	1.600
2466	1.600	2516	1.600	2566	1.600	2616	1.600	2666	1.600	2716	1.600
2467	1.600	2517	1.600	2567	1.600	2617	1.600	2667	1.600	2717	1.600
2468	1.600	2518	1.600	2568	1.600	2618	1.600	2668	1.600	2718	1.600
2469	1.600	2519	1.600	2569	1.600	2619	1.600	2669	1.600	2719	1.600
2470	1.600	2520	1.600	2570	1.600	2620	1.600	2670	1.600	2720	1.600
2471	1.600	2521	1.600	2571	1.600	2621	1.600	2671	1.600	2721	1.600
2472	1.600	2522	1.600	2572	1.600	2622	1.600	2672	1.600	2722	1.600
2473	1.600	2523	1.600	2573	1.600	2623	1.600	2673	1.600	2723	1.600
2474	1.600	2524	1.600	2574	1.600	2624	1.600	2674	1.600	2724	1.600
2475	1.600	2525	1.600	2575	1.600	2625	1.600	2675	1.600	2725	1.600
2476	1.600	2526	1.600	2576	1.600	2626	1.600	2676	1.600	2726	1.600
2477	1.600	2527	1.600	2577	1.600	2627	1.600	2677	1.600	2727	1.600
2478	1.600	2528	1.600	2578	1.600	2628	1.600	2678	1.600	2728	1.600
2479	1.600	2529	1.600	2579	1.600	2629	1.600	2679	1.600	2729	1.600
2480	1.600	2530	1.600	2580	1.600	2630	1.600	2680	1.600	2730	1.600

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2731	1.600	2756	1.600	2781	1.600	2806	1.600	2831	1.600	2856	1.600
2732	1.600	2757	1.600	2782	1.600	2807	1.600	2832	1.600	2857	1.600
2733	1.600	2758	1.600	2783	1.600	2808	1.600	2833	1.600	2858	1.600
2734	1.600	2759	1.600	2784	1.600	2809	1.600	2834	1.600	2859	1.600
2735	1.600	2760	1.600	2785	1.600	2810	1.600	2835	1.600	2860	1.600
2736	1.600	2761	1.600	2786	1.600	2811	1.600	2836	1.600	2861	1.600
2737	1.600	2762	1.600	2787	1.600	2812	1.600	2837	1.600	2862	1.600
2738	1.600	2763	1.600	2788	1.600	2813	1.600	2838	1.600	2863	1.600
2739	1.600	2764	1.600	2789	1.600	2814	1.600	2839	1.600	2864	1.600
2740	1.600	2765	1.600	2790	1.600	2815	1.600	2840	1.600	2865	1.600
2741	1.600	2766	1.600	2791	1.600	2816	1.600	2841	1.600	2866	1.600
2742	1.600	2767	1.600	2792	1.600	2817	1.600	2842	1.600	2867	1.600
2743	1.600	2768	1.600	2793	1.600	2818	1.600	2843	1.600	2868	1.600
2744	1.600	2769	1.600	2794	1.600	2819	1.600	2844	1.600	2869	1.600
2745	1.600	2770	1.600	2795	1.600	2820	1.600	2845	1.600	2870	1.600
2746	1.600	2771	1.600	2796	1.600	2821	1.600	2846	1.600	2871	1.600
2747	1.600	2772	1.600	2797	1.600	2822	1.600	2847	1.600	2872	1.600
2748	1.600	2773	1.600	2798	1.600	2823	1.600	2848	1.600	2873	1.600
2749	1.600	2774	1.600	2799	1.600	2824	1.600	2849	1.600	2874	1.600
2750	1.600	2775	1.600	2800	1.600	2825	1.600	2850	1.600	2875	1.600
2751	1.600	2776	1.600	2801	1.600	2826	1.600	2851	1.600	2876	1.600
2752	1.600	2777	1.600	2802	1.600	2827	1.600	2852	1.600	2877	1.600
2753	1.600	2778	1.600	2803	1.600	2828	1.600	2853	1.600	2878	1.600
2754	1.600	2779	1.600	2804	1.600	2829	1.600	2854	1.600	2879	1.600
2755	1.600	2780	1.600	2805	1.600	2830	1.600	2855	1.600	2880	1.600

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	4
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S19, DS/PN: S7.001, Volume (m³): 7.7

Unit Reference	MD-SHE-0082-3010-1020-3010
Design Head (m)	1.020
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	82
Invert Level (m)	1.130
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	1.020	3.0
Flush-Flo™	0.307	3.0
Kick-Flo®	0.639	2.4
Mean Flow over Head Range	-	2.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**
0.100	2.4	1.200	3.2	3.000	5.0	7.000	7.4
0.200	2.9	1.400	3.5	3.500	5.3	7.500	7.6
0.300	3.0	1.600	3.7	4.000	5.7	8.000	7.9
0.400	3.0	1.800	3.9	4.500	6.0	8.500	8.1
0.500	2.9	2.000	4.1	5.000	6.3	9.000	8.3
0.600	2.6	2.200	4.3	5.500	6.6	9.500	8.5
0.800	2.7	2.400	4.5	6.000	6.9		
1.000	3.0	2.600	4.6	6.500	7.1		

Hydro-Brake® Optimum Manhole: S22, DS/PN: S8.001, Volume (m³): 3.7

Unit Reference	MD-SHE-0070-2000-0820-2000
Design Head (m)	0.820
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	70
Invert Level (m)	1.150
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

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Hydro-Brake® Optimum Manhole: S22, DS/PN: S8.001, Volume (m³): 3.7

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.820	2.0
Flush-Flo™	0.248	2.0
Kick-Flo®	0.519	1.6
Mean Flow over Head Range	-	1.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.8	1.200	2.4	3.000	3.6	7.000	5.4
0.200	2.0	1.400	2.6	3.500	3.9	7.500	5.6
0.300	2.0	1.600	2.7	4.000	4.1	8.000	5.7
0.400	1.9	1.800	2.9	4.500	4.4	8.500	5.9
0.500	1.7	2.000	3.0	5.000	4.6	9.000	6.1
0.600	1.7	2.200	3.1	5.500	4.8	9.500	6.2
0.800	2.0	2.400	3.3	6.000	5.0		
1.000	2.2	2.600	3.4	6.500	5.2		

Hydro-Brake® Optimum Manhole: S17, DS/PN: S9.006, Volume (m³): 9.8

Unit Reference	MD-SHE-0089-3800-1260-3800
Design Head (m)	1.260
Design Flow (l/s)	3.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	89
Invert Level (m)	0.375
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.260	3.8
Flush-Flo™	0.379	3.8
Kick-Flo®	0.777	3.0
Mean Flow over Head Range	-	3.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.7	0.300	3.8	0.500	3.7	0.800	3.1
0.200	3.5	0.400	3.8	0.600	3.6	1.000	3.4

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Hydro-Brake® Optimum Manhole: S17, DS/PN: S9.006, Volume (m³): 9.8

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.200	3.7	2.400	5.1	5.000	7.2	8.000	9.0
1.400	4.0	2.600	5.3	5.500	7.6	8.500	9.3
1.600	4.2	3.000	5.7	6.000	7.9	9.000	9.6
1.800	4.5	3.500	6.1	6.500	8.2	9.500	9.8
2.000	4.7	4.000	6.5	7.000	8.5		
2.200	4.9	4.500	6.9	7.500	8.8		

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Storage Structures for Storm

Cellular Storage Manhole: S19, DS/PN: S7.001

Invert Level (m) 1.130 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1400.0	0.0	1.001	0.0	0.0
1.000	1400.0	0.0			

Cellular Storage Manhole: S22, DS/PN: S8.001

Invert Level (m) 1.150 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	500.0	0.0	0.801	0.0	0.0
0.800	500.0	0.0			

Cellular Storage Manhole: S13, DS/PN: S10.000

Invert Level (m) 1.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1500.0	0.0	0.801	0.0	0.0
0.800	1500.0	0.0			

Cellular Storage Manhole: S21, DS/PN: S11.004

Invert Level (m) 0.520 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	600.0	0.0	1.001	0.0	0.0
1.000	600.0	0.0			

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 4
Number of Online Controls 3 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.100 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 10.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S7.000	S18	15 Winter	100	+40%	30/15 Winter			
S7.001	S19	2880 Winter	100	+40%	30/2880 Winter			
S7.002	S20	2880 Winter	100	+40%	100/180 Winter			
S8.000	S21	1440 Winter	100	+40%	100/480 Winter			
S8.001	S22	1440 Winter	100	+40%	30/360 Winter			
S8.002	S23	2880 Winter	100	+40%	30/240 Winter			
S7.003	S21	2880 Winter	100	+40%	2/480 Winter			
S7.004	S22	2880 Winter	100	+40%	2/180 Summer			
S7.005	S23	2880 Winter	100	+40%	2/120 Summer			
S9.000	S10	15 Winter	100	+40%				
S9.001	S11	15 Winter	100	+40%	100/15 Summer			
S9.002	S12	15 Winter	100	+40%	30/15 Summer			
S10.000	S13	4320 Winter	100	+40%	30/2160 Winter			
S9.003	S13	4320 Winter	100	+40%	2/15 Summer			
S9.004	S14	4320 Winter	100	+40%	2/15 Winter			
S9.005	S15	4320 Winter	100	+40%	2/15 Summer			
S11.000	S17	15 Winter	100	+40%	100/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.000	S18	2.190	0.360	0.000	1.98		688.0	SURCHARGED	
S7.001	S19	1.965	0.385	0.000	0.02		3.0	SURCHARGED	
S7.002	S20	1.615	0.085	0.000	0.06		11.1	SURCHARGED	
S8.000	S21	1.920	0.070	0.000	0.04		14.4	SURCHARGED	
S8.001	S22	1.919	0.419	0.000	0.02		2.0	SURCHARGED	
S8.002	S23	1.614	0.214	0.000	0.04		6.9	SURCHARGED	
S7.003	S21	1.613	0.333	0.000	0.37		68.2	SURCHARGED	
S7.004	S22	1.611	0.501	0.000	0.50		68.6	SURCHARGED	
S7.005	S23	1.608	0.648	0.000	0.62		84.9	SURCHARGED	
S9.000	S10	2.033	-0.187	0.000	0.16		32.2	OK	
S9.001	S11	2.002	0.142	0.000	0.59		119.1	SURCHARGED	
S9.002	S12	1.829	0.494	0.000	1.12		186.6	SURCHARGED	
S10.000	S13	1.733	0.333	0.000	0.02		3.7	SURCHARGED	
S9.003	S13	1.733	0.538	0.000	0.03		3.8	SURCHARGED	
S9.004	S14	1.733	0.603	0.000	0.03		3.8	SURCHARGED	
S9.005	S15	1.731	0.806	0.000	0.03		3.8	SURCHARGED	
S11.000	S17	2.025	0.275	0.000	0.55		58.0	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S11.001	S18	15 Winter	100	+40%	2/960 Winter			
S11.002	S19	4320 Winter	100	+40%	2/180 Summer			
S11.003	S20	4320 Winter	100	+40%	2/180 Winter			
S12.000	S19	15 Winter	100	+40%	100/15 Summer			
S12.001	S20	4320 Winter	100	+40%	2/1440 Winter			
S12.002	S24	4320 Winter	100	+40%	2/480 Winter			
S11.004	S21	4320 Winter	100	+40%	2/180 Winter			
S9.006	S17	4320 Winter	100	+40%	2/15 Summer			
S7.006	S9	2880 Winter	100	+40%	2/60 Summer			
S7.007	S10	2880 Winter	100	+40%	2/60 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S11.001	S18	1.857	0.707	0.000	1.16		122.0	SURCHARGED	
S11.002	S19	1.731	0.831	0.000	0.06		4.1	SURCHARGED	
S11.003	S20	1.731	0.806	0.000	0.07		4.1	SURCHARGED	
S12.000	S19	2.014	0.064	0.000	0.80		41.3	SURCHARGED	
S12.001	S20	1.731	0.531	0.000	0.03		1.3	SURCHARGED	
S12.002	S24	1.731	0.631	0.000	0.04		2.3	SURCHARGED	
S11.004	S21	1.731	0.811	0.000	0.03		5.6	SURCHARGED	
S9.006	S17	1.730	1.205	0.000	0.39		3.9	SURCHARGED	
S7.006	S9	1.604	0.804	0.000	0.78		109.7	SURCHARGED	
S7.007	S10	1.602	0.852	0.000	0.65		108.9	SURCHARGED	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.053	4-8	0.541	8-12	0.459	12-16	0.039

Total Area Contributing (ha) = 1.092

Total Pipe Volume (m³) = 1554.235

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	74.508	0.375	198.7	0.170	5.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	65.940	0.330	199.8	0.102	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.000	34.268	0.140	244.8	0.095	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	6.12	2.085	0.170	0.0	0.0	0.0	1.11	78.6	23.0
S1.001	50.00	7.11	1.710	0.272	0.0	0.0	0.0	1.11	78.4	36.8
S2.000	50.00	5.69	1.595	0.095	0.0	0.0	0.0	0.83	33.1	12.8

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.002	89.634	0.235	381.4	0.167	0.00	0.0	0.600	o	600	Pipe/Conduit	
S3.000	28.683	0.290	98.9	0.145	5.00	0.0	0.600	o	300	Pipe/Conduit	
S1.003	57.120	0.175	326.4	0.131	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.004	1.376	0.020	68.8	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.005	99.829	0.010	9982.9	0.219	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
S1.006	25.506	0.145	175.9	0.063	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	8.286	0.050	165.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	6.318	0.055	114.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.002	50.00	8.31	1.080	0.534	0.0	0.0	0.0	1.24	350.8	72.3
S3.000	50.00	5.30	1.420	0.145	0.0	0.0	0.0	1.58	111.8	19.6
S1.003	50.00	9.02	0.845	0.810	0.0	0.0	0.0	1.34	379.5	109.7
S1.004	50.00	9.03	0.670	0.810	0.0	0.0	0.0	2.94	830.9	109.7
S1.005	50.00	12.49	0.650	1.029	0.0	0.0	0.0	0.48	7219.7	139.3
S1.006	50.00	12.92	0.640	1.092	0.0	0.0	0.0	0.98	39.1«	147.9
S1.007	50.00	13.05	0.495	1.092	0.0	0.0	0.0	1.01	40.3«	147.9
S1.008	50.00	13.14	0.445	1.092	0.0	0.0	0.0	1.22	48.5«	147.9

Conduit Sections for Storm

NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \/ open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m²)
-1	[]	15000	1000	90.0		1.875	15.000

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	3.090	1.005	Open Manhole	1200	S1.000	2.085	300				
S2	2.880	1.170	Open Manhole	1200	S1.001	1.710	300	S1.000	1.710	300	
S9	2.650	1.055	Open Manhole	1200	S2.000	1.595	225				
S3	2.400	1.320	Open Manhole	1500	S1.002	1.080	600	S1.001	1.380	300	
								S2.000	1.455	225	
S5	2.640	1.220	Open Manhole	1200	S3.000	1.420	300				
S4	2.880	2.035	Open Manhole	1500	S1.003	0.845	600	S1.002	0.845	600	
								S3.000	1.130	300	
S5	2.860	2.190	Open Manhole	1500	S1.004	0.670	600	S1.003	0.670	600	
S6	2.500	1.850	Open Manhole	3000	S1.005	0.650	-1	S1.004	0.650	600	
S9	2.000	1.360	Open Manhole	3000	S1.006	0.640	225	S1.005	0.640	-1	
S7	2.000	1.505	Open Manhole	1200	S1.007	0.495	225	S1.006	0.495	225	
S8	2.000	1.555	Open Manhole	1200	S1.008	0.445	225	S1.007	0.445	225	
S	2.000	1.610	Open Manhole	0		OUTFALL		S1.008	0.390	225	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	300	S1	3.090	2.085	0.705	Open Manhole	1200
S1.001	o	300	S2	2.880	1.710	0.870	Open Manhole	1200
S2.000	o	225	S9	2.650	1.595	0.830	Open Manhole	1200
S1.002	o	600	S3	2.400	1.080	0.720	Open Manhole	1500
S3.000	o	300	S5	2.640	1.420	0.920	Open Manhole	1200
S1.003	o	600	S4	2.880	0.845	1.435	Open Manhole	1500
S1.004	o	600	S5	2.860	0.670	1.590	Open Manhole	1500
S1.005	[]	-1	S6	2.500	0.650	0.850	Open Manhole	3000
S1.006	o	225	S9	2.000	0.640	1.135	Open Manhole	3000
S1.007	o	225	S7	2.000	0.495	1.280	Open Manhole	1200
S1.008	o	225	S8	2.000	0.445	1.330	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	74.508	198.7	S2	2.880	1.710	0.870	Open Manhole	1200
S1.001	65.940	199.8	S3	2.400	1.380	0.720	Open Manhole	1500
S2.000	34.268	244.8	S3	2.400	1.455	0.720	Open Manhole	1500
S1.002	89.634	381.4	S4	2.880	0.845	1.435	Open Manhole	1500
S3.000	28.683	98.9	S4	2.880	1.130	1.450	Open Manhole	1500
S1.003	57.120	326.4	S5	2.860	0.670	1.590	Open Manhole	1500
S1.004	1.376	68.8	S6	2.500	0.650	1.250	Open Manhole	3000
S1.005	99.829	9982.9	S9	2.000	0.640	0.360	Open Manhole	3000
S1.006	25.506	175.9	S7	2.000	0.495	1.280	Open Manhole	1200
S1.007	8.286	165.7	S8	2.000	0.445	1.330	Open Manhole	1200
S1.008	6.318	114.9	S	2.000	0.390	1.385	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.170	0.170	0.170
1.001	User	-	100	0.102	0.102	0.102
2.000	User	-	100	0.095	0.095	0.095
1.002	User	-	100	0.167	0.167	0.167
3.000	User	-	100	0.145	0.145	0.145
1.003	User	-	100	0.131	0.131	0.131
1.004	-	-	100	0.000	0.000	0.000
1.005	User	-	100	0.219	0.219	0.219
1.006	User	-	100	0.063	0.063	0.063
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.092	1.092	1.092

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.008	S	2.000	0.390	0.000	0	0

Datum (m) 0.000 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1	1.800	23	1.800	45	1.800	67	1.800	89	1.800	111	1.800
2	1.800	24	1.800	46	1.800	68	1.800	90	1.800	112	1.800
3	1.800	25	1.800	47	1.800	69	1.800	91	1.800	113	1.800
4	1.800	26	1.800	48	1.800	70	1.800	92	1.800	114	1.800
5	1.800	27	1.800	49	1.800	71	1.800	93	1.800	115	1.800
6	1.800	28	1.800	50	1.800	72	1.800	94	1.800	116	1.800
7	1.800	29	1.800	51	1.800	73	1.800	95	1.800	117	1.800
8	1.800	30	1.800	52	1.800	74	1.800	96	1.800	118	1.800
9	1.800	31	1.800	53	1.800	75	1.800	97	1.800	119	1.800
10	1.800	32	1.800	54	1.800	76	1.800	98	1.800	120	1.800
11	1.800	33	1.800	55	1.800	77	1.800	99	1.800	121	1.800
12	1.800	34	1.800	56	1.800	78	1.800	100	1.800	122	1.800
13	1.800	35	1.800	57	1.800	79	1.800	101	1.800	123	1.800
14	1.800	36	1.800	58	1.800	80	1.800	102	1.800	124	1.800
15	1.800	37	1.800	59	1.800	81	1.800	103	1.800	125	1.800
16	1.800	38	1.800	60	1.800	82	1.800	104	1.800	126	1.800
17	1.800	39	1.800	61	1.800	83	1.800	105	1.800	127	1.800
18	1.800	40	1.800	62	1.800	84	1.800	106	1.800	128	1.800
19	1.800	41	1.800	63	1.800	85	1.800	107	1.800	129	1.800
20	1.800	42	1.800	64	1.800	86	1.800	108	1.800	130	1.800
21	1.800	43	1.800	65	1.800	87	1.800	109	1.800	131	1.800
22	1.800	44	1.800	66	1.800	88	1.800	110	1.800	132	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
133	1.800	183	1.800	233	1.800	283	1.800	333	1.800	383	1.800
134	1.800	184	1.800	234	1.800	284	1.800	334	1.800	384	1.800
135	1.800	185	1.800	235	1.800	285	1.800	335	1.800	385	1.800
136	1.800	186	1.800	236	1.800	286	1.800	336	1.800	386	1.800
137	1.800	187	1.800	237	1.800	287	1.800	337	1.800	387	1.800
138	1.800	188	1.800	238	1.800	288	1.800	338	1.800	388	1.800
139	1.800	189	1.800	239	1.800	289	1.800	339	1.800	389	1.800
140	1.800	190	1.800	240	1.800	290	1.800	340	1.800	390	1.800
141	1.800	191	1.800	241	1.800	291	1.800	341	1.800	391	1.800
142	1.800	192	1.800	242	1.800	292	1.800	342	1.800	392	1.800
143	1.800	193	1.800	243	1.800	293	1.800	343	1.800	393	1.800
144	1.800	194	1.800	244	1.800	294	1.800	344	1.800	394	1.800
145	1.800	195	1.800	245	1.800	295	1.800	345	1.800	395	1.800
146	1.800	196	1.800	246	1.800	296	1.800	346	1.800	396	1.800
147	1.800	197	1.800	247	1.800	297	1.800	347	1.800	397	1.800
148	1.800	198	1.800	248	1.800	298	1.800	348	1.800	398	1.800
149	1.800	199	1.800	249	1.800	299	1.800	349	1.800	399	1.800
150	1.800	200	1.800	250	1.800	300	1.800	350	1.800	400	1.800
151	1.800	201	1.800	251	1.800	301	1.800	351	1.800	401	1.800
152	1.800	202	1.800	252	1.800	302	1.800	352	1.800	402	1.800
153	1.800	203	1.800	253	1.800	303	1.800	353	1.800	403	1.800
154	1.800	204	1.800	254	1.800	304	1.800	354	1.800	404	1.800
155	1.800	205	1.800	255	1.800	305	1.800	355	1.800	405	1.800
156	1.800	206	1.800	256	1.800	306	1.800	356	1.800	406	1.800
157	1.800	207	1.800	257	1.800	307	1.800	357	1.800	407	1.800
158	1.800	208	1.800	258	1.800	308	1.800	358	1.800	408	1.800
159	1.800	209	1.800	259	1.800	309	1.800	359	1.800	409	1.800
160	1.800	210	1.800	260	1.800	310	1.800	360	1.800	410	1.800
161	1.800	211	1.800	261	1.800	311	1.800	361	1.800	411	1.800
162	1.800	212	1.800	262	1.800	312	1.800	362	1.800	412	1.800
163	1.800	213	1.800	263	1.800	313	1.800	363	1.800	413	1.800
164	1.800	214	1.800	264	1.800	314	1.800	364	1.800	414	1.800
165	1.800	215	1.800	265	1.800	315	1.800	365	1.800	415	1.800
166	1.800	216	1.800	266	1.800	316	1.800	366	1.800	416	1.800
167	1.800	217	1.800	267	1.800	317	1.800	367	1.800	417	1.800
168	1.800	218	1.800	268	1.800	318	1.800	368	1.800	418	1.800
169	1.800	219	1.800	269	1.800	319	1.800	369	1.800	419	1.800
170	1.800	220	1.800	270	1.800	320	1.800	370	1.800	420	1.800
171	1.800	221	1.800	271	1.800	321	1.800	371	1.800	421	1.800
172	1.800	222	1.800	272	1.800	322	1.800	372	1.800	422	1.800
173	1.800	223	1.800	273	1.800	323	1.800	373	1.800	423	1.800
174	1.800	224	1.800	274	1.800	324	1.800	374	1.800	424	1.800
175	1.800	225	1.800	275	1.800	325	1.800	375	1.800	425	1.800
176	1.800	226	1.800	276	1.800	326	1.800	376	1.800	426	1.800
177	1.800	227	1.800	277	1.800	327	1.800	377	1.800	427	1.800
178	1.800	228	1.800	278	1.800	328	1.800	378	1.800	428	1.800
179	1.800	229	1.800	279	1.800	329	1.800	379	1.800	429	1.800
180	1.800	230	1.800	280	1.800	330	1.800	380	1.800	430	1.800
181	1.800	231	1.800	281	1.800	331	1.800	381	1.800	431	1.800
182	1.800	232	1.800	282	1.800	332	1.800	382	1.800	432	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
433	1.800	483	1.800	533	1.800	583	1.800	633	1.800	683	1.800
434	1.800	484	1.800	534	1.800	584	1.800	634	1.800	684	1.800
435	1.800	485	1.800	535	1.800	585	1.800	635	1.800	685	1.800
436	1.800	486	1.800	536	1.800	586	1.800	636	1.800	686	1.800
437	1.800	487	1.800	537	1.800	587	1.800	637	1.800	687	1.800
438	1.800	488	1.800	538	1.800	588	1.800	638	1.800	688	1.800
439	1.800	489	1.800	539	1.800	589	1.800	639	1.800	689	1.800
440	1.800	490	1.800	540	1.800	590	1.800	640	1.800	690	1.800
441	1.800	491	1.800	541	1.800	591	1.800	641	1.800	691	1.800
442	1.800	492	1.800	542	1.800	592	1.800	642	1.800	692	1.800
443	1.800	493	1.800	543	1.800	593	1.800	643	1.800	693	1.800
444	1.800	494	1.800	544	1.800	594	1.800	644	1.800	694	1.800
445	1.800	495	1.800	545	1.800	595	1.800	645	1.800	695	1.800
446	1.800	496	1.800	546	1.800	596	1.800	646	1.800	696	1.800
447	1.800	497	1.800	547	1.800	597	1.800	647	1.800	697	1.800
448	1.800	498	1.800	548	1.800	598	1.800	648	1.800	698	1.800
449	1.800	499	1.800	549	1.800	599	1.800	649	1.800	699	1.800
450	1.800	500	1.800	550	1.800	600	1.800	650	1.800	700	1.800
451	1.800	501	1.800	551	1.800	601	1.800	651	1.800	701	1.800
452	1.800	502	1.800	552	1.800	602	1.800	652	1.800	702	1.800
453	1.800	503	1.800	553	1.800	603	1.800	653	1.800	703	1.800
454	1.800	504	1.800	554	1.800	604	1.800	654	1.800	704	1.800
455	1.800	505	1.800	555	1.800	605	1.800	655	1.800	705	1.800
456	1.800	506	1.800	556	1.800	606	1.800	656	1.800	706	1.800
457	1.800	507	1.800	557	1.800	607	1.800	657	1.800	707	1.800
458	1.800	508	1.800	558	1.800	608	1.800	658	1.800	708	1.800
459	1.800	509	1.800	559	1.800	609	1.800	659	1.800	709	1.800
460	1.800	510	1.800	560	1.800	610	1.800	660	1.800	710	1.800
461	1.800	511	1.800	561	1.800	611	1.800	661	1.800	711	1.800
462	1.800	512	1.800	562	1.800	612	1.800	662	1.800	712	1.800
463	1.800	513	1.800	563	1.800	613	1.800	663	1.800	713	1.800
464	1.800	514	1.800	564	1.800	614	1.800	664	1.800	714	1.800
465	1.800	515	1.800	565	1.800	615	1.800	665	1.800	715	1.800
466	1.800	516	1.800	566	1.800	616	1.800	666	1.800	716	1.800
467	1.800	517	1.800	567	1.800	617	1.800	667	1.800	717	1.800
468	1.800	518	1.800	568	1.800	618	1.800	668	1.800	718	1.800
469	1.800	519	1.800	569	1.800	619	1.800	669	1.800	719	1.800
470	1.800	520	1.800	570	1.800	620	1.800	670	1.800	720	1.800
471	1.800	521	1.800	571	1.800	621	1.800	671	1.800	721	1.800
472	1.800	522	1.800	572	1.800	622	1.800	672	1.800	722	1.800
473	1.800	523	1.800	573	1.800	623	1.800	673	1.800	723	1.800
474	1.800	524	1.800	574	1.800	624	1.800	674	1.800	724	1.800
475	1.800	525	1.800	575	1.800	625	1.800	675	1.800	725	1.800
476	1.800	526	1.800	576	1.800	626	1.800	676	1.800	726	1.800
477	1.800	527	1.800	577	1.800	627	1.800	677	1.800	727	1.800
478	1.800	528	1.800	578	1.800	628	1.800	678	1.800	728	1.800
479	1.800	529	1.800	579	1.800	629	1.800	679	1.800	729	1.800
480	1.800	530	1.800	580	1.800	630	1.800	680	1.800	730	1.800
481	1.800	531	1.800	581	1.800	631	1.800	681	1.800	731	1.800
482	1.800	532	1.800	582	1.800	632	1.800	682	1.800	732	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
733	1.800	783	1.800	833	1.800	883	1.800	933	1.800	983	1.800
734	1.800	784	1.800	834	1.800	884	1.800	934	1.800	984	1.800
735	1.800	785	1.800	835	1.800	885	1.800	935	1.800	985	1.800
736	1.800	786	1.800	836	1.800	886	1.800	936	1.800	986	1.800
737	1.800	787	1.800	837	1.800	887	1.800	937	1.800	987	1.800
738	1.800	788	1.800	838	1.800	888	1.800	938	1.800	988	1.800
739	1.800	789	1.800	839	1.800	889	1.800	939	1.800	989	1.800
740	1.800	790	1.800	840	1.800	890	1.800	940	1.800	990	1.800
741	1.800	791	1.800	841	1.800	891	1.800	941	1.800	991	1.800
742	1.800	792	1.800	842	1.800	892	1.800	942	1.800	992	1.800
743	1.800	793	1.800	843	1.800	893	1.800	943	1.800	993	1.800
744	1.800	794	1.800	844	1.800	894	1.800	944	1.800	994	1.800
745	1.800	795	1.800	845	1.800	895	1.800	945	1.800	995	1.800
746	1.800	796	1.800	846	1.800	896	1.800	946	1.800	996	1.800
747	1.800	797	1.800	847	1.800	897	1.800	947	1.800	997	1.800
748	1.800	798	1.800	848	1.800	898	1.800	948	1.800	998	1.800
749	1.800	799	1.800	849	1.800	899	1.800	949	1.800	999	1.800
750	1.800	800	1.800	850	1.800	900	1.800	950	1.800	1000	1.800
751	1.800	801	1.800	851	1.800	901	1.800	951	1.800	1001	1.800
752	1.800	802	1.800	852	1.800	902	1.800	952	1.800	1002	1.800
753	1.800	803	1.800	853	1.800	903	1.800	953	1.800	1003	1.800
754	1.800	804	1.800	854	1.800	904	1.800	954	1.800	1004	1.800
755	1.800	805	1.800	855	1.800	905	1.800	955	1.800	1005	1.800
756	1.800	806	1.800	856	1.800	906	1.800	956	1.800	1006	1.800
757	1.800	807	1.800	857	1.800	907	1.800	957	1.800	1007	1.800
758	1.800	808	1.800	858	1.800	908	1.800	958	1.800	1008	1.800
759	1.800	809	1.800	859	1.800	909	1.800	959	1.800	1009	1.800
760	1.800	810	1.800	860	1.800	910	1.800	960	1.800	1010	1.800
761	1.800	811	1.800	861	1.800	911	1.800	961	1.800	1011	1.800
762	1.800	812	1.800	862	1.800	912	1.800	962	1.800	1012	1.800
763	1.800	813	1.800	863	1.800	913	1.800	963	1.800	1013	1.800
764	1.800	814	1.800	864	1.800	914	1.800	964	1.800	1014	1.800
765	1.800	815	1.800	865	1.800	915	1.800	965	1.800	1015	1.800
766	1.800	816	1.800	866	1.800	916	1.800	966	1.800	1016	1.800
767	1.800	817	1.800	867	1.800	917	1.800	967	1.800	1017	1.800
768	1.800	818	1.800	868	1.800	918	1.800	968	1.800	1018	1.800
769	1.800	819	1.800	869	1.800	919	1.800	969	1.800	1019	1.800
770	1.800	820	1.800	870	1.800	920	1.800	970	1.800	1020	1.800
771	1.800	821	1.800	871	1.800	921	1.800	971	1.800	1021	1.800
772	1.800	822	1.800	872	1.800	922	1.800	972	1.800	1022	1.800
773	1.800	823	1.800	873	1.800	923	1.800	973	1.800	1023	1.800
774	1.800	824	1.800	874	1.800	924	1.800	974	1.800	1024	1.800
775	1.800	825	1.800	875	1.800	925	1.800	975	1.800	1025	1.800
776	1.800	826	1.800	876	1.800	926	1.800	976	1.800	1026	1.800
777	1.800	827	1.800	877	1.800	927	1.800	977	1.800	1027	1.800
778	1.800	828	1.800	878	1.800	928	1.800	978	1.800	1028	1.800
779	1.800	829	1.800	879	1.800	929	1.800	979	1.800	1029	1.800
780	1.800	830	1.800	880	1.800	930	1.800	980	1.800	1030	1.800
781	1.800	831	1.800	881	1.800	931	1.800	981	1.800	1031	1.800
782	1.800	832	1.800	882	1.800	932	1.800	982	1.800	1032	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1033	1.800	1083	1.800	1133	1.800	1183	1.800	1233	1.800	1283	1.800
1034	1.800	1084	1.800	1134	1.800	1184	1.800	1234	1.800	1284	1.800
1035	1.800	1085	1.800	1135	1.800	1185	1.800	1235	1.800	1285	1.800
1036	1.800	1086	1.800	1136	1.800	1186	1.800	1236	1.800	1286	1.800
1037	1.800	1087	1.800	1137	1.800	1187	1.800	1237	1.800	1287	1.800
1038	1.800	1088	1.800	1138	1.800	1188	1.800	1238	1.800	1288	1.800
1039	1.800	1089	1.800	1139	1.800	1189	1.800	1239	1.800	1289	1.800
1040	1.800	1090	1.800	1140	1.800	1190	1.800	1240	1.800	1290	1.800
1041	1.800	1091	1.800	1141	1.800	1191	1.800	1241	1.800	1291	1.800
1042	1.800	1092	1.800	1142	1.800	1192	1.800	1242	1.800	1292	1.800
1043	1.800	1093	1.800	1143	1.800	1193	1.800	1243	1.800	1293	1.800
1044	1.800	1094	1.800	1144	1.800	1194	1.800	1244	1.800	1294	1.800
1045	1.800	1095	1.800	1145	1.800	1195	1.800	1245	1.800	1295	1.800
1046	1.800	1096	1.800	1146	1.800	1196	1.800	1246	1.800	1296	1.800
1047	1.800	1097	1.800	1147	1.800	1197	1.800	1247	1.800	1297	1.800
1048	1.800	1098	1.800	1148	1.800	1198	1.800	1248	1.800	1298	1.800
1049	1.800	1099	1.800	1149	1.800	1199	1.800	1249	1.800	1299	1.800
1050	1.800	1100	1.800	1150	1.800	1200	1.800	1250	1.800	1300	1.800
1051	1.800	1101	1.800	1151	1.800	1201	1.800	1251	1.800	1301	1.800
1052	1.800	1102	1.800	1152	1.800	1202	1.800	1252	1.800	1302	1.800
1053	1.800	1103	1.800	1153	1.800	1203	1.800	1253	1.800	1303	1.800
1054	1.800	1104	1.800	1154	1.800	1204	1.800	1254	1.800	1304	1.800
1055	1.800	1105	1.800	1155	1.800	1205	1.800	1255	1.800	1305	1.800
1056	1.800	1106	1.800	1156	1.800	1206	1.800	1256	1.800	1306	1.800
1057	1.800	1107	1.800	1157	1.800	1207	1.800	1257	1.800	1307	1.800
1058	1.800	1108	1.800	1158	1.800	1208	1.800	1258	1.800	1308	1.800
1059	1.800	1109	1.800	1159	1.800	1209	1.800	1259	1.800	1309	1.800
1060	1.800	1110	1.800	1160	1.800	1210	1.800	1260	1.800	1310	1.800
1061	1.800	1111	1.800	1161	1.800	1211	1.800	1261	1.800	1311	1.800
1062	1.800	1112	1.800	1162	1.800	1212	1.800	1262	1.800	1312	1.800
1063	1.800	1113	1.800	1163	1.800	1213	1.800	1263	1.800	1313	1.800
1064	1.800	1114	1.800	1164	1.800	1214	1.800	1264	1.800	1314	1.800
1065	1.800	1115	1.800	1165	1.800	1215	1.800	1265	1.800	1315	1.800
1066	1.800	1116	1.800	1166	1.800	1216	1.800	1266	1.800	1316	1.800
1067	1.800	1117	1.800	1167	1.800	1217	1.800	1267	1.800	1317	1.800
1068	1.800	1118	1.800	1168	1.800	1218	1.800	1268	1.800	1318	1.800
1069	1.800	1119	1.800	1169	1.800	1219	1.800	1269	1.800	1319	1.800
1070	1.800	1120	1.800	1170	1.800	1220	1.800	1270	1.800	1320	1.800
1071	1.800	1121	1.800	1171	1.800	1221	1.800	1271	1.800	1321	1.800
1072	1.800	1122	1.800	1172	1.800	1222	1.800	1272	1.800	1322	1.800
1073	1.800	1123	1.800	1173	1.800	1223	1.800	1273	1.800	1323	1.800
1074	1.800	1124	1.800	1174	1.800	1224	1.800	1274	1.800	1324	1.800
1075	1.800	1125	1.800	1175	1.800	1225	1.800	1275	1.800	1325	1.800
1076	1.800	1126	1.800	1176	1.800	1226	1.800	1276	1.800	1326	1.800
1077	1.800	1127	1.800	1177	1.800	1227	1.800	1277	1.800	1327	1.800
1078	1.800	1128	1.800	1178	1.800	1228	1.800	1278	1.800	1328	1.800
1079	1.800	1129	1.800	1179	1.800	1229	1.800	1279	1.800	1329	1.800
1080	1.800	1130	1.800	1180	1.800	1230	1.800	1280	1.800	1330	1.800
1081	1.800	1131	1.800	1181	1.800	1231	1.800	1281	1.800	1331	1.800
1082	1.800	1132	1.800	1182	1.800	1232	1.800	1282	1.800	1332	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1333	1.800	1383	1.800	1433	1.800	1483	1.800	1533	1.800	1583	1.800
1334	1.800	1384	1.800	1434	1.800	1484	1.800	1534	1.800	1584	1.800
1335	1.800	1385	1.800	1435	1.800	1485	1.800	1535	1.800	1585	1.800
1336	1.800	1386	1.800	1436	1.800	1486	1.800	1536	1.800	1586	1.800
1337	1.800	1387	1.800	1437	1.800	1487	1.800	1537	1.800	1587	1.800
1338	1.800	1388	1.800	1438	1.800	1488	1.800	1538	1.800	1588	1.800
1339	1.800	1389	1.800	1439	1.800	1489	1.800	1539	1.800	1589	1.800
1340	1.800	1390	1.800	1440	1.800	1490	1.800	1540	1.800	1590	1.800
1341	1.800	1391	1.800	1441	1.800	1491	1.800	1541	1.800	1591	1.800
1342	1.800	1392	1.800	1442	1.800	1492	1.800	1542	1.800	1592	1.800
1343	1.800	1393	1.800	1443	1.800	1493	1.800	1543	1.800	1593	1.800
1344	1.800	1394	1.800	1444	1.800	1494	1.800	1544	1.800	1594	1.800
1345	1.800	1395	1.800	1445	1.800	1495	1.800	1545	1.800	1595	1.800
1346	1.800	1396	1.800	1446	1.800	1496	1.800	1546	1.800	1596	1.800
1347	1.800	1397	1.800	1447	1.800	1497	1.800	1547	1.800	1597	1.800
1348	1.800	1398	1.800	1448	1.800	1498	1.800	1548	1.800	1598	1.800
1349	1.800	1399	1.800	1449	1.800	1499	1.800	1549	1.800	1599	1.800
1350	1.800	1400	1.800	1450	1.800	1500	1.800	1550	1.800	1600	1.800
1351	1.800	1401	1.800	1451	1.800	1501	1.800	1551	1.800	1601	1.800
1352	1.800	1402	1.800	1452	1.800	1502	1.800	1552	1.800	1602	1.800
1353	1.800	1403	1.800	1453	1.800	1503	1.800	1553	1.800	1603	1.800
1354	1.800	1404	1.800	1454	1.800	1504	1.800	1554	1.800	1604	1.800
1355	1.800	1405	1.800	1455	1.800	1505	1.800	1555	1.800	1605	1.800
1356	1.800	1406	1.800	1456	1.800	1506	1.800	1556	1.800	1606	1.800
1357	1.800	1407	1.800	1457	1.800	1507	1.800	1557	1.800	1607	1.800
1358	1.800	1408	1.800	1458	1.800	1508	1.800	1558	1.800	1608	1.800
1359	1.800	1409	1.800	1459	1.800	1509	1.800	1559	1.800	1609	1.800
1360	1.800	1410	1.800	1460	1.800	1510	1.800	1560	1.800	1610	1.800
1361	1.800	1411	1.800	1461	1.800	1511	1.800	1561	1.800	1611	1.800
1362	1.800	1412	1.800	1462	1.800	1512	1.800	1562	1.800	1612	1.800
1363	1.800	1413	1.800	1463	1.800	1513	1.800	1563	1.800	1613	1.800
1364	1.800	1414	1.800	1464	1.800	1514	1.800	1564	1.800	1614	1.800
1365	1.800	1415	1.800	1465	1.800	1515	1.800	1565	1.800	1615	1.800
1366	1.800	1416	1.800	1466	1.800	1516	1.800	1566	1.800	1616	1.800
1367	1.800	1417	1.800	1467	1.800	1517	1.800	1567	1.800	1617	1.800
1368	1.800	1418	1.800	1468	1.800	1518	1.800	1568	1.800	1618	1.800
1369	1.800	1419	1.800	1469	1.800	1519	1.800	1569	1.800	1619	1.800
1370	1.800	1420	1.800	1470	1.800	1520	1.800	1570	1.800	1620	1.800
1371	1.800	1421	1.800	1471	1.800	1521	1.800	1571	1.800	1621	1.800
1372	1.800	1422	1.800	1472	1.800	1522	1.800	1572	1.800	1622	1.800
1373	1.800	1423	1.800	1473	1.800	1523	1.800	1573	1.800	1623	1.800
1374	1.800	1424	1.800	1474	1.800	1524	1.800	1574	1.800	1624	1.800
1375	1.800	1425	1.800	1475	1.800	1525	1.800	1575	1.800	1625	1.800
1376	1.800	1426	1.800	1476	1.800	1526	1.800	1576	1.800	1626	1.800
1377	1.800	1427	1.800	1477	1.800	1527	1.800	1577	1.800	1627	1.800
1378	1.800	1428	1.800	1478	1.800	1528	1.800	1578	1.800	1628	1.800
1379	1.800	1429	1.800	1479	1.800	1529	1.800	1579	1.800	1629	1.800
1380	1.800	1430	1.800	1480	1.800	1530	1.800	1580	1.800	1630	1.800
1381	1.800	1431	1.800	1481	1.800	1531	1.800	1581	1.800	1631	1.800
1382	1.800	1432	1.800	1482	1.800	1532	1.800	1582	1.800	1632	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1633	1.800	1683	1.800	1733	1.800	1783	1.800	1833	1.800	1883	1.800
1634	1.800	1684	1.800	1734	1.800	1784	1.800	1834	1.800	1884	1.800
1635	1.800	1685	1.800	1735	1.800	1785	1.800	1835	1.800	1885	1.800
1636	1.800	1686	1.800	1736	1.800	1786	1.800	1836	1.800	1886	1.800
1637	1.800	1687	1.800	1737	1.800	1787	1.800	1837	1.800	1887	1.800
1638	1.800	1688	1.800	1738	1.800	1788	1.800	1838	1.800	1888	1.800
1639	1.800	1689	1.800	1739	1.800	1789	1.800	1839	1.800	1889	1.800
1640	1.800	1690	1.800	1740	1.800	1790	1.800	1840	1.800	1890	1.800
1641	1.800	1691	1.800	1741	1.800	1791	1.800	1841	1.800	1891	1.800
1642	1.800	1692	1.800	1742	1.800	1792	1.800	1842	1.800	1892	1.800
1643	1.800	1693	1.800	1743	1.800	1793	1.800	1843	1.800	1893	1.800
1644	1.800	1694	1.800	1744	1.800	1794	1.800	1844	1.800	1894	1.800
1645	1.800	1695	1.800	1745	1.800	1795	1.800	1845	1.800	1895	1.800
1646	1.800	1696	1.800	1746	1.800	1796	1.800	1846	1.800	1896	1.800
1647	1.800	1697	1.800	1747	1.800	1797	1.800	1847	1.800	1897	1.800
1648	1.800	1698	1.800	1748	1.800	1798	1.800	1848	1.800	1898	1.800
1649	1.800	1699	1.800	1749	1.800	1799	1.800	1849	1.800	1899	1.800
1650	1.800	1700	1.800	1750	1.800	1800	1.800	1850	1.800	1900	1.800
1651	1.800	1701	1.800	1751	1.800	1801	1.800	1851	1.800	1901	1.800
1652	1.800	1702	1.800	1752	1.800	1802	1.800	1852	1.800	1902	1.800
1653	1.800	1703	1.800	1753	1.800	1803	1.800	1853	1.800	1903	1.800
1654	1.800	1704	1.800	1754	1.800	1804	1.800	1854	1.800	1904	1.800
1655	1.800	1705	1.800	1755	1.800	1805	1.800	1855	1.800	1905	1.800
1656	1.800	1706	1.800	1756	1.800	1806	1.800	1856	1.800	1906	1.800
1657	1.800	1707	1.800	1757	1.800	1807	1.800	1857	1.800	1907	1.800
1658	1.800	1708	1.800	1758	1.800	1808	1.800	1858	1.800	1908	1.800
1659	1.800	1709	1.800	1759	1.800	1809	1.800	1859	1.800	1909	1.800
1660	1.800	1710	1.800	1760	1.800	1810	1.800	1860	1.800	1910	1.800
1661	1.800	1711	1.800	1761	1.800	1811	1.800	1861	1.800	1911	1.800
1662	1.800	1712	1.800	1762	1.800	1812	1.800	1862	1.800	1912	1.800
1663	1.800	1713	1.800	1763	1.800	1813	1.800	1863	1.800	1913	1.800
1664	1.800	1714	1.800	1764	1.800	1814	1.800	1864	1.800	1914	1.800
1665	1.800	1715	1.800	1765	1.800	1815	1.800	1865	1.800	1915	1.800
1666	1.800	1716	1.800	1766	1.800	1816	1.800	1866	1.800	1916	1.800
1667	1.800	1717	1.800	1767	1.800	1817	1.800	1867	1.800	1917	1.800
1668	1.800	1718	1.800	1768	1.800	1818	1.800	1868	1.800	1918	1.800
1669	1.800	1719	1.800	1769	1.800	1819	1.800	1869	1.800	1919	1.800
1670	1.800	1720	1.800	1770	1.800	1820	1.800	1870	1.800	1920	1.800
1671	1.800	1721	1.800	1771	1.800	1821	1.800	1871	1.800	1921	1.800
1672	1.800	1722	1.800	1772	1.800	1822	1.800	1872	1.800	1922	1.800
1673	1.800	1723	1.800	1773	1.800	1823	1.800	1873	1.800	1923	1.800
1674	1.800	1724	1.800	1774	1.800	1824	1.800	1874	1.800	1924	1.800
1675	1.800	1725	1.800	1775	1.800	1825	1.800	1875	1.800	1925	1.800
1676	1.800	1726	1.800	1776	1.800	1826	1.800	1876	1.800	1926	1.800
1677	1.800	1727	1.800	1777	1.800	1827	1.800	1877	1.800	1927	1.800
1678	1.800	1728	1.800	1778	1.800	1828	1.800	1878	1.800	1928	1.800
1679	1.800	1729	1.800	1779	1.800	1829	1.800	1879	1.800	1929	1.800
1680	1.800	1730	1.800	1780	1.800	1830	1.800	1880	1.800	1930	1.800
1681	1.800	1731	1.800	1781	1.800	1831	1.800	1881	1.800	1931	1.800
1682	1.800	1732	1.800	1782	1.800	1832	1.800	1882	1.800	1932	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1933	1.800	1983	1.800	2033	1.800	2083	1.800	2133	1.800	2183	1.800
1934	1.800	1984	1.800	2034	1.800	2084	1.800	2134	1.800	2184	1.800
1935	1.800	1985	1.800	2035	1.800	2085	1.800	2135	1.800	2185	1.800
1936	1.800	1986	1.800	2036	1.800	2086	1.800	2136	1.800	2186	1.800
1937	1.800	1987	1.800	2037	1.800	2087	1.800	2137	1.800	2187	1.800
1938	1.800	1988	1.800	2038	1.800	2088	1.800	2138	1.800	2188	1.800
1939	1.800	1989	1.800	2039	1.800	2089	1.800	2139	1.800	2189	1.800
1940	1.800	1990	1.800	2040	1.800	2090	1.800	2140	1.800	2190	1.800
1941	1.800	1991	1.800	2041	1.800	2091	1.800	2141	1.800	2191	1.800
1942	1.800	1992	1.800	2042	1.800	2092	1.800	2142	1.800	2192	1.800
1943	1.800	1993	1.800	2043	1.800	2093	1.800	2143	1.800	2193	1.800
1944	1.800	1994	1.800	2044	1.800	2094	1.800	2144	1.800	2194	1.800
1945	1.800	1995	1.800	2045	1.800	2095	1.800	2145	1.800	2195	1.800
1946	1.800	1996	1.800	2046	1.800	2096	1.800	2146	1.800	2196	1.800
1947	1.800	1997	1.800	2047	1.800	2097	1.800	2147	1.800	2197	1.800
1948	1.800	1998	1.800	2048	1.800	2098	1.800	2148	1.800	2198	1.800
1949	1.800	1999	1.800	2049	1.800	2099	1.800	2149	1.800	2199	1.800
1950	1.800	2000	1.800	2050	1.800	2100	1.800	2150	1.800	2200	1.800
1951	1.800	2001	1.800	2051	1.800	2101	1.800	2151	1.800	2201	1.800
1952	1.800	2002	1.800	2052	1.800	2102	1.800	2152	1.800	2202	1.800
1953	1.800	2003	1.800	2053	1.800	2103	1.800	2153	1.800	2203	1.800
1954	1.800	2004	1.800	2054	1.800	2104	1.800	2154	1.800	2204	1.800
1955	1.800	2005	1.800	2055	1.800	2105	1.800	2155	1.800	2205	1.800
1956	1.800	2006	1.800	2056	1.800	2106	1.800	2156	1.800	2206	1.800
1957	1.800	2007	1.800	2057	1.800	2107	1.800	2157	1.800	2207	1.800
1958	1.800	2008	1.800	2058	1.800	2108	1.800	2158	1.800	2208	1.800
1959	1.800	2009	1.800	2059	1.800	2109	1.800	2159	1.800	2209	1.800
1960	1.800	2010	1.800	2060	1.800	2110	1.800	2160	1.800	2210	1.800
1961	1.800	2011	1.800	2061	1.800	2111	1.800	2161	1.800	2211	1.800
1962	1.800	2012	1.800	2062	1.800	2112	1.800	2162	1.800	2212	1.800
1963	1.800	2013	1.800	2063	1.800	2113	1.800	2163	1.800	2213	1.800
1964	1.800	2014	1.800	2064	1.800	2114	1.800	2164	1.800	2214	1.800
1965	1.800	2015	1.800	2065	1.800	2115	1.800	2165	1.800	2215	1.800
1966	1.800	2016	1.800	2066	1.800	2116	1.800	2166	1.800	2216	1.800
1967	1.800	2017	1.800	2067	1.800	2117	1.800	2167	1.800	2217	1.800
1968	1.800	2018	1.800	2068	1.800	2118	1.800	2168	1.800	2218	1.800
1969	1.800	2019	1.800	2069	1.800	2119	1.800	2169	1.800	2219	1.800
1970	1.800	2020	1.800	2070	1.800	2120	1.800	2170	1.800	2220	1.800
1971	1.800	2021	1.800	2071	1.800	2121	1.800	2171	1.800	2221	1.800
1972	1.800	2022	1.800	2072	1.800	2122	1.800	2172	1.800	2222	1.800
1973	1.800	2023	1.800	2073	1.800	2123	1.800	2173	1.800	2223	1.800
1974	1.800	2024	1.800	2074	1.800	2124	1.800	2174	1.800	2224	1.800
1975	1.800	2025	1.800	2075	1.800	2125	1.800	2175	1.800	2225	1.800
1976	1.800	2026	1.800	2076	1.800	2126	1.800	2176	1.800	2226	1.800
1977	1.800	2027	1.800	2077	1.800	2127	1.800	2177	1.800	2227	1.800
1978	1.800	2028	1.800	2078	1.800	2128	1.800	2178	1.800	2228	1.800
1979	1.800	2029	1.800	2079	1.800	2129	1.800	2179	1.800	2229	1.800
1980	1.800	2030	1.800	2080	1.800	2130	1.800	2180	1.800	2230	1.800
1981	1.800	2031	1.800	2081	1.800	2131	1.800	2181	1.800	2231	1.800
1982	1.800	2032	1.800	2082	1.800	2132	1.800	2182	1.800	2232	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2233	1.800	2283	1.800	2333	1.800	2383	1.800	2433	1.800	2483	1.800
2234	1.800	2284	1.800	2334	1.800	2384	1.800	2434	1.800	2484	1.800
2235	1.800	2285	1.800	2335	1.800	2385	1.800	2435	1.800	2485	1.800
2236	1.800	2286	1.800	2336	1.800	2386	1.800	2436	1.800	2486	1.800
2237	1.800	2287	1.800	2337	1.800	2387	1.800	2437	1.800	2487	1.800
2238	1.800	2288	1.800	2338	1.800	2388	1.800	2438	1.800	2488	1.800
2239	1.800	2289	1.800	2339	1.800	2389	1.800	2439	1.800	2489	1.800
2240	1.800	2290	1.800	2340	1.800	2390	1.800	2440	1.800	2490	1.800
2241	1.800	2291	1.800	2341	1.800	2391	1.800	2441	1.800	2491	1.800
2242	1.800	2292	1.800	2342	1.800	2392	1.800	2442	1.800	2492	1.800
2243	1.800	2293	1.800	2343	1.800	2393	1.800	2443	1.800	2493	1.800
2244	1.800	2294	1.800	2344	1.800	2394	1.800	2444	1.800	2494	1.800
2245	1.800	2295	1.800	2345	1.800	2395	1.800	2445	1.800	2495	1.800
2246	1.800	2296	1.800	2346	1.800	2396	1.800	2446	1.800	2496	1.800
2247	1.800	2297	1.800	2347	1.800	2397	1.800	2447	1.800	2497	1.800
2248	1.800	2298	1.800	2348	1.800	2398	1.800	2448	1.800	2498	1.800
2249	1.800	2299	1.800	2349	1.800	2399	1.800	2449	1.800	2499	1.800
2250	1.800	2300	1.800	2350	1.800	2400	1.800	2450	1.800	2500	1.800
2251	1.800	2301	1.800	2351	1.800	2401	1.800	2451	1.800	2501	1.800
2252	1.800	2302	1.800	2352	1.800	2402	1.800	2452	1.800	2502	1.800
2253	1.800	2303	1.800	2353	1.800	2403	1.800	2453	1.800	2503	1.800
2254	1.800	2304	1.800	2354	1.800	2404	1.800	2454	1.800	2504	1.800
2255	1.800	2305	1.800	2355	1.800	2405	1.800	2455	1.800	2505	1.800
2256	1.800	2306	1.800	2356	1.800	2406	1.800	2456	1.800	2506	1.800
2257	1.800	2307	1.800	2357	1.800	2407	1.800	2457	1.800	2507	1.800
2258	1.800	2308	1.800	2358	1.800	2408	1.800	2458	1.800	2508	1.800
2259	1.800	2309	1.800	2359	1.800	2409	1.800	2459	1.800	2509	1.800
2260	1.800	2310	1.800	2360	1.800	2410	1.800	2460	1.800	2510	1.800
2261	1.800	2311	1.800	2361	1.800	2411	1.800	2461	1.800	2511	1.800
2262	1.800	2312	1.800	2362	1.800	2412	1.800	2462	1.800	2512	1.800
2263	1.800	2313	1.800	2363	1.800	2413	1.800	2463	1.800	2513	1.800
2264	1.800	2314	1.800	2364	1.800	2414	1.800	2464	1.800	2514	1.800
2265	1.800	2315	1.800	2365	1.800	2415	1.800	2465	1.800	2515	1.800
2266	1.800	2316	1.800	2366	1.800	2416	1.800	2466	1.800	2516	1.800
2267	1.800	2317	1.800	2367	1.800	2417	1.800	2467	1.800	2517	1.800
2268	1.800	2318	1.800	2368	1.800	2418	1.800	2468	1.800	2518	1.800
2269	1.800	2319	1.800	2369	1.800	2419	1.800	2469	1.800	2519	1.800
2270	1.800	2320	1.800	2370	1.800	2420	1.800	2470	1.800	2520	1.800
2271	1.800	2321	1.800	2371	1.800	2421	1.800	2471	1.800	2521	1.800
2272	1.800	2322	1.800	2372	1.800	2422	1.800	2472	1.800	2522	1.800
2273	1.800	2323	1.800	2373	1.800	2423	1.800	2473	1.800	2523	1.800
2274	1.800	2324	1.800	2374	1.800	2424	1.800	2474	1.800	2524	1.800
2275	1.800	2325	1.800	2375	1.800	2425	1.800	2475	1.800	2525	1.800
2276	1.800	2326	1.800	2376	1.800	2426	1.800	2476	1.800	2526	1.800
2277	1.800	2327	1.800	2377	1.800	2427	1.800	2477	1.800	2527	1.800
2278	1.800	2328	1.800	2378	1.800	2428	1.800	2478	1.800	2528	1.800
2279	1.800	2329	1.800	2379	1.800	2429	1.800	2479	1.800	2529	1.800
2280	1.800	2330	1.800	2380	1.800	2430	1.800	2480	1.800	2530	1.800
2281	1.800	2331	1.800	2381	1.800	2431	1.800	2481	1.800	2531	1.800
2282	1.800	2332	1.800	2382	1.800	2432	1.800	2482	1.800	2532	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2533	1.800	2583	1.800	2633	1.800	2683	1.800	2733	1.800	2783	1.800
2534	1.800	2584	1.800	2634	1.800	2684	1.800	2734	1.800	2784	1.800
2535	1.800	2585	1.800	2635	1.800	2685	1.800	2735	1.800	2785	1.800
2536	1.800	2586	1.800	2636	1.800	2686	1.800	2736	1.800	2786	1.800
2537	1.800	2587	1.800	2637	1.800	2687	1.800	2737	1.800	2787	1.800
2538	1.800	2588	1.800	2638	1.800	2688	1.800	2738	1.800	2788	1.800
2539	1.800	2589	1.800	2639	1.800	2689	1.800	2739	1.800	2789	1.800
2540	1.800	2590	1.800	2640	1.800	2690	1.800	2740	1.800	2790	1.800
2541	1.800	2591	1.800	2641	1.800	2691	1.800	2741	1.800	2791	1.800
2542	1.800	2592	1.800	2642	1.800	2692	1.800	2742	1.800	2792	1.800
2543	1.800	2593	1.800	2643	1.800	2693	1.800	2743	1.800	2793	1.800
2544	1.800	2594	1.800	2644	1.800	2694	1.800	2744	1.800	2794	1.800
2545	1.800	2595	1.800	2645	1.800	2695	1.800	2745	1.800	2795	1.800
2546	1.800	2596	1.800	2646	1.800	2696	1.800	2746	1.800	2796	1.800
2547	1.800	2597	1.800	2647	1.800	2697	1.800	2747	1.800	2797	1.800
2548	1.800	2598	1.800	2648	1.800	2698	1.800	2748	1.800	2798	1.800
2549	1.800	2599	1.800	2649	1.800	2699	1.800	2749	1.800	2799	1.800
2550	1.800	2600	1.800	2650	1.800	2700	1.800	2750	1.800	2800	1.800
2551	1.800	2601	1.800	2651	1.800	2701	1.800	2751	1.800	2801	1.800
2552	1.800	2602	1.800	2652	1.800	2702	1.800	2752	1.800	2802	1.800
2553	1.800	2603	1.800	2653	1.800	2703	1.800	2753	1.800	2803	1.800
2554	1.800	2604	1.800	2654	1.800	2704	1.800	2754	1.800	2804	1.800
2555	1.800	2605	1.800	2655	1.800	2705	1.800	2755	1.800	2805	1.800
2556	1.800	2606	1.800	2656	1.800	2706	1.800	2756	1.800	2806	1.800
2557	1.800	2607	1.800	2657	1.800	2707	1.800	2757	1.800	2807	1.800
2558	1.800	2608	1.800	2658	1.800	2708	1.800	2758	1.800	2808	1.800
2559	1.800	2609	1.800	2659	1.800	2709	1.800	2759	1.800	2809	1.800
2560	1.800	2610	1.800	2660	1.800	2710	1.800	2760	1.800	2810	1.800
2561	1.800	2611	1.800	2661	1.800	2711	1.800	2761	1.800	2811	1.800
2562	1.800	2612	1.800	2662	1.800	2712	1.800	2762	1.800	2812	1.800
2563	1.800	2613	1.800	2663	1.800	2713	1.800	2763	1.800	2813	1.800
2564	1.800	2614	1.800	2664	1.800	2714	1.800	2764	1.800	2814	1.800
2565	1.800	2615	1.800	2665	1.800	2715	1.800	2765	1.800	2815	1.800
2566	1.800	2616	1.800	2666	1.800	2716	1.800	2766	1.800	2816	1.800
2567	1.800	2617	1.800	2667	1.800	2717	1.800	2767	1.800	2817	1.800
2568	1.800	2618	1.800	2668	1.800	2718	1.800	2768	1.800	2818	1.800
2569	1.800	2619	1.800	2669	1.800	2719	1.800	2769	1.800	2819	1.800
2570	1.800	2620	1.800	2670	1.800	2720	1.800	2770	1.800	2820	1.800
2571	1.800	2621	1.800	2671	1.800	2721	1.800	2771	1.800	2821	1.800
2572	1.800	2622	1.800	2672	1.800	2722	1.800	2772	1.800	2822	1.800
2573	1.800	2623	1.800	2673	1.800	2723	1.800	2773	1.800	2823	1.800
2574	1.800	2624	1.800	2674	1.800	2724	1.800	2774	1.800	2824	1.800
2575	1.800	2625	1.800	2675	1.800	2725	1.800	2775	1.800	2825	1.800
2576	1.800	2626	1.800	2676	1.800	2726	1.800	2776	1.800	2826	1.800
2577	1.800	2627	1.800	2677	1.800	2727	1.800	2777	1.800	2827	1.800
2578	1.800	2628	1.800	2678	1.800	2728	1.800	2778	1.800	2828	1.800
2579	1.800	2629	1.800	2679	1.800	2729	1.800	2779	1.800	2829	1.800
2580	1.800	2630	1.800	2680	1.800	2730	1.800	2780	1.800	2830	1.800
2581	1.800	2631	1.800	2681	1.800	2731	1.800	2781	1.800	2831	1.800
2582	1.800	2632	1.800	2682	1.800	2732	1.800	2782	1.800	2832	1.800

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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2833	1.800	2841	1.800	2849	1.800	2857	1.800	2865	1.800	2873	1.800
2834	1.800	2842	1.800	2850	1.800	2858	1.800	2866	1.800	2874	1.800
2835	1.800	2843	1.800	2851	1.800	2859	1.800	2867	1.800	2875	1.800
2836	1.800	2844	1.800	2852	1.800	2860	1.800	2868	1.800	2876	1.800
2837	1.800	2845	1.800	2853	1.800	2861	1.800	2869	1.800	2877	1.800
2838	1.800	2846	1.800	2854	1.800	2862	1.800	2870	1.800	2878	1.800
2839	1.800	2847	1.800	2855	1.800	2863	1.800	2871	1.800	2879	1.800
2840	1.800	2848	1.800	2856	1.800	2864	1.800	2872	1.800	2880	1.800

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S9, DS/PN: S1.006, Volume (m³): 1462.1

Unit Reference	MD-SHE-0085-3200-1000-3200
Design Head (m)	1.000
Design Flow (l/s)	3.2
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	85
Invert Level (m)	0.640
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	1.000	3.2
Flush-Flo™	0.296	3.2
Kick-Flo®	0.624	2.6
Mean Flow over Head Range	-	2.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**
0.100	2.6	1.200	3.5	3.000	5.3	7.000	7.9
0.200	3.1	1.400	3.7	3.500	5.7	7.500	8.2
0.300	3.2	1.600	4.0	4.000	6.1	8.000	8.5
0.400	3.1	1.800	4.2	4.500	6.4	8.500	8.7
0.500	3.0	2.000	4.4	5.000	6.8	9.000	8.9
0.600	2.7	2.200	4.6	5.500	7.1	9.500	9.2
0.800	2.9	2.400	4.8	6.000	7.4		
1.000	3.2	2.600	5.0	6.500	7.7		

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	10.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	15 Winter	100	+40%	100/15 Summer			
S1.001	S2	15 Winter	100	+40%	100/15 Summer			
S2.000	S9	15 Winter	100	+40%	100/15 Summer			
S1.002	S3	2880 Winter	100	+40%				
S3.000	S5	15 Winter	100	+40%				
S1.003	S4	2880 Winter	100	+40%	100/1440 Winter			
S1.004	S5	2880 Winter	100	+40%	100/360 Winter			
S1.005	S6	2880 Winter	100	+40%				
S1.006	S9	2880 Winter	100	+40%	2/180 Winter			
S1.007	S7	2880 Winter	100	+40%	2/15 Summer			
S1.008	S8	2880 Winter	100	+40%	2/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	2.950	0.565	0.000	1.03		78.0	SURCHARGED	
S1.001	S2	2.545	0.535	0.000	1.53		114.7	SURCHARGED	
S2.000	S9	2.059	0.239	0.000	1.64		51.0	SURCHARGED	
S1.002	S3	1.590	-0.090	0.000	0.03		9.3	OK	
S3.000	S5	1.626	-0.094	0.000	0.79		80.0	OK	
S1.003	S4	1.590	0.145	0.000	0.04		13.6	SURCHARGED	
S1.004	S5	1.591	0.321	0.000	0.07		17.2	SURCHARGED	
S1.005	S6	1.591	-0.059	0.000	0.00		19.6	OK	
S1.006	S9	1.591	0.726	0.000	0.09		3.1	SURCHARGED	
S1.007	S7	1.591	0.871	0.000	0.92		28.9	SURCHARGED	
S1.008	S8	1.591	0.921	0.000	1.48		49.1	SURCHARGED	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	1.690	4-8	1.686	8-12	0.370

Total Area Contributing (ha) = 3.746

Total Pipe Volume (m³) = 54.013

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	2.500	1.200	Open Manhole	1200	S1.000	1.300	225				
S2	2.500	1.250	Open Manhole	1350	S1.001	1.250	450	S1.000	1.250	225	
S3	2.500	1.290	Open Manhole	1350	S1.002	1.210	450	S1.001	1.210	450	
S4	2.500	1.620	Open Manhole	1350	S1.003	0.880	450	S1.002	0.880	450	
S5	2.500	2.015	Open Manhole	1350	S1.004	0.485	450	S1.003	0.485	450	
S6	2.500	2.115	Open Manhole	1200	S2.000	0.385	225				
S7	2.500	2.135	Open Manhole	1200	S2.001	0.365	225	S2.000	0.365	225	
S6	2.500	2.235	Open Manhole	1350	S1.005	0.265	450	S1.004	0.265	450	
								S2.001	0.265	225	
S7	2.500	2.270	Open Manhole	1350	S1.006	0.230	450	S1.005	0.230	450	
S	2.010	1.805	Open Manhole	0		OUTFALL		S1.006	0.205	450	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	225	S1	2.500	1.300	0.975	Open Manhole	1200
S1.001	o	450	S2	2.500	1.250	0.800	Open Manhole	1350
S1.002	o	450	S3	2.500	1.210	0.840	Open Manhole	1350
S1.003	o	450	S4	2.500	0.880	1.170	Open Manhole	1350
S1.004	o	450	S5	2.500	0.485	1.565	Open Manhole	1350
S2.000	o	225	S6	2.500	0.385	1.890	Open Manhole	1200
S2.001	o	225	S7	2.500	0.365	1.910	Open Manhole	1200
S1.005	o	450	S6	2.500	0.265	1.785	Open Manhole	1350
S1.006	o	450	S7	2.500	0.230	1.820	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	13.163	263.3	S2	2.500	1.250	1.025	Open Manhole	1350
S1.001	22.983	574.6	S3	2.500	1.210	0.840	Open Manhole	1350
S1.002	98.199	297.6	S4	2.500	0.880	1.170	Open Manhole	1350
S1.003	117.597	297.7	S5	2.500	0.485	1.565	Open Manhole	1350
S1.004	66.759	303.5	S6	2.500	0.265	1.785	Open Manhole	1350
S2.000	4.245	212.3	S7	2.500	0.365	1.910	Open Manhole	1200
S2.001	27.631	276.3	S6	2.500	0.265	2.010	Open Manhole	1350
S1.005	19.234	549.5	S7	2.500	0.230	1.820	Open Manhole	1350
S1.006	3.581	143.2	S	2.010	0.205	1.355	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.856	0.856	0.856
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
2.000	-	-	100	2.890	2.890	2.890
2.001	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				3.746	3.746	3.746

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.006	S	2.010	0.205	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	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	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S2, DS/PN: S1.001, Volume (m³): 2.3

Unit Reference	MD-SHE-0075-2500-1000-2500
Design Head (m)	1.000
Design Flow (l/s)	2.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	75
Invert Level (m)	1.250
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	2.5
Flush-Flo™	0.307	2.5
Kick-Flo®	0.627	2.0
Mean Flow over Head Range	-	2.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.1	1.200	2.7	3.000	4.1	7.000	6.2
0.200	2.4	1.400	2.9	3.500	4.5	7.500	6.4
0.300	2.5	1.600	3.1	4.000	4.7	8.000	6.6
0.400	2.5	1.800	3.3	4.500	5.0	8.500	6.8
0.500	2.4	2.000	3.4	5.000	5.3	9.000	7.0
0.600	2.1	2.200	3.6	5.500	5.5	9.500	7.1
0.800	2.3	2.400	3.7	6.000	5.7		
1.000	2.5	2.600	3.9	6.500	6.0		

Hydro-Brake® Optimum Manhole: S7, DS/PN: S2.001, Volume (m³): 2.5

Unit Reference	MD-SHE-0134-8400-1000-8400
Design Head (m)	1.000
Design Flow (l/s)	8.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	134
Invert Level (m)	0.365
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

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Hydro-Brake® Optimum Manhole: S7, DS/PN: S2.001, Volume (m³): 2.5

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	8.4
Flush-Flo™	0.301	8.3
Kick-Flo®	0.662	6.9
Mean Flow over Head Range	-	7.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.8	1.200	9.1	3.000	14.1	7.000	21.2
0.200	8.1	1.400	9.8	3.500	15.2	7.500	21.9
0.300	8.3	1.600	10.5	4.000	16.2	8.000	22.6
0.400	8.2	1.800	11.1	4.500	17.1	8.500	23.2
0.500	8.0	2.000	11.6	5.000	18.0	9.000	23.9
0.600	7.5	2.200	12.2	5.500	18.8	9.500	24.5
0.800	7.6	2.400	12.7	6.000	19.6		
1.000	8.4	2.600	13.2	6.500	20.4		

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Storage Structures for Storm

Cellular Storage Manhole: S1, DS/PN: S1.000

Invert Level (m) 1.300 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	750.0	0.0	1.001	0.0	0.0
1.000	750.0	0.0			

Cellular Storage Manhole: S6, DS/PN: S2.000

Invert Level (m) 0.385 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	3000.0	0.0	1.001	0.0	0.0
1.000	3000.0	0.0			

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.100 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	1440 Winter	100	+40%	2/600 Winter			
S1.001	S2	1440 Winter	100	+40%	30/240 Winter			
S1.002	S3	1440 Winter	100	+40%				
S1.003	S4	1440 Winter	100	+40%				
S1.004	S5	1440 Winter	100	+40%				
S2.000	S6	2160 Winter	100	+40%	30/60 Winter			
S2.001	S7	2160 Winter	100	+40%	2/240 Winter			
S1.005	S6	10080 Winter	100	+40%				
S1.006	S7	10080 Winter	100	+40%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	2.259	0.734	0.000	0.14		4.0	FLOOD RISK	
S1.001	S2	2.278	0.578	0.000	0.03		2.5	FLOOD RISK	
S1.002	S3	1.240	-0.420	0.000	0.01		2.5	OK	

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.003	S4	0.910	-0.420	0.000	0.01		2.5	OK	
S1.004	S5	0.516	-0.419	0.000	0.01		2.5	OK	
S2.000	S6	1.231	0.621	0.000	0.39		9.8	SURCHARGED	
S2.001	S7	1.248	0.658	0.000	0.29		8.3	SURCHARGED	
S1.005	S6	0.370	-0.345	0.000	0.12		10.8	OK	
S1.006	S7	0.314	-0.366	0.000	0.08		10.8	OK	

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