

REnescience Northwich

Appendix G: Drainage Strategy



rpsgroup.com/uk

NG

The following paragraphs replace the text provided within paragraphs 4.19 and 4.20 of the Drainage Strategy Report (Appendix 8.A:Drainage Strategy).

- 4.19 The CLO material storage area will be covered by a formal canopy structure and will have walls on three sides. Roof drainage to this structure will be consistent with the strategy detailed above for other building roofs. Any liquid run-off from the CLO store will be drained to a central drainage channel, which will drain to a below ground holding sump and will be re-used within the process or if not suitable sent for off-site disposal.
- 4.20 RDF/SRF and recycled material will be stored on a concrete slab. Any rainwater or in the event of a leak liquid run-off from the storage area will be drained to a central drainage channel, which will drain to a below ground holding sump. The sump will include level monitoring and alarms to alert the operator before the sump becomes full. The contents of the sump will be monitored for contamination (e.g. pH and conductivity). Where the water is free from contamination the sump will be sent to the process water tank or manually discharged to Wade Brook. If contamination is identified the water will either be returned to the process use.

Appendix 8.A: Drainage Strategy

rpsgroup.com/uk





Appendix 8.A: Drainage Strategy

REnescience Northwich





rpsgroup.com/uk

Quality Management

Prepared by:	Gordon Barnard	Associate Director	Geanont	29/09/2015
Reviewed & checked by:	Alan Skipper	Technical Director	Abhaper	29/09/2015
Authorised by:	Alan Skipper	Technical Director	Abhaper	29/092015
Date of issue:	29 September 201	15	Revision number:	2
Project number:	NK018157			
Document file path:	O:\Jobs_8001- 9000\8407s\Info_s egy.docx	share\ES_submission\Final	_Word\Vol3_Appendices\V3	A8.A_Drainage_Strat

Revision Hist	tory			
Rev	Date	Status	Reason for revision	Additional comments
0	03/08/15	Draft	-	-
1	19/08/15	Draft	Initial internal review	TAD
2	29/09/15	Final	Foul drainage change	TAD

DISCLAIMER

RPS has used reasonable skill and care in completing this work and preparing this report, within the terms of its brief and contract and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the stated scope. This report is confidential to the client and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. The opinions and interpretations presented in this report represent our reasonable technical interpretation of the data made available to us. RPS accepts no responsibility for data provided by other bodies and no legal liability arising from the use by other persons of data or opinions contained in this report.

Except for the provision of professional services on a fee basis, RPS does not have a commercial arrangement with any other person or company involved in the interests that are the subject of this report.

Contents

1	Introduction	1
	General	1
	Site Description	1
2	Existing Site Drainage	3
3	Construction Stage Drainage	4
4	Proposed Surface Water Drainage	5
5	Proposed Surface Water Design Parameters	9
6	Proposed Foul Water Drainage	10
7	Maintenance	11

Tables, Figures and Appendices

Tables

Table 2.1: Summary of existing surface water drainage system	. 3
Table 4.1: Summary of proposed surface water drainage system	. 6

Figures

- Figure 8.A: Existing Site Plan Showing Impermeable Areas
- Figure 8.B: Proposed Site Plan Showing Impermeable Areas
- Figure 8.C: Proposed Drainage Layout
- Figure 8.D: Surface Water Manhole Schedule

Annexes

- Annex 8.A.1: Existing Network Analysis
- Annex 8.A.2: Proposed Network Analysis
- Annex 8.A.3: AD Bund Wall Height Calculations
- Annex 8.A.4: Bioreactor Bund Wall Height Calculations

1 Introduction

General

- 1.1 This report has been produced to describe, in detail, the design principles and strategy required for the management of surface water runoff and foul water discharge from the proposed REnescience Northwich development.
- 1.2 The contents of this document are to be read in conjunction with all other supporting drawings or documents referenced herein or otherwise appended to this report, and/or submitted for the purposes of planning consent.
- 1.3 The project description in Chapter 2 of the ES gives full details of the proposed development, which comprises buildings for waste treatment, external bioreactors for enzyme treatment, tanks and associated pumps and pipework for anaerobic digestion, covered external storage areas for recyclable materials, refuse-derived fuel (RDF) and de-watered digestate (compost-like output, CLO), and associated hardstanding, vehicle movement, parking and landscape planting areas.

Site Description

- 1.4 The site is brownfield land that was previously used for chlorine manufacturing until 2001. At the time of previous re-development planning applications for the site in 2009 / 2010, buildings were still present, but they have since been demolished in 2013. At present, the site is cleared, with only residual foundation slabs, hardstandings, roadways and a disused security hut outside the site entrance gates remaining from the former industrial development. The site is fully enclosed by a palisade fence.
- 1.5 The site is generally flat with a large central plateau level of around 25.50m AOD. Site levels around the northern, western and southern boundaries are approximately 2m to 3m lower than the main plateau. This correlates with the levels of the existing railway line and associated sidings present to the north and south of the site. The wider site topography in terms of overland drainage flow paths generally trends in a southerly direction towards Wade Brook, which runs within a steeply sloping channel in an east-west direction just beyond the southern site boundary. The water level in Wade Brook is approximately 17.50m to 18.00m AOD (7.5m to 8.0m below existing general site levels).
- 1.6 The site area is sparsely vegetated, with only isolated trees and shrubs present around the site owing to the fact that the site is largely hard surfaced. The steep banks of Wade Brook to the south of the site are heavily wooded with trees and scrub to heights of approximately 10m.
- 1.7 Ground conditions identified by site investigation show a variable thickness of Made Ground is present from ground surface across the site. The thickness of Made Ground was generally greater in the northern half of the site. Made Ground is underlain by Glacial Till, which in turn overlies the Northwich Halite Formation.

1.8 More specifically, the geological strata encountered can be described as follows.

Made Ground

1.9 A variable thickness of Made Ground was encountered from the ground surface across the site. Made Ground was encountered to depths ranging from 0.10m, located in the southwest of the site, to 5.00m below ground level (bgl), located in the west of the site. The Made Ground was variable in nature, but generally comprised dark grey or brown, clayey, sand, gravel and cobbles, ranging to sandy, gravelly clay. Gravel and cobbles comprised brick, ash, clinker, sandstone, mudstone and wood.

Glacial Till

1.10 Glacial Till was encountered beneath the Made Ground at depths ranging from 0.10m to 5.00m bgl. The thickness of the stratum ranged from 2.20m to 13.20m (where proven) and was generally encountered to greatest depth in the south and west of the site. The base of the stratum was not encountered at depths of up to 15.50m bgl in the far west of the site. The stratum was variable in nature, but generally comprised red, occasionally grey, mottled, silty, sandy, occasionally gravelly clay. Gravel comprised fine to medium angular gravel of mudstone and sandstone. Rare clayey sand layers, up to 0.70m in thickness, were recorded in some locations.

Northwich Halite Formation

- 1.11 The surface of the Northwich Halite Formation was encountered at depths ranging from 5.70m to 13.30m bgl. The stratum was encountered as weak, red, brown, grey and green, sandy, highly to completely weathered mudstone.
- 1.12 Perched groundwater was encountered at depths ranging from 0.50m to 3.40m bgl, within the Made Ground, typically trapped within the depth or at the base of the Made Ground strata, which is in part granular in nature.

2 Existing Site Drainage

- 2.1 United Utilities sewer record plans indicate that there are no public sewers present within the vicinity of the proposed development site.
- 2.2 The site is currently served by privately owned and maintained surface water drains associated with the former chlorine production plant on the site. In addition, there are also a number of separate trade effluent drains present, which collected acid/ alkali and other miscellaneous effluents arising from the various former industrial processes undertaken on the site.
- 2.3 Surface water runoff from the site has historically been discharged to Wade Brook via a network of underground surface water drains. A small section of the site along the northern boundary, which is lower than the main plateau area and which is covered with stone ballast associated with the railway sidings serving the site, drains via infiltration and/or overland flows within the larger area of railway land beyond the northern boundary of the site.
- 2.4 Historic site plans dating back to the early to mid-1970s, when the site was most recently developed out as a chlorine production plant, indicate that surface water flows from the site at that time discharged via a 450mm diameter pipe outfall to Wade Brook, present just beyond the southern boundary of the site. No flow restrictions have been applied to the drainage outflow from this pipe.
- 2.5 The existing site impermeable area has been calculated as being approximately 2.19Ha, and which is identified on Figure 8.A. This drawing also identifies the extent of the existing main surface water drainage system layout present on site. The estimated maximum outflow to the surface water drainage outfall to Wade Brook has been assessed using MicroDrainage as Table 2.1, below. Design calculations for the existing network are included in Annex 8.A.1.

Return Period	Critical Storm / Duration	Maximum Outflow	Drainage System Characteristics
1 in 1 year	15min, winter profile	238.1 L/s	No surcharging
1 in 30 year	15min, winter profile	428.7 L/s	Pipe surcharging, no flooding
1 in 100 year	15min, winter profile	502.9 L/s	Flooding, total 28.68m ³

Table 2.1: Summary of existing surface water drainage system

- 2.6 In the course of a previous planning application for a waste treatment plant on this site by Viridor in 2009/2010, the Environment Agency was consulted as part of the planning process. This consultation concluded that all surface water discharge from any new site development should not exceed the existing outfall capacity for all discharges up to and including the 1 in 100 year flood event.
- 2.7 Based on the condition that the surface water discharge from the new development must not exceed the existing maximum 1 in 100 year storm event, it can be concluded that a maximum upper discharge limit of 502.9L/s will apply to the new development surface water drainage system.

3 Construction Stage Drainage

- 3.1 The site will initially be subject to a demolition operation to remove all remaining impermeable floor slabs, bases and hard paving surfaces. Recovered materials will be processed on site for reuse as engineered fill material. As part of this exercise, all redundant existing below ground drainage pipes (if not suitable for re-use) will either be grubbed up and removed, or filled and capped off using a cement based grout.
- 3.2 Existing surface water pipework connected to Wade Brook outfall will be retained upstream of the outfall for re-use as both a temporary and permanent means of surface water drainage disposal.
- 3.3 During construction, the site will be subject to a bulk earthworks cut and fill operation to re-profile the site to allow construction of new building structures, external plant and hardstanding areas. Measures will be put in place by the contractor to ensure temporary rainwater runoff from the site is collected and discharged in a controlled manner, including being treated by an appropriate means to remove silt and sedimentation from the runoff.
- 3.4 The project requires the construction of a large below ground waste storage bunker which will be 6m deep. The construction of this element is anticipated to be by means of an open cut excavation, and which will be formed as part of the overall bulk earthworks operation. The nature of this excavation, which will be within impermeable Glacial Till strata, will create a sump for rainwater runoff across the site during construction, either by direct overland flows or via infiltration flows through the overlying permeable horizons of made ground fill strata. As a result, a temporary land drainage system will be provided to the perimeter of the base of the bunker excavation to maintain a dry working environment at all times during construction. Disposal of collected rainwater will be via sump pumping to Wade Brook outfall via a silt interception / removal device.
- 3.5 Installation and ongoing management of surface water runoff for the duration of the construction works will be the responsibility of the contractor. All temporary drainage systems will be sized accordingly to ensure that adequate discharge flow capacity is available at all times. Temporary drainage systems will be regularly monitored and maintained by the contractor to ensure that all runoff is adequately contained within the site boundary at all times, and only discharged to Wade Brook at a rate less than the maximum existing surface water outfall capacity.
- 3.6 The contractor will develop a formal site management plan, which will address pollution management and control in relation to site vehicles, raw materials and waste generation, to ensure that all surface water runoff generated during the construction works is free of contamination.
- 3.7 These construction-stage requirements are set out in the Construction Environmental Management Plan at Appendix 2.C in Volume 3 of the Environmental Statement (ES).

4 Proposed Surface Water Drainage

- 4.1 The proposed site surface water drainage system will be a single gravity network, discharging via the existing 450 mm diameter outfall into Wade Brook. The surface water drainage run-off flow rate will be restricted to a maximum flow rate of 502.9L/s, in line with the calculated existing outfall capacity. The proposed new system is designed to positively drain all new building roofs and external hard-surfaced catchments.
- 4.2 The drainage system is designed to contain all surface water runoff in below-ground pipework and chambers during storms up to and including the 1 in 100 year return period (including climate change). Below-ground drainage pipework and chambers provide sufficient runoff attenuation to ensure that surface water during such flood events can be controlled and discharged from the existing Wade Brook outfall without surface flooding. The WinDes outputs for the proposed drainage design are provided in Annex 8.A.2 and summarised in Table 4.1, which confirm these criteria have been met.
- 4.3 Surface water within bunded areas (around AD tanks and bioreactors) will be retained within the respective bunds, to be discharged at a controlled rate to Wade Brook following inspection as required. This is detailed below.
- 4.4 The surface water drainage network has been designed to accommodate the long term effects of climate change. All rainfall intensities used in the design have been subject to increase allowing sufficient future proofing against climate change for the expected life of the development (25 years), and in accordance with current Environment Agency (EA) and planning guidelines. For the design life of the proposed development, a climate change effect factor of 20% will apply, and so design rainfall rates calculated for the new development have been increased accordingly.
- 4.5 The use of soakaways for disposal of surface water on site has been discounted on the grounds that the soil strata underlying the site, being Glacial Till and Northwich Halite Formation as described in section 1, have low permeability characteristics and so would not support direct infiltration of surface water runoff. In addition, Network Rail has indicated during consultation that soakaways to railway land should be avoided.
- 4.6 The proposed surface water drainage design is shown in Figure 8.C.

Building Roof Drainage

4.7 Large building roof areas will be drained by a specialist designed siphonic roof drainage system, with primary and secondary roof gutter outlets, designed in accordance with BS 8490 and BS EN 12056-3 to provide Category 3 protection for an envelope design life of 25 years. Small buildings and roof areas will be drained by traditional gravity means, designed in accordance with BS EN 12056-3.

4.8 Surface water runoff from all roof areas is classed as clean runoff, and as such requires no formal treatment prior to discharge to Wade Brook.

External Vehicular Hardstanding Drainage

- 4.9 External HGV circulation areas and vehicle parking areas will be drained via linear drainage channels, Beany-type linear kerb drains, and/or localised road gullies. All surface water drainage from vehicular parking or circulation areas will be trapped at point of source to remove silt or debris, then passed through a Class 1 bypass oil separator (with integral high level alarms) to ensure compliance with BS EN 858-1:2002, in accordance with Pollution Prevention Guideline document PPG3 'Use and design of Oil Separators in Surface Water Drainage Systems'.
- 4.10 The external vehicle fuelling station area will be isolated by way of a perimeter surface water drainage channel around the fuelling point to intercept potentially contaminated surface water runoff arising from re-fuelling activities. Runoff from this area will be passed through a Class 1 Forecourt oil separator (with integral high level alarms) to ensure compliance with BS EN 858-1:2002, in accordance with Pollution Prevention Guideline document PPG3 'Use and design of Oil Separators in Surface Water Drainage Systems'.
- 4.11 The proposed total site impermeable area has been calculated as being approximately 2.36 Ha, shown in Figure 8.B. This drawing also identifies the extent of the proposed main surface water drainage system on site, which is then shown in detail in Figure 8.C. Of this total area, 1.40 Ha is drained by free gravity discharge to Wade Brook, with the balance of 0.96 Ha retained within bunded storage areas for controlled discharge to Wade Brook. Discharge of rainwater from bunded areas of the site is discussed in the following sections of this report. The estimated maximum outflow to the surface water drainage outfall to Wade Brook has been assessed using MicroDrainage and results are summarised in Table 4.1, below. Design calculations for the proposed drainage network are included in Annex 8.A.2.

Return Period	Critical Storm / Duration	Maximum Outflow	Drainage System Characteristics
1 in 1 year	15min, winter profile	149.8 L/s	No surcharging
1 in 30 year	15min, winter profile	345.0 L/s	Pipe surcharging, storage in chambers
1 in 100 year	15min, winter profile	462.9 L/s	Pipe surcharging, storage in chambers

Table 4 1. Summary	v of	proposed	surface	water	drainage	system
	y UI	proposed	Sunace	water	uramaye	System

4.12 As can be seen from Table 4.1, the maximum free discharge from the proposed site surface water drainage system is 462.9L/s, under a 1 in 100 year storm event (with climate change effects). This is below the maximum existing site drainage system outfall flow rate of 502.9L/s for the same 1 in 100 year storm event and so it can therefore be demonstrated that the proposed site surface water drainage system from the new development has no detrimental effect to Wade Brook in an extreme rainfall event.

Anaerobic Digestion (AD) Tank Area Drainage

- 4.13 Surface water drainage to the proposed AD tank area will be contained within a fully watertight bunded area designed to BS EN 1992-3. General surface water runoff from this area will be collected within a perimeter drainage channel inside the perimeter bund wall. All general surface water runoff will be retained by default within the bunded tank area to avoid potentially contaminated surface water being discharged to Wade Brook. Release of runoff collected within the AD tank area will be controlled via a manually operated penstock valve. The penstock valve will default to the closed position, and only be opened to release collected runoff after formal inspection of the contents by a suitably qualified site operative.
- 4.14 A rainwater management regime will be implemented on site to ensure that standing water levels within the bunded area are controlled to acceptable levels, and to ensure that all runoff released to the surface water drainage system is fully inspected for cleanliness prior to discharge. The maximum permissible water volume will be equal to the 1 in 100 year storm event (plus climate change), which is 1,012 m³. The maximum permissible rainwater level within the AD tank bund will be clearly identified by a maximum water level marker located adjacent to the penstock release valve.
- 4.15 The AD tank area will be afforded watertight bund protection to contain 25% of the combined working volume of all liquid containing AD tanks, which has been determined as 6,773 m³. This volume is greater than 110% of the largest tank (a digester tank with a maximum capacity of 6,000 m³). In addition, the bund will be sized to contain the volume of water attributable to the 1 in 100 year storm event, which is 1,012 m³. A minimum freeboard of 100mm will be provided above the maximum predicted liquid level within the bunded area. The total containment volume within the AD tank bund will therefore be 7,785 m³, with a bund wall height ranging from 0.83 m to 2.38 m (to account for the 1 in 80 longitudinal fall across the bund base level for drainage purposes) Calculations for the bund wall height are included in Annex 8.A.3.

Bio-reactor Tank Area Drainage

- 4.16 Surface water drainage within the proposed external bioreactor area will also be contained within a fully watertight bunded area designed to BS EN 1992-3. General surface water runoff from this area will be by collected within a perimeter drainage channel inside the perimeter bund wall. All general surface water runoff will be detained by default within the bunded area, to avoid potentially contaminated surface water being discharged to Wade Brook. Release of runoff collected within the bioreactor bunded area will be controlled via a manually operated penstock valve. The penstock valve will default to the closed position, and only be opened to release collected runoff after formal inspection of the contents by a suitably qualified site operative.
- 4.17 A rainwater management regime will be implemented on site to ensure that standing water levels within the bunded area are controlled to acceptable levels, and to ensure that all runoff released to the surface water drainage system is fully inspected for cleanliness prior to discharge. The maximum permissible water volume will be equal to the 1 in 100 year storm event (plus climate

change), which is 81 m³. The maximum permissible rainwater level within the bioreactor area bund will be clearly identified by a maximum water level marker located adjacent to the penstock release valve.

4.18 The bioreactor area will be afforded watertight bund protection to contain 110% volume of one of the two bioreactors, which has a maximum bio-liquid capacity of 270 m³. This equates to a storage volume requirement of 297 m³. In addition, the bund will be designed to contain the volume of water attributable to the 1 in 100 year storm event, which is 81 m³. The total bioreactor bund containment is therefore 378m³. A minimum freeboard of 100mm will be provided above the maximum predicted liquid level within the bunded area.

CLO / RDF Storage Areas Drainage

- 4.19 Both the CLO and RDF/recycled material storage areas will be covered by formal canopy structures such that rainwater will not be permitted to mix with any stored waste materials. Roof drainage to these canopy roof areas will be consistent with the strategy detailed above for other building roofs.
- 4.20 Any leakage or spillages of contaminated waste liquid within each of these storage areas will be drained to a centrally located drainage channel, which will drain to a below ground holding tank. Similarly any washdown of the floors in the CLO / RDF storage areas will be contained and drained to the holding tank for re-use in the waste process operation, or off-site disposal if and when required. The proposed drainage and tank arrangements are shown in Figure 8.C.

Fire Water Runoff Containment

- 4.21 Fire suppression systems shall be installed within the waste bunker and waste reception hall areas only. In the event of activation of the fire sprinkler systems provided within the building, fire water runoff will be directed by perimeter upstands / falls within the reception hall floor to the waste bunker, where it will be collected.
- 4.22 Fire water runoff from general firefighting water used by the Fire Service will be managed firstly with a manually operated penstock closure valve on the outfall of the surface water drainage system to Wade Brook. Proposed levels for the new development will be set such that all firefighting water runoff will be fully contained within the hard surfaced areas of the site, thus removing the risk of uncontrolled contaminated runoff leaving the site in the event of fire. This will in turn ensure compliance with Environment Agency Pollution Prevention Guideline document PPG18 'Managing Fire Water and Major Spillages'. Fire water run-off contained in such an event would be classed as contaminated run off and hence require off-site disposal by tanker.

5 Proposed Surface Water Design Parameters

5.1 The new surface water drainage system for the site has been designed using current Windes analysis software (by MicroDrainage), to prevent any flooding of the site and surrounding areas. The surface water drainage system has been designed in accordance with BS EN 752: 2008, Drain and sewer systems outside buildings', BS EN 12056-3 'Gravity Drainage Inside Buildings – Roof Drainage, layout and calculation' and Building Regulations Approved Document H 'Drainage and Waste Disposal'.

Global Variables

- Design return period: 1, 30 and 100 years.
- Climate change: Rainfall intensity+20%
- M5-60: 19.2mm/hr
- Ratio, 'r': 0.408
- Volumetric runoff coefficient: 0.75 (summer) and 0.84 (winter)
- Global time of entry: 4 minutes
- **PIMP (%):** 100% impermeable area
- Infiltration: Ignore for peak flow design
- Backdrops: Permitted, maximum depth of 1.5m
- **Pipe velocity:** 0.75 m/s for self cleansing (private drainage system)
- **Surcharging:** No surcharging permitted during 1 in 2 year return period event.
- 5.2 The site surface water drainage system has been designed and checked against following storm intensities and durations:
 - 2 year return period 15 minute to 24 hour storm duration
 - 30 year return period 15 minute to 24 hour storm duration
 - 100 year return period** 15 minute to 24 hour storm duration

**plus climate change allowance

6 Proposed Foul Water Drainage

- 6.1 Foul water drainage from the new development will primarily be generated from staff welfare facilities within office areas, together with non-waste process related wash down areas, plant rooms etc.
- 6.2 Disposal of foul sewage arising from the new development site will be via an on-site cesspool, as there are no foul sewers or private foul drains available in the vicinity to facilitate an off-site connection.
- 6.3 In accordance with EA PPG4, the cesspool will be sited in a well ventilated area, away from any buildings, whilst also providing easy means of access for emptying. A high level warning alarm will also be provided to ensure the tank is emptied out at appropriate intervals.
- 6.4 The cesspool will be sized on a maximum site occupancy of 40 staff. Based on British Water Code of Practice 'Flows and Loads', an industrial/factory development with no canteen would require an allowance of 50 Litres/ person/ day for foul effluent generation. This would equate to a maximum flow of 200Litres/ day for the site. In order to minimise frequency of tank emptying, allowance for up to 30 days' storage will be provided, therefore a 6,000L capacity effluent tank will be provided, shown in Figure 8.C.

Proposed Foul Water Design Parameters

- 6.5 The new foul water drainage system for the site has been designed using current Windes analysis software (by MicroDrainage), to prevent any flooding of the site and surrounding areas.
- 6.6 The foul water drainage system has been designed in accordance with BS EN 752: 2008, 'Drain and sewer systems outside buildings', BS EN 12056-2 'Gravity Drainage Inside Buildings – Sanitary pipework, layout and calculation' and Building Regulations Approved Document H 'Drainage and Waste Disposal'.

Global Variables

- Infiltration: Ignore for peak flow design
- Backdrops: Permitted, maximum depth of 1.5m
- **Pipe velocity:** 0.75 m/s for self cleansing (private drainage system)

7 Maintenance

7.1 The following table indicates the anticipated drainage maintenance regime that will need to be followed.

Element	Access method including specific access equipment	Method/type of maintenance	Frequency required
Roof gutters / outlets	Scaffolding / Cherry pickers to be used where required	General cleaning and removal of debris from gutters /outlets. Jet cleaning where required	Bi-annual inspection. Periodic inspection of gutter coatings to prevent corrosion
Oil separators	In accordance with Health and Safety regulations. Confined spaces regulations apply	Refer to manufacturer's guidance. Removal of waste oils and sludge from units	Bi-annual inspection
Channel / kerb drains	In accordance with Health and Safety regulations	Regular performance monitoring to prevent blockages. Jet cleaning	Bi-annual inspection
Silt-traps / gullies	In accordance with Health and Safety regulations	Monitor to ensure no blockages develop. Sludge removal	Bi-annual inspection
Pump chambers	In accordance with Health and Safety regulations. Confined spaces regulations apply	Maintain in accordance with manufacturers recommendations.	Bi-annual inspection or as pump manufacturer's recommendations, whichever occurs first
Headwalls	In accordance with Health and Safety regulations	Monitor to ensure no blockages develop. Clearance of debris from trash screens	Bi-annual inspection
Penstock valves	In accordance with Health and Safety regulations. Confined spaces regulations apply	Refer to Manufacturer's guidance for details.	Bi-annual inspection
Hydrobrake units	In accordance with Health and Safety regulations. Confined spaces regulations apply	Monitor to ensure no blockages develop. in accordance with the manufacturers recommendations	Bi-annual inspection

Annex 8.A.1: Existing Network Analysis

rpsgroup.com/uk

RPS Burks Green	Page 1
Sherwood House	
Sherwood Avenue	L'united and the second s
Newark NG24 1QQ	Micco
Date 11/09/2015 11:50	Designed by gordon.barnard
File NK018157_ExistingNetwo	Checked by
Micro Drainage	Network 2014.1
STORM SEWER DESIGN	by the Modified Rational Method
Design	Criteria for Storm
Pipe Sizes STA	NDARD Manhole Sizes STANDARD
FSR Rainfall	Model - England and Wales
Return Period (years)	1 Add Flow / Climate Change (%) 0
Ratio R	0.408 Maximum Backdrop Height (m) 1.500
Maximum Rainfall (mm/hr)	75 Min Design Depth for Optimisation (m) 1.200
Maximum Time of Concentration (mins) Foul Sewage (1/s/ba)	30 Min Vel for Auto Design only (m/s) 1.00 0.000 Min Slope for Optimisation (1:X) 500
Volumetric Runoff Coeff.	0.750
Design	ed with Level Inverts
Time Are	a Diagram for Storm
Time (mins)	Area Time Area (ha) (mins) (ha)
0-4	4 1.140 4-8 1.049
Total Area	Contributing (ha) = 2.189
Total Pi	pe Volume $(m^3) = 52,268$
Network De	esign Table for Storm
PN Length Fall Slope I.Ar	ea T.E. Base k HYD DIA Auto
(m) (m) (1:X) (ha	.) (mins) Flow (l/s) (mm) SECT (mm) Design
1.000 24.000 0.200 120.0 0.0	68 4.00 0.0 0.600 o 150 💣
1.001 32.000 0.345 92.8 0.0	92 0.00 0.0 0.600 o 225 💣
2.000 34.000 0.283 120.1 0.0	91 4.00 0.0 0.600 o 150 🗬
2.001 11.000 0.092 119.6 0.0	16 0.00 0.0 0.600 o 225 💣
1.002 38.000 0.317 119.9 0.0	60 0.00 0.0 0.600 o 225 🔐
Netwo	rk Results Table
PN Rain T.C. US/IL Σ I.A (mm/hr) (mins) (m) (ha	rea E Base Foul Add Flow Vel Cap Flow .) Flow (l/s) (l/s) (l/s) (m/s) (l/s) (l/s)
1.000 55.88 4.44 23.720 0. 1.001 53.91 4.83 23.520 0	068 0.0 0.0 0.0 0.92 16.2 10.3 160 0.0 0.0 1.36 54.0 23.4
1.001 00.01 4.00 20.020 0.	100 0.0 0.0 0.0 1.00 01.0 20.1
2.000 54.95 4.62 23.550 0. 2.001 54.18 4.77 23.267 0.	091 0.0 0.0 0.0 0.92 16.2 13.5 107 0.0 0.0 1.19 47.5 15.7
1.002 51.48 5.36 23.175 0.	327 0.0 0.0 0.0 1.19 47.4 45.6
01000	2014 VD Colution

RPS Burks Gi	reen										P	age 2	
Sherwood Hou	ise										С		٦
Sherwood Ave	enue										7	٦.	
Newark NG24	1 100											- Cu	~
Date 11/09/2	2015 11	:50		Des	signe	d bv	aord	lon.ba	arnai	cd		MILIO	
File NK01815	57 Exis	tingN	etwo	Che	ecked	bv	<u> </u>		-	-		Jrainage	2
Micro Draina		0 = 11 911		Net	work	201	4.1						-
	.90				- HOIN	201							_
		Ne	etwork D	esid	n Ta	ble	for S	Storm					
		<u></u>		001	911 10.	010		<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>					
PN	Length	Fall	Slope I.A	rea	T.E.	Ва	se	k	HYD	DIA	Auto)	
	(m)	(m)	(1:X) (h	a) ((mins)	Flow	(l/s)	(mm)	SECT	(mm)	Desig	In	
3.000	13.000	0.108	120.4 0.	060	4.00		0.0	0.600	0	150	. (*		
3.001	28.000	0.694	40.3 0.	057	0.00		0.0	0.600	0	150	æ		
1.003	3 25.000	0.400	62.5 0.	098	0.00		0.0	0.600	0	300	P		
1.004	20.000	0.242	82.6 0.	053	0.00		0.0	0.600	0	300	ð		
4 000	30 000	0 250	120 0 0	0.81	4 00		0 0	0 600	0	225	а		
4.001	35.000	0.292	119.9 0.	110	0.00		0.0	0.600	0	225	<u>–</u>		
4.002	2 31.000	0.962	32.2 0.	140	0.00		0.0	0.600	0	225	ð		
1 0.05	33 000	0 275	120 0 0	0.85	0 00		0 0	0 600	0	375	_@		
1.000	5 48.000	0.400	120.0 0.	090	0.00		0.0	0.600	0	375	en e		
1.007	22.000	0.220	100.0 0.	081	0.00		0.0	0.600	0	375	- Ē		
1.008	36.000	0.397	90.7 0.	102	0.00		0.0	0.600	0	375	ď		
5.000	38.000	0.317	119.9 0.	108	4.00		0.0	0.600	0	150	æ		
5.001	42.000	0.350	120.0 0.	075	0.00		0.0	0.600	0	225	- Ē		
5.002	20.000	0.167	119.8 0. 88 3 0	039 047	0.00		0.0	0.600	0	225	en e		
3.000	23.000	0.205	00.5 0.	011	0.00		0.0	0.000	0	225			
6.000	40.000	0.333	120.1 0.	129	4.00		0.0	0.600	0	225	e 🖉		
6.00	36.000	0./84	45.9 0.	089	0.00		0.0	0.600	0	225	Ū		
			Netwo	ork	Resul	ts 1	able						
PN F	ain T.	C. US	S/IL Σ I.	Area	ΣBa	se	Foul	Add Fl	.ow V	7el	Cap	Flow	
(m	n/hr) (mi	.ns) ((m) (h	a)	Flow (1/s)	(1/s)	(1/s)) (n	ı/s)	(1/s)	(1/s)	
3.000	56.95 4	.24 23	.660 0	.060		0.0	0.0	0	.0 0	.91 50	16.2 28 1	9.3 17.6	
2.UUI	JJ.40 4	.JS Z3		• ⊥ ⊥ /		0.0	0.0	0	1	• 7 2	20 . 1	τι.ο	
1.003	50.59 5	.57 22	.858 0	.542		0.0	0.0	0	.0 1	.99	140.8	74.3	
1.004	49.80 5	.76 22	.458 0	.595		0.0	0.0	0	.0 1	.73	122.3	80.2	
4.000	55.97 4	.42 23	.720 0	.081		0.0	0.0	0	.0 1	.19	47.4	12.3	
4.001	53.53 4	.91 23	.470 0	.191		0.0	0.0	0	.0 1	.19	47.4	27.7	
4.002	52.49 5	.13 23	.178 0	.331		0.0	0.0	0	.0 2	.31	92.0	47.1	
1.005	48.50 6	.09 22	.216 1	.011		0.0	0.0	0	.0 1	.65	182.6	132.8	
1.006	46.74 6	.58 21	.941 1	.101		0.0	0.0	0	.0 1	.65	182.6	139.4	
1.007	46.05 6 45.01 7	. 78 21	.541 1	.182		U.O 0 0	0.0	0	.0 1	.81	200.1	147.4 156.5	
T.000	-0•0± /		1	.204		0.0	0.0	0	•• 1	• 20			
5.000	54.59 4	.69 23	.720 0	.108		0.0	0.0	0	.0 0	.92	16.2	16.0	
5.001	50.64 5	.28 23	.403 0	.183		0.0	0.0	0	.0 1	.19	47.4	25.7 30 4	
5.002	19.42 5	.86 22	.886 0	.269		0.0	0.0	0	.0 1	.39	55.3	36.0	
		_											
6.000	55.25 4	.56 23	.387 0	.129		0.0	0.0	0	.0 1	.19	47.4 77 0	19.3 31.7	
0.001						0.0		0	1	•	,,0	JT.,	
			©1982-	-201	4 XP	Solu	ution	S					

RPS Burks	Green										F	Page 3
Sherwood H	ouse										C	
Sherwood A	venue											Ya
Newark NG	24 1QQ											Micco
Date 11/09	/2015	11:50		De	esigne	ed by	gord	don.b	arna	rd		
File NK018	157_Ex	isting	Netwo.	CI	hecked	l by						namada
Micro Drai	nage			Ne	etwork	201	4.1					
		N	etwork	c Desi	ign Ta	ble	for S	Storm				
P	N Lengt (m)	ch Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Ba Flow	ase (1/s)	k (mm)	HYD SECT	DIA (mm)	Aut Desi	o gn
5.0)04 33.00)05 68.00)0 0.275)0 1.404	120.0 48.4	0.086 0.104	0.00		0.0	0.600	0	300 300) (†	
1.0	009 35.00 010 32.00)0 0.292)0 2.777	119.9 11.5	0.108 0.120	0.00		0.0	0.600	0	450 450	- • •	
			Ne	twork	Resu	lts '	Iable	<u>!</u>			_	
PN	Rain	Т.С. Т	JS/TI. 5	I Are:	аля	ase	Foul	Add F	low	Vel	Cap	Flow
	(mm/hr)	(mins)	(m)	(ha)	Flow	(1/s)	(1/s)	(1/s) (1	m/s)	(1/s)	(1/s)
5 004	17 95	6 21 2	2 603	0 57	3	0 0	0 0	(1 / 3	101 /	74 4
5.004	46.18	6.74 2	2.328	0.67	7	0.0	0.0	(0.0	2.26	160.1	84.7
1.009	44.03	7.41 2	0.924	2.06	9	0.0	0.0	(0.0	1.86	295.2	246.7
1.010	43.76	7.50 2	0.632	2.189	9	0.0	0.0	().0	6.01	956.6	259.4
		Free	Flowir	ng Out	tfall	Deta	ils :	for S	torm			
										-		
	C	utfall	Outfa	11 C.	Level I	. Lev	el 1	Min	D,L	W		
	Pip	e Number	name	1	(m)	(m)	1.	(m)	(mm)	(mm)		
		1.010) headwa	11 1	9.680	17.8	55	0.000	0	0		
		<u>,</u>	Simula	tion	Crite	ria	for S	torm				
	Volume	etric Ru	noff Coe	ff 0.7	750 Ac	ditio	nal Fl	ow - %	of T	otal	Flow (0.000
	Area	L Reduct:	ion Fact	or 1.0	000	MAD	D Fact	or * 1	Om³/h	a Sto	rage 2	2.000
	Чо	Hot Sta	art (min	is)	0 0 Flor	, nor	Dorgon	Inle [®]	t Coe	ffiec /nor/	ient (0.800
Manho	le Headlo	oss Coef:	f (Globa	un) 1) 0.5	500 500	v per	reison	R	ay (1 un Ti	me (m	ins)	60
Fou	l Sewage	per hect	tare (l/	's) 0.0	000		Ou	tput I	nterv	al (m	ins)	1
Number of Ir Number of	nput Hydr Online (ographs Controls	0 Nun 0 Numbe	nber of er of S	Offlin Storage	ie Con Struc	trols tures	0 Numb 0 Numb	er of er of	Time Real	e/Area . Time	Diagrams O Controls O
			Synth	netic	Rainf	all	Deta	ils				
	D	ainfall	Model		1	FSR		Profi			ummer	
	Return P	eriod (y	ears)		1	1		Cv (Summe	er)	0.750	
		R	egion E	ngland	and Wa	les		Cv (Winte	er)	0.840	
		M5-60 Ra	(mm) tio R		19.1	200 St 408	corm Du	uration	ı (mir	ıs)	30	
		114			0.							
			©19	82-20	14 XP	Sol	ution	S				

I'U D DULKD O	reen						Page 4
Sherwood Ho	use						
Sherwood Av	enue						4
Newark NG2	4 100						- Com
Date 11/09/	2015 11:	:50		Designed	by gordon.b	arnard	MILLO
File NK0181	57 Eviet	ingNet	- WO	Checked b		ar nar a	Drainage
Migra Drain		LIIGNEU		Network 2	Y 01/1 1		
MICTO Drain	age			Network 2	014.1		
Summar	y of Cri	tical	Result	s by Maxim	uum Level (1	Rank 1) for	Storm
Manhole Foul	Areal Re Ho Hot St Headloss Sewage per	eduction ot Start cart Leve Coeff (0 c hectare	Factor (mins) el (mm) Global) e (l/s)	0.500 Flow pe 0.000	ional Flow - % ADD Factor * 1 Inle r Person per D	of Total Flow Om³/ha Storage t Coeffiecient ay (l/per/day)	7 0.000 2.000 0.800 0.000
Number of Inp Number of C	out Hydrogr Online Cont	aphs 0 rols 0	Number Number o	of Offline C f Storage Str	ontrols 0 Numk uctures 0 Numk	per of Time/Are per of Real Tir	ea Diagrams O ne Controls O
	Ra	infall M Re M5-60	<u>Synthe</u> Nodel gion Eng (mm)	etic Rainfall FS gland and Wale 19.20	Details SR Ratio R es Cv (Summer) OO Cv (Winter)	0.408 0.750 0.840	
	Margin	for Floo	od Risk N Analy:	Warning (mm) sis Timestep DTS Status	300.0 DVD Fine Inertia ON	Status OFF Status OFF	
		Profile	e(s)			Summer and Win	ter
	Duratio		- (-) 15				
	Durucio	011(S) (1111	LNS) 15,	, 30, 60, 120,	, 180, 240, 36	0, 480, 600, 7 960, 1	20, 440
Ret	urn Period	l(s) (yea	ars) 15,	, 30, 60, 120,	, 180, 240, 36	0, 480, 600, 7 960, 1 1, 30,	20, 440 100
Ret	urn Period Climate	l(s) (yea Change	115) 15, ars) (%)	, 30, 60, 120,	, 180, 240, 36	0, 480, 600, 7 960, 1 1, 30, 0, 0	20, 440 100 , 0
Ret PN	urn Period Climate Storm	l(s) (yea Change Return Period	ns) 15, ars) (%) Climate Change	First X Surcharge	, 180, 240, 36 First Y Flood	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100 , 0 Lvl Exc.
Ret PN	urn Period Climate Storm	(s) (yea Change Return Period	ars) (%) Climate Change	First X Surcharge	First Y Flood	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100 , 0 Lvl Exc.
Ret PN 1.000 1.001	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100	<pre>ns) 15, ars) (%) Climate Change 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100 , 0 Lvl Exc. 4 4
Ret PN 1.000 1.001 2.000	urn Period Climate Storm 15 Winter 15 Winter 15 Winter	Return Period 100 100 100	ns) 15, (%) Climate Change 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4
Ret PN 1.000 1.001 2.000 2.001	urn Period Climate Storm 15 Winter 15 Winter 15 Winter 15 Winter	Return Period 100 100 100 100	ns) 15, (%) Climate Change 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100 , 0 Lvl Exc . 4 4 4 4
PN 1.000 1.001 2.000 2.001 1.002	urn Period Climate Storm 15 Winter 15 Winter 15 Winter 15 Winter	Return Period 100 100 100 100	ns) 15, (%) Climate Change 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc . 4 4 4 4 4
PN 1.000 1.001 2.000 2.001 1.002 3.000 2.001	urn Period Climate Storm 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter	Return Period 100 100 100 100 100	ns) 15, (%) Climate Change 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc . 4 4 4 4 4
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003	urn Period Climate Storm 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100	ns) 15, (%) Climate Change 0% 0% 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100 , 0 Lvl Exc . 4 4 4 4 4 2
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.003	urn Period Climate Storm 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	ns) 15, (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc . 4 4 4 4 4 2
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.003 1.004 4.000	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>ns) 15, ars) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc . 4 4 4 4 4 2 2
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001	urn Period Climate Storm 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	ns) 15, (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc . 4 4 4 4 4 2 2 2
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.003 1.004 4.000 4.001 4.002	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	ns) 15, (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, 0 Lvl Exc. 4 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.003 1.004 4.000 4.001 4.002 1.005	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	ns) 15, (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.005	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	ns) 15, (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007 1.008 5.000	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007 1.008 5.000 5.001	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	Ins) 15, ars) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007 1.008 5.000 5.001 5.002	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>ns) 15, ars) (%) Climate Change</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
Ret PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007 1.008 5.000 5.001 5.002 5.003	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>ns) 15, ars) (%) Climate Change</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100 , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007 1.008 5.000 5.001 5.002 5.003 6.000	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) Climate Change</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007 1.008 5.000 5.001 5.002 5.003 6.000 6.001	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) Climate Change</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.005 1.006 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.007 1.007 1.008 5.001 5.001 5.001 5.004	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.005 1.005 1.005 1.005 1.005 1.005 1.007 1.007 1.008 5.000 5.001 5.002 5.003 6.000 6.001 5.004 5.005	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.005 1.006 1.007 1.008 5.000 5.001 5.002 5.003 6.000 6.001 5.004 5.005 1.009	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer	<pre>First Y Flood 100/15 Summer 100/15 Summer</pre>	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, , 0 Lvl Exc. 4 4 4 4 2 2 2 1
PN 1.000 1.001 2.000 2.001 1.002 3.000 3.001 1.003 1.004 4.000 4.001 4.002 1.005 1.006 1.007 1.008 5.000 5.001 5.002 5.003 6.000 6.001 5.004 5.005 1.009 1.010	urn Period Climate Storm 15 Winter 15 Winter	Return Period 100 100 100 100 100 100 100 100 100 10	<pre>Ins) 15, ars) (%) (%) Climate Change 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%</pre>	First X Surcharge 30/15 Summer 30/15 Summer	First Y Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	0, 480, 600, 7 960, 1 1, 30, 0, 0 First Z O/F Overflow Act.	20, 440 100, 0 Lvl Exc. 4 4 4 4 2 2 2 1

hammand Haman	n							E	Page
nerwood House								ſ	
herwood Avenue	2								4
wark NG2/ 10	\sim								
=walk NG24 1	2 <u>2</u> 5 11.	5.0		Deciano	d brr o	don	harr	and	Micı
ale 11/09/2013	5 11:	50		Designe	a by g	jordon	.parn	aro	Ncai
le NK018157_1	Exist	ingNet		Checked	by				biui
cro Drainage				Network	2014.	1		·	
Summary of	E Cri	tical	Results	s by Max	imum 1	Level	(Ran)	(1) for \$	Stor
				51					
		Water	~	F.Tooded	/		Pipe		
	US/MH	Level	Surch'ed	l Volume	Flow /	0'ilow	FTOM	<i>.</i>	
PN	Name	(m)	Depth (m) (m³)	Cap.	(1/s)	(1/s)	Status	
1.000	1	25.134	1.26	4 4.108	1.71	0.0	26.3	FLOOD	
1.001	2	25.131	1.38	6 1.286	0.71	0.0	36.1	FLOOD	
2.000	3	25.076	1.37	6 5.605	1.72	0.0	26.8	FLOOD	
2.001	4	25.052	1.56	0 1.688	0.76	0.0	30.4	FLOOD	
1.002	5	25.084	1.68	4 0.000	1.45	0.0	64.9	FLOOD RISK	
3.000	6	24.775	0.96	5 5.037	1.82	0.0	26.8	FLOOD	
3.001	7	24.860	1.15	8 0.418	1.11	0.0	29.7	FLOOD	
1.003	8	24.870	1.71	2 0.000	0.85	0.0	106.5	FLOOD RISK	
1.004	9	24.705	1.94	7 0.000	1.11	0.0	118.0	SURCHARGED	
4.000	10	25.174	1.22	9 4.278	0.94	0.0	41.8	FLOOD	
4.001	11	25.181	1.48	6 1.542	1.26	0.0	56.3	FLOOD	
4.002	12	25.170	1.76	7 0.022	0.87	0.0	74.4	FLOOD	
1.005	13	24.491	1.90	0.000	1.21	0.0	197.8	SURCHARGED	
1.006	14	24.073	1.75	7 0.000	1.33	0.0	224.2	SURCHARGED	
1.007	15	23.350	1.43	4 0.000	1.45	0.0	247.1	SURCHARGED	
1.008	16	22.886	1.19	0.000	1.46	0.0	275.8	SURCHARGED	
	17	25.135	1.26	5 4.692	1.92	0.0	30.1	FLOOD	
5.000	18	25.032	1.40	4 0.000	0.87	0.0	39.4	FLOOD RISK	
5.000 5.001	± 0								
5.000 5.001 5.002	19	24.856	1.57	8 0.000	1.18	0.0	50.9	SURCHARGED	
5.000 5.001 5.002 5.003	19 20	24.856 24.677	1.57	8 0.000 6 0.000	1.18 1.14	0.0 0.0	50.9 58.0	SURCHARGED SURCHARGED	
5.000 5.001 5.002 5.003 6.000	19 20 21	24.856 24.677 25.031	1.57 1.56 1.08	8 0.000 6 0.000 6 0.000	1.18 1.14 0.97	0.0 0.0 0.0	50.9 58.0 43.7	SURCHARGED SURCHARGED FLOOD RISK	
5.000 5.001 5.002 5.003 6.000 6.001	19 20 21 22	24.856 24.677 25.031 24.830	1.57 1.56 1.08 1.21	8 0.000 6 0.000 6 0.000 8 0.000	1.18 1.14 0.97 0.81	0.0 0.0 0.0 0.0	50.9 58.0 43.7 59.0	SURCHARGED SURCHARGED FLOOD RISK SURCHARGED	
5.000 5.001 5.002 5.003 6.000 6.001 5.004	19 20 21 22 23	24.856 24.677 25.031 24.830 24.318	1.57 1.56 1.08 1.21 1.41	8 0.000 6 0.000 6 0.000 8 0.000 5 0.000	1.18 1.14 0.97 0.81 1.50	0.0 0.0 0.0 0.0 0.0	50.9 58.0 43.7 59.0 138.9	SURCHARGED SURCHARGED FLOOD RISK SURCHARGED SURCHARGED	
5.000 5.001 5.002 5.003 6.000 6.001 5.004 5.005	19 20 21 22 23 24	24.856 24.677 25.031 24.830 24.318 23.706	1.57 1.56 1.08 1.21 1.41 1.07	8 0.000 6 0.000 6 0.000 8 0.000 5 0.000 8 0.000	1.18 1.14 0.97 0.81 1.50 1.08	0.0 0.0 0.0 0.0 0.0 0.0	50.9 58.0 43.7 59.0 138.9 165.4	SURCHARGED SURCHARGED FLOOD RISK SURCHARGED SURCHARGED SURCHARGED	
5.000 5.001 5.002 5.003 6.000 6.001 5.004 5.005 1.009	19 20 21 22 23 24 25	24.856 24.677 25.031 24.830 24.318 23.706 22.035	1.57 1.56 1.08 1.21 1.41 1.07 0.66	8 0.000 6 0.000 6 0.000 8 0.000 5 0.000 8 0.000 1 0.000	1.18 1.14 0.97 0.81 1.50 1.08 1.81	0.0 0.0 0.0 0.0 0.0 0.0 0.0	50.9 58.0 43.7 59.0 138.9 165.4 468.6	SURCHARGED SURCHARGED FLOOD RISK SURCHARGED SURCHARGED SURCHARGED	

rpsgroup.com/uk

Annex 8.A.2: Proposed Network Analysis

rpsgroup.com/uk

RPS Burks	Green									Pa	ge 1
Sherwood H	ouse									5	
Sherwood A	venue									۲	~ m
Newark NG	24 1QQ	0.15					,			— M	licro
Date 0//10	/2015 I	Z:15		De	esigned	y by	dean.	watson		D	rainade
Migro Drai	SED SII	E NEI	WORK P		twork	2015	1				
MICIO DIAI	nage			ING	LWOLK	2013	• 1				
	STOR	M SEW	IER DES	SIGN by	the M	odifi	led Ra	ational	Method	<u>t</u>	
			De	sign Cr	iteria	for	Stor	<u>m</u>			
		Pi	pe Size	s STANDA	RD Manł	nole S	izes S	STANDARD			
Maximum Tir	Retu Maximum ne of Con Fou Volumet	nrn Pe: n Rain: ncentra nl Sewa rric Ri	FSR Rai riod (ye M5-60 Rat fall (mr ation (r age (1/: unoff Co D	infall Mc ears) (mm) 19 tio R 0 m/hr) nins) s/ha) 0 poeff. 0 esigned	odel - E 1 .200 .408 75 Mi 30 .000 .750 with Le	n Des: Min ' Min Vel In	d and Add F Min Max ign De Vel fo n Slop	Wales low / Cl imum Bac imum Bac pth for r Auto D e for Op	imate Ch kdrop He kdrop He Optimisa esign or timisati	hange eight ation hly (m/ ton (1:	(%) 0 (m) 0.200 (m) 1.500 (m) 1.200 (s) 1.00 (s) 1.00 (x) 500
			Tim	e Area	Diagra	um fo	r Sto	rm			
		Time		Time 3			Drage	Time	1		
	(1	nins)	(ha)	(mins) (ha) (m	ins)	(ha)	(mins)	Area (ha)		
		0-4	0.656	4-8 0	.650	8-12	0.059	12-16 (0.007		
		0 1		100		0 10	0.0001	10 10 .			
			Total	Area Cor	ntributi	.ng (h	ia) = 1	.371			
			Tot	al Pipe	Volume	(m³) =	= 43.5	09			
			Netwo	ork Desi	ign Tal	ble f	Eor St	corm			
PN	Length (m)	n Fall (m)	L Slope (1:X)	I.Area (ha)	T.E. (mins)	Ba Flow	ise (l/s)	k H (mm) Si	IYD DIA ECT (mm)	Auto	o gn
1.00	00 11.000	0.11	0 100.0	0.025	10.00		0.0	0.600	o 15() 🔒	
	0 0 000		0 100 0	0.000	4 00		0.0	0 (00		, -	
2.00	0 8.830 01 9.560	0.08	8 100.0 6 100.0	0.000	4.00 0.00		0.0	0.600	o 150 o 150		
1.00)1 37.290	0.37	3 100.0	0.066	0.00		0.0	0.600	o 150)	
				Network	Resul	ts T	able				
PN (1	Rain] nm/hr) (n	F.C. mins)	US/IL (m)	Σ I.Area (ha)	ΣBa Flow (ise (l/s)	Foul (l/s)	Add Flor (1/s)	w Vel (m/s)	Cap (1/s)	Flow (l/s)
1.000	37.18 1	10.18	23.825	0.025		0.0	0.0	0.0	0 1.00	17.8	2.5
2.000	57.45 56.58	4.15 4.31	23.825 23.737	0.000	1	0.0	0.0	0.0	0 1.00	17.8 17.8	0.0
1.001	36.02 1	10.80	23.641	0.091		0.0	0.0	0.0	0 1.00	17.8	8.9
			©	1982-20	15 XP	Solu	tions				
L											

RPS Burks	Green										Pag	ge 2
Sherwood H	louse											
Sherwood A	venue										4	
Newark NG	524 1QQ											- Cm
Date 07/10	/2015 1	2:15		D	esigned	d bv	dean.	watso	n			ILIO
File PROPO	SED STT	E NETV	JORK M	C.	hecked	by					Dr	ainage
Migro Droj	220			O	otwork	2015	1					
MICIO DIAI	Ilaye			IN	etwork	2013	· • 1					
			Netwo:	rk Des	ign Ta	ble f	Eor St	corm				
PN	I Length	n Fall	Slope	I.Area	T.E.	Ba	ase	k	HYD	DIA	Auto	,
2.0	(m)	(m)	(1:X)	(na)	(mins)	F.TOM	(1/5)	(mm)	SECT	(mm)	Desig	n
5.0	00 21.740	0.217	100.2	0.015	4.00		0.0	0.600	0	150	•	
4.0	00 6.150	0.037	166.2	0.135	4.00		0.0	0.600	0	225	Ö	
1.0	02 39.450	0.240	164.4	0.000	0.00		0.0	0.600	0	225	Ô	
5.0 5.0	00 8.200 01 42.880) 0.050) 0.260	164.0 164.9	0.070 0.030	10.00 0.00		0.0 0.0	0.600 0.600	0 0	225 225	 ₿	
6.0	00 27.340	0.166	164.7	0.036	4.00		0.0	0.600	0	225	•	
7.0	00 7.500	0.045	166.7	0.135	4.00		0.0	0.600	0	225	6	
1.0	03 28.100	0.088	319.3	0.000	0.00		0.0	0.600	0	375	•	
8.0	00 3.000	0.030	100.0	0.030	4.00		0.0	0.600	0	150	0	
1.0	04 30.300	0.095	318.9	0.000	0.00		0.0	0.600	0	375	٥	
9.0	00 15.320	0.093	164.7	0.052	10.00		0.0	0.600	0	225	٥	
9.0 9.0	01 34.190 02 23.040	0.207 0.140	165.2 164.6	0.013 0.040	0.00		0.0	0.600 0.600	0 0	225 225		
			N	letwor}	k Resul	ts T	able					
PN	Rain !	r.c. t	JS/IL X	I.Area	a ΣBa	ise	Foul	Add Fl	ow 1	Vel	Cap	Flow
(mm/hr) (r	nins)	(m)	(ha)	Flow	(1/s)	(1/s)	(1/s)) (1	n/s)	(1/s)	(1/s)
3.000	56.28	4.36 2	4.025	0.01	5	0.0	0.0	0	.0 1	L.00	17.7	2.3
4.000	57.70	4.10 2	3.305	0.13	5	0.0	0.0	0	.0 1	1.01	40.2	21.1
1.002	34.89	11.45 2	3.193	0.24	1	0.0	0.0	0	.0	1.02	40.4	22.8
5.000	37.27	10.13 2	3.700	0.07	0	0.0	0.0	0	.0 1	1.02	40.5	7.1
5.001	35.95	10.84 2	3.650	0.10	0	0.0	0.0	0	.0	1.02	40.4	9.7
6.000	55.82	4.45 2	3.950	0.03	6	0.0	0.0	0	.0	1.02	40.4	5.4
7.000	57.58	4.12 2	3.790	0.13	5	0.0	0.0	0	.0	1.01	40.2	21.1
1.003	34.13	11.91 2	2.803	0.51	2	0.0	0.0	0	.0 2	1.01	111.4	47.3
8.000	58.00	4.05 2	3.900	0.03	0	0.0	0.0	0	.0	1.00	17.8	4.7
1.004	33.35	12.41 <mark>2</mark>	2.715	0.54	2	0.0	0.0	0	.0	1.01	111.4	48.9
9.000	37.05	10.25 <mark>2</mark>	3.650	0.05	2	0.0	0.0	0	.0	1.02	40.4	5.2
9.001	35.99	10.81 2	3.557	0.06	5	0.0	0.0	0	.0	1.01	40.3	6.3
9.002	35.33	11.19 2	2.850	0.10	5	0.0	0.0	0	.0 1	L.02	40.4	10.0

RPS Burks	Green										Pag	re 3
Sherwood H	ouse											
Sherwood A	venue										4	~
Newark NG	24 1QQ										M	
Date 07/10	/2015 1	2:15		De	signed	l by	dean.	watso	n			
File PROPO	SED SIT	E NETW	IORK M.	Ch	necked	by						alliage
Micro Drai	nage			Ne	etwork	2015	.1					
			Networ	k Desi	ign Tab	ole f	or St	orm				
DN	Ionati	- F -11	S 1000	T Aroa	m 6	р-		ŀ	חעם	הדא	Nut 0	
EN	(m)	(m)	(1:X)	(ha)	(mins)	Flow	(1/s)	(mm)	SECT	(mm)	Desig	'n
				. ,	. ,			. ,			-	
1 0	05 27 410	0 137	200 1	0 035	0 00		0 0	0 600	0	375	<u>A</u>	
1.0	00 27.11		200.1	0.000	0.00		0.0	0.000	0	575		
10.0	00 10.900	0.066	165.2	0.106	4.00		0.0	0.600	0	225	0	
1.0	06 12.73	0.064	198.9	0.000	0.00		0.0	0.600	0	375	0	
11.0	00 4.61	0.028	164.6	0.040	4.00		0.0	0.600	0	225	8	
11.0	01 18.000	0.110	163.6	0.000	0.00		0.0	0.600	0	225	Ō	
1.0	07 8.00	0.040	200.0	0.000	0.00		0.0	0.600	0	375	8	
1.0	08 9.50	0.048	197.9	0.000	0.00		0.0	0.600	0	375	0	
12.0	00 24.950	0.151	165.2	0.036	4.00		0.0	0.600	0	225	0	
13.0	00 19.013	3 0.115	165.3	0.110	4.00		0.0	0.600	0	225	0	
12.0	01 10.70	0.045	237.8	0.050	0.00		0.0	0.600	0	300	0	
12.0	02 9.50	0.040	237.5	0.015	0.00		0.0	0.600	0	300	-	
12.0	03 22.800) 0.095	240.0	0.015	0.00		0.0	0.600	0	300		
12.0	04 30.030	0.120 0.117	239.3	0.043	0.00		0.0	0.600	0	300		
			Ne	etwork	Resul	ts Ta	able					
PN	Rain	I.C. 1	US/IL Σ	I.Area	а ΣВа	ase	Foul	Add F	Low	Vel	Cap	Flow
(1	mm/hr) (1	mins)	(m)	(ha)	Flow	(1/s)	(1/s)	(1/s) (1	n/s)	(l/s)	(l/s)
					_							
1.005	32.82	12.// 2	1.489	0.682	2	0.0	0.0	(.0	1.28	141.1	60.6
10.000	57.27	4.18 2	1.418	0.106	5	0.0	0.0	(0.0	1.01	40.3	16.4
1.006	32.58	12.94 2	1.352	0.788	3	0.0	0.0	(0.0	1.28	141.5	69.5
11.000	57.85	4.08 2	4.050	0.040	C	0.0	0.0	().0 ·	1.02	40.4	6.3
11.001	56.23	4.37 2	2.398	0.040	C	0.0	0.0	(0.0	1.02	40.5	6.3
1 007	32 43	13.04 🤉	1.288	0 829	3	0 0	0 0	ſ).0 ·	1.28	141 1	72 7
1.008	32.25	13.16 2	1.148	0.828	3	0.0	0.0	(0.0	1.28	141.8	72.7
12.000	56.02	4.41 2	3.935	0.036	5	0.0	0.0	(0.0	1.01	40.3	5.5
12,000		4 2 1 0	12 000	0 110	2	0 0	0 0			1 0 1	40.0	16.0
13.000	30.54	4.JI 2	3.899	0.110	J	0.0	0.0	(1.01	40.3	τρ.δ
12.001	55.11	4.59 2	3.709	0.196	6	0.0	0.0	(0.0	1.02	71.8	29.3
12.002	54.34	4.74 2	3.664	0.211	L	0.0	0.0	().0 :	1.02	71.8	31.0
12.003	52.56	5.12 2	3.624	0.226	D 1	0.0	0.0	(J.U 1	1.01	/1.4	32.2
12.004	30.37 48 54	5.62 2	3.401	0.2/1	1	0.0	0.0	().0 [.]	1.01	/⊥.5 71 5	37.U 42.2
12.000	10.01	2.00 2		0.021	-	0.0	0.0				. 1 • 0	
			©19	982-20	15 XP	Solut	tions					

RPS Burk	ks Gr	een										Pag	ge 4
Sherwood	d Hou	se											
Sherwood	d Ave	nue										4	~
Newark	NG24	1QQ										М	icro
Date 07,	/10/2	015 1	2:15		De	signed	d by	dean.	watsor	l			illi Din age
File PRO	OPOSE	D SI1	CE NET	WORK M	Ch	ecked	by					U	diiidye
Micro Dr	raina	ge			Ne	twork	2015	.1					
				Networ	rk Desi	.gn Tal	ble f	or St	orm				
		T	h == 1		T 3							3 +	_
	PN	Lengt	n Fal. (m)	$(1 \cdot \mathbf{x})$	1.Area (ha)	T.E. (mins)	E Flow	15e (1/e)	K (mm)	SECT	(mm)	Desid	C m
		(111)	(111)	(1.A)	(IIA)	(1113)	FIOW	(1/3)	(SECI	(11111)	Desi	J 11
1	4.000	21.00	0 0.12	7 165.4	0.027	4.00		0.0	0.600	0	225	A	
1	4.001	34.40	0 0.14	3 240.6	0.076	0.00		0.0	0.600	0	225	Ā	
1	4.002	25.96	0.15	7 165.4	0.018	0.00		0.0	0.600	0	225	Ă	
1	4.003	10.10	0.06	1 165.6	0.000	0.00		0.0	0.600	0	225	ŏ	
1	2.006	42.10	0 0.21	1 199.5	0.050	0.00		0.0	0.600	0	300	8	
1	5.000	12.63	3 0.07	7 164.1	0.051	4.00		0.0	0.600	0	225		
1	2 007	21 10	0 0 10	6 100 1	0 000	0 00		0 0	0 600	0	300		
1	2.007	21.10	0 0.10	0 199.1	0.000	0.00		0.0	0.000	0	500	•	
	1.009	13.15	50 1.10	0 12.0	0.000	0.00		0.0	0.600	0	450	8	
				N	etwork	Resul	ts Ta	able					
PN	Ra	in	T.C.	US/IL :	Σ I.Area	ΣВ	ase	Foul	Add Fl	.ow N	Vel	Cap	Flow
	(mm	/hr)	(mins)	(m)	(ha)	Flow	(1/s)	(l/s)	(1/s)) (r	n/s)	(l/s)	(1/s)
14.00	0 5	6.37	4.35	23.925	0.027	,	0.0	0.0	C	.0 1	1.01	40.3	4.1
14.00	1 5	2.96	5.03	23.798	0.103	1	0.0	0.0	C	.0 (0.84	33.3	14.8
14.00	2 5	1.07	5.46	23.655	0.121		0.0	0.0	C	.0 1	1.01	40.3	16.7
14.00	3 5	0.37	5.62	23.498	0.121		0.0	0.0	C	.0 1	1.01	40.3	16.7
12.00	6 4	6.27	6.72	22.417	0.492	:	0.0	0.0	C	.0 1	1.11	78.4	61.6
15.00	0 5	7.12	4.21	22.283	0.051		0.0	0.0	C	.0 2	1.02	40.5	7.9
12.00	7 4	5.22	7.03	21.206	0.543		0.0	0.0	C	.0 1	1.11	78.5	66.5
1.00	9 3:	2.20	13.20	19.100	1.371		0.0	0.0	C	.0 .	5.90	939.1	119.6

RPS Burks Green		Page 1
Sherwood House		
Sherwood Avenue		<u>u</u>
Newark NG24 1QQ		Micco
Date 07/10/2015 12:19	Designed by dean.watson	
File PROPOSED SITE NETWORK MODEL 150915.MDX	Checked by	Digiliada
Micro Drainage	Network 2015.1	,

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)
CP1	25.175	1.350	Open Manhole	1200	1.000	23.825	150				
CP2	25.175	1.350	Open Manhole	1200	2.000	23.825	150				
RET1	25.175	1.438	Open Manhole	1200	2.001	23.737	150	2.000	23.737	150	
S1	25.215	1.574	Open Manhole	1200	1.001	23.641	150	1.000	23.715	150	74
								2.001	23.641	150	
CP3	25.375	1.350	Open Manhole	1200	3.000	24.025	150				
CP4	25.090	1.785	Open Manhole	1200	4.000	23.305	225				
S2	25.250	2.057	Open Manhole	1200	1.002	23.193	225	1.001	23.268	150	
								3.000	23.808	150	540
								4.000	23.268	225	75
CP5	25.000	1.300	Open Manhole	1200	5.000	23.700	225				
S3	25.275	1.625	Open Manhole	1200	5.001	23.650	225	5.000	23.650	225	
CP6	25.250	1.300	Open Manhole	1200	6.000	23.950	225				
CP7	25.090	1.300	Open Manhole	1200	7.000	23.790	225				
S4	25.275	2.472	Open Manhole	1350	1.003	22.803	375	1.002	22.953	225	
								5.001	23.390	225	437
								6.000	23.784	225	831
								7.000	23.745	225	792
CP8	25.200	1.300	Open Manhole	1200	8.000	23.900	150				

RPS Burks Green		Page 2
Sherwood House		
Sherwood Avenue		<u> </u>
Newark NG24 1QQ		Micro
Date 07/10/2015 12:19	Designed by dean.watson	
File PROPOSED SITE NETWORK MODEL 150915.MDX	Checked by	Digiliarie
Micro Drainage	Network 2015.1	

Manhole Schedules for Sto

er	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
75	1.003	22.715	375	
	8.000	23.870	150	930
25				
25	9.000	23.557	225	
25	9.001	23.350	225	500
75	1.004	22.620	375	1131
	9.002	22.710	225	1071
25				
75	1.005	21.352	375	
	10.000	21.352	225	
25				
25	11.000	24.022	225	1624
75	1.006	21.288	375	
	11.001	22.288	225	850
75	1.007	21.248	375	100
25				
25				
00	12.000	23.784	225	
	13.000	23.784	225	
25		12.000 13.000	12.000 23.784 13.000 23.784	12.000 23.784 225 13.000 23.784 225

RPS Burks Green		Page 3
Sherwood House		
Sherwood Avenue		<u> </u>
Newark NG24 1QQ		Micco
Date 07/10/2015 12:19	Designed by dean.watson	
File PROPOSED SITE NETWORK MODEL 150915.MDX	Checked by	Drainacje
Micro Drainage	Network 2015.1	

MH Name	MH CL (m)	MH Depth (m)	Coni	MH nection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdroj (mm)
S15	25.350	1.686	Open	Manhole	1200	12.002	23.664	300	12.001	23.664	300	
S16	25.350	1.726	Open	Manhole	1200	12.003	23.624	300	12.002	23.624	300	
S17	25.375	1.846	Open	Manhole	1200	12.004	23.529	300	12.003	23.529	300	
S18	25.325	1.924	Open	Manhole	1200	12.005	23.401	300	12.004	23.401	300	
S20	25.350	1.425	Open	Manhole	1200	14.000	23.925	225				
S21	25.350	1.552	Open	Manhole	1200	14.001	23.798	225	14.000	23.798	225	
S22	25.260	1.605	Open	Manhole	1200	14.002	23.655	225	14.001	23.655	225	
S23	25.100	1.602	Open	Manhole	1200	14.003	23.498	225	14.002	23.498	225	
S19	25.325	2.908	Open	Manhole	1200	12.006	22.417	300	12.005	23.284	300	86
									14.003	23.437	225	94
S24	25.120	2.837	Open	Manhole	1200	15.000	22.283	225				
S25	25.300	4.094	Open	Manhole	1200	12.007	21.206	300	12.006	22.206	300	100
									15.000	22.206	225	92
S26	23.000	3.900	Open	Manhole	1350	1.009	19.100	450	1.008	21.100	375	192
									12.007	21.100	300	185
K Headwall	19.680	1.680	Open	Manhole	0		OUTFALL		1.009	18.000	450	

RPS Burks Gree	n						Page 7
Sherwood House							
Sherwood Avenu	е						L.
Newark NG24 1	QQ						Micco
Date 07/10/201	5 12:1	18		Designe	ed by de	ean.watson	
File PROPOSED	SITE 1	NETWOR	км	Checked	l by		Dialitacje
Micro Drainage				Network	2015.	1	
		PI	IPELINE	SCHEDUI	LES for	Storm	
			Up	stream N	Manhole		
PN H	vd Dia	am MH	C.Level	I.Level	D.Depth	MH MH DIAM	., L*W
Se	ect (mn	n) Name	(m)	(m)	(m)	Connection (mm	n)
1 000	0 15	0 CP1	25 175	23 825	1 200	Open Manhole	1200
1.000	0 10		23.175	23.025	1.200	open Mannore	1200
2.000	o 15	0 CP2	25.175	23.825	1.200	Open Manhole	1200
2.001	0 15	0 RET1	25.175	23.737	1.288	Open Manhole	1200
1.001	o 15	0 S1	25.215	23.641	1.424	Open Manhole	1200
				o			1000
3.000	o 15	OU CP3	25.375	24.025	1.200	Upen Manhole	1200
4.000	o 22	25 CP4	25.090	23.305	1.560	Open Manhole	1200
		-					
1.002	o 22	25 S2	25.250	23.193	1.832	Open Manhole	1200
5.000	o 22	25 CP5	25.000	23.700	1.075	Open Manhole	1200
5.001	o 22	25 S3	25.275	23.650	1.400	Open Manhole	1200
6.000	o 22	25 CP6	25.250	23.950	1.075	Open Manhole	1200
7 000	0 20	5 07	25 090	23 700	1 075	Open Manhele	1200
/.000	0 22	J CF7	23.090	23.190	1.075	open Mannore	1200
1.003	0 37	75 S4	25.275	22.803	2.097	Open Manhole	1350
			Dow	nstream	Manhol	<u>e</u>	
PN Len	gth Sl	ope MH	C.Leve	l I.Level	L D.Deptl	h MH MH DIA	ЪМ., L*W
(r	n) (1	:X) Nam	e (m)	(m)	(m)	Connection (mm)
1 000 11	000 10	0 0 0	1 05 01	- 00 71	- 1 25	O Oraca Markala	1000
1.000 11.	000 10	0.0 5	1 23.21	5 25.713	1.33	o open Mannore	1200
2.000 8.	830 10	0.0 RET	1 25.17	5 23.73	7 1.28	8 Open Manhole	1200
2.001 9.	560 10	0.0 S	1 25.21	5 23.641	1 1.42	4 Open Manhole	1200
1.001 37.	290 10	0.0 S	2 25.25	0 23.268	3 1.83	2 Open Manhole	1200
3.000 21.	740 10	0.2 S	2 25.25	0 23.808	3 1.293	2 Open Manhole	1200
4.000 6.	150 16	6.2 S	2 25.25	0 23.268	3 1.75	7 Open Manhole	1200
1 002 20	150 16	лл с	1 25 27	5 22 053	3 2 00	7 Open Marholo	1350
1.002 59.	-JU 10		- 23.21	J ZZ.903	. 2.09	, open mannote	1350
5.000 8.	200 16	4.0 S	3 25.27 4 25.27	5 23.650		0 Open Manhole 0 Open Manhole	1200
5.001 42.	000 IQ	ч. <i>)</i> Б	- 23.21	- 20.090	, T.00	o oben mannore	1000
6.000 27.	340 16	4.7 S	4 25.27	5 23.784	1.26	6 Open Manhole	1350
7.000 7.	500 16	6.7 S	4 25.27	5 23.745	5 1.30	5 Open Manhole	1350
1.003 28.	100 31	9.3 S	5 25.24	0 22.715	5 2.15	0 Open Manhole	1350
			©1982-	-2015 XP	Soluti	lons	

RPS Burks Gr	reen								Page 8
Sherwood Hou	lse								
Sherwood Ave	enue								L'
Newark NG24	1QQ								Micco
Date 07/10/2	015 1	2 : 18			Designed	l by de	an.watson		Desinar
File PROPOSE	D SIT	E NEI	WORK	Μ	Checked	by			Diamac
Micro Draina	ıge			·	Network	2015.1			
						_			
			PIE	PELINE	SCHEDULI	ES for	Storm		
				Ups	stream Ma	anhole			
PN	Hvd	Diam	мн	C Level	T Level I) Depth	МН		T.*W
1.14	Sect	(mm)	Name	(m)	(m)	(m)	Connection	(mm)	,
8.000) 0	150	CP8	25.200	23.900	1.150	Open Manhole		1200
1.004	4 о	375	S5	25.240	22.715	2.150	Open Manhole		1350
9.000) 0	225	CP11	25,250	23,650	1.375	Open Manhole		1200
9.001	1 o	225	S6	25.375	23.557	1.593	Open Manhole		1200
9.002	2 0	225	S7	25.390	22.850	2.315	Open Manhole		1200
1.005	ō o	375	S8	25.460	21.489	3.596	Open Manhole		1350
10.000) 0	225	CP12	25.025	21.418	3.382	Open Manhole		1200
1.006	6 O	375	S9	25.180	21.352	3.453	Open Manhole		1350
11.000) 0	225	CP15	25.350	24.050	1.075	Open Manhole		1200
11.001	1 o	225	S10	25.400	22.398	2.777	Open Manhole		1200
1.00	7 о	375	S11	25.180	21.288	3.517	Open Manhole		1350
1.008	3 о	375	BYP1	25.180	21.148	3.657	Open Manhole		1350
						e 1 1.			
				DOWI	istream i	Mannole			
PN	Length	Slope	e MH	C.Leve	l I.Level	D.Depth	MH Connection	MH DIAM	[., L*₩ n)
	(111)	(1.7)	Manie	(111)	(111)	(111)	connección	(111	,
8.000	3.000	100.0) S5	25.24	0 23.870	1.220) Open Manhole	2	1350
1.004	30.300	318.9	9 S8	25.46	0 22.620	2.465	Open Manhole	2	1350
9.000	15.320	164.	7 S6	25.37	5 23.557	1.593	3 Open Manhole	2	1200
9.001	34.190	165.2	2 S7	25.39	0 23.350	1.815	Open Manhole	è	1200
9.002	23.040	164.0	5 S8	25.46	0 22.710	2.525	Open Manhole	5	1350
1.005	27.410	200.3	1 S9	25.18	0 21.352	3.453	3 Open Manhole	9	1350
10.000	10.900	165.2	2 S9	25.18	0 21.352	3.603	8 Open Manhole	è	1350
1.006	12.730	198.9	9 S11	25.18	0 21.288	3.517	7 Open Manhole	9	1350
11.000	4.610	164.0	5 S10	25.40	0 24.022	1.153	3 Open Manhole	2	1200

11.001 18.000 163.6 S11 25.180 22.288 2.667 Open Manhole

1.0078.000200.0BYP125.18021.2483.557OpenManhole1.0089.500197.9S2623.00021.1001.525OpenManhole

©1982-2015 XP Solutions

1350

1350 1350

RPS Burks Gre	een								Page 9		
Sherwood Hous	se										
Sherwood Aver	nue								L.		
Newark NG24	1QQ								Micco		
Date 07/10/20)15 1	2:18			Designe	ed by de	ean.watson				
File PROPOSEI) SIT	'E NE'	TWORF	к м	Checked	d by			Diamarje		
Micro Drainag	ge				Network	c 2015.2	L				
PIPELINE SCHEDULES for Storm											
Upstream Manhole											
				<u>op.</u>							
PN	Hyd	Diam	MH	C.Level	I.Level	D.Depth	МН	MH DIAM.	, L*W		
	Sect	(mm)	Name	(m)	(m)	(m)	Connection	(mm)			
12.000	0	225	S12	25.360	23.935	1.200	Open Manhole		1200		
13.000	0	225	S13	25.435	23.899	1.311	Open Manhole		1200		
12.001	0	300	S14	25.375	23.709	1.366	Open Manhole		1200		
12.002	0	300	S15	25.350	23.664	1.386	Open Manhole		1200		
12.003	0	300	S16	25.350	23.624	1.426	Open Manhole		1200		
12.004	0	300	S17	25.375	23.529	1.546	Open Manhole		1200		
12.005	0	300	S18	25.325	23.401	1.624	Open Manhole		1200		
14.000	0	225	S20	25.350	23.925	1.200	Open Manhole		1200		
14.001	0	225	S21	25.350	23.798	1.327	Open Manhole		1200		
14.002	0	225	S22	25.260	23.655	1.380	Open Manhole		1200		
14.003	0	225	S23	25.100	23.498	1.377	Open Manhole		1200		
12.006	0	300	S19	25.325	22.417	2.608	Open Manhole		1200		
15.000	0	225	S24	25.120	22.283	2.612	Open Manhole		1200		
12.007	0	300	S25	25.300	21.206	3.794	Open Manhole		1200		
				Dowi	nstream	Manhol	<u>a</u>				
				2.011			<u> </u>				
PN I	length	Slop	e MH	C.Leve	l I.Leve	l D.Dept	h MH	MH DIAM	l., L*W		
	(m)	(1:X	() Nam	e (m)	(m)	(m)	Connection	n (mr	n)		

PN	Length	Slope	MH	C.Level	I.Level	D.Depth	MH	MH DIAM., L*W		
	(m)	(1:X)	Name	(m)	(m)	(m)	Connection	(mm)		
12.000	24.950	165.2	S14	25.375	23.784	1.366	Open Manhole	1200		
13.000	19.013	165.3	S14	25.375	23.784	1.366	Open Manhole	1200		
12.001	10.700	237.8	S15	25.350	23.664	1.386	Open Manhole	1200		
12.002	9.500	237.5	S16	25.350	23.624	1.426	Open Manhole	1200		
12.003	22.800	240.0	S17	25.375	23.529	1.546	Open Manhole	1200		
12.004	30.650	239.5	S18	25.325	23.401	1.624	Open Manhole	1200		
12.005	28.000	239.3	S19	25.325	23.284	1.741	Open Manhole	1200		
14.000	21.000	165.4	S21	25.350	23.798	1.327	Open Manhole	1200		
14.001	34.400	240.6	S22	25.260	23.655	1.380	Open Manhole	1200		
14.002	25.960	165.4	S23	25.100	23.498	1.377	Open Manhole	1200		
14.003	10.100	165.6	S19	25.325	23.437	1.663	Open Manhole	1200		
12.006	42.100	199.5	S25	25.300	22.206	2.794	Open Manhole	1200		
15.000	12.633	164.1	S25	25.300	22.206	2.869	Open Manhole	1200		
12.007	21.100	199.1	S26	23.000	21.100	1.600	Open Manhole	1350		
			0	01982-20)15 XP	Solutio	ns			

RPS Burks Green	Page 10
Sherwood House	
Sherwood Avenue	
Newark NG24 1QQ	Micro
Date 07/10/2015 12:18	Designed by dean.watson
File PROPOSED SITE NETWORK M	Checked by
Micro Drainage	Network 2015.1
PIPELINE	SCHEDULES for Storm
au	stream Manhole
PN Hyd Diam MH C.Level	I.Level D.Depth MH MH DIAM., L*W
Sect (mm) Name (m)	(m) (m) Connection (mm)
1.009 o 450 S26 23.000	19.100 3.450 Open Manhole 1350
Down	nstream Manhole
PN Length Slope MH C.L	evel I.Level D.Depth MH MH DIAM., L*W
(m) (1:X) Name (m) (m) (m) Connection (mm)
1.009 13.150 12.0 Ex Headwall 19	.680 18.000 1.230 Open Manhole 0
Free Flowing (JULIAII DELAIIS FOR STORM
Outfall Outfall	C. Level I. Level Min D,L W
Pipe Number Name	(m) (m) I. Level (mm) (mm)
	(m)
1.009 Ex Headwall	19.680 18.000 0.000 0 0
Cirru latia	n Quitania fan Otaun
Simulatio	n Criteria for Storm
Volumetric Runoff Coeff 0	.750 Additional Flow - % of Total Flow 0.000
Areal Reduction Factor 1	.000 MADD Factor * 10m ³ /ha Storage 2.000
Hot Start (mins)	0 Inlet Coefficient 0.800
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 Hydrogra	anhs () Number of Storage Structures ()
Number of Online Contr	cols 0 Number of Time/Area Diagrams 0
Number of Offline Contr	cols 0 Number of Real Time Controls 0
Supthet	ic Prinfall Dotails
<u>synchec</u>	ic Raimail Details
Rainfall Model	FSR Profile Type Summer
Return Period (years)	1 Cv (Summer) 0.750
Region Englai M5-60 (mm)	nd and Wales Cv (Winter) 0.840
Ratio R	0.408

RPS Burk	s Gre	en							Page 11
Sherwood	Hous	e							
Sherwood	Aven	ue							L.
Newark	NG24	1QQ					Micco		
Date 07/	10/20	15 12 : 18		De	signed by				
File PRO	POSED	SITE NET	WORK M	Ch	ecked by				Diamaye
Micro Dr	ainag	e		Ne	twork 201	L5.1			
<u>Sı</u>	ummary	v of Crit	ical Re	sults	by Maximu	m Level	(Rank 1)	for S	torm
Manh Fo	A ole He oul Sew 1	real Reduc Hot S Hot Start adloss Coe age per he Number of I Number of	tion Fac tart (mi Level (ff (Glob ctare (1 nput Hyc Online	Simula tor 1.00 ns) mm) al) 0.50 /s) 0.00 drograph Control	ation Crite 00 Additi 0 MP 00 Flow per 00 s 0 Number s 0 Number	onal Flow DD Factor Person p of Storag of Time/2	- % of Tot * 10m³/ha Inlet Coef: er Day (1/p ge Structur Area Diagra	tal Flor Storage fiecien per/day es O ms O	₩ 0.000 = 2.000 t 0.800) 0.000
		Number of	Offline	Control	s 0 Number	of Real ?	Cime Contro	ls O	
		Rainfa M5 Margin for	Sill Model Regior 6-60 (mm) Flood F	ynthetic - n Englan Risk War Analysis D	Rainfall FSI FSI d and Wale 19.20 ning (mm) F Timestep TS Status	Details R Rat: s Cv (Sumr O Cv (Wint 300.0 Fine Ine ON	io R 0.408 mer) 0.750 cer) 0.840 DVD Status rtia Status	ON ON	
				_		•••			
			Drofilo	(c)			Summor and	Wintor	
		Duratior	Profile n(s) (min	(s) ns) 15,	30, 60, 12	0, 180, 30	Summer and 50, 600, 72	0, 1440	
	Ret	urn Period	(s) (yea:	rs)	, ,	-, -, -,	,	1	
		Climate	Change	(응)				0	1
									Water
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overfl Act.	.ow Level (m)
1 000	CD1	15 Winter	1	±08					23 863
2.000	CP2	60 Winter	1	+0%					23.825
2.001	RET1	60 Winter	1	+0%					23.737
1.001	S1	15 Winter	1	+0%					23.722
3.000	CP3	15 Winter	1	+0%					24.061
4.000	CP4	15 Summer	1	+0%					23.438
1.002	S2	15 Winter	1	+0%					23.346
5.000	CP5	15 Winter	1	+0%					23.769
5.001	S3	15 Winter	1	+0%					23.726
6.000	CP6	15 Winter	1	+0%					24.005
7.000	CP7	15 Summer	1	+0%					23.923
1.003	S4	15 Winter	1	+0%					23.022
8.000	CP8	15 Summer	1	+0%					23.966
1.004	S5	15 Winter	1	+0%					22.938
9.000	CP11	15 Winter	1	+0%					23.705
9.001	S6	15 Winter	1	+0%					23.617
9.002	S7	15 Winter	1	+0%					22.931
10,005	58	15 Winter	1	+0%					21.706
1 000	CP12	15 Winter	1	+0%					21.629 21.610
11 000	S9	15 Winter	1	+U%					21.01Z
11 001	S10	15 Summer	⊥ 1	+U중 +N위					24.118 22 458
11.001	010	TO DUNNET	1	100					22.100
			©1	982-20	15 XP Sol	utions			

b buiks Gree	n							Page 12
erwood House								
erwood Avenu	е							4
wark NG24 1	00							
e 07/10/201	<u>~~</u> 5 12•	18	Des	signed	by dean	wats	on	- MICLO
A PROPOSED	0 9 - T F -	NETWORK M	Che	cked k	w	. naco		Draina
e FROFOSED	SILL	NEIWORK M		eckeu i				
ro Drainage			Net	WORK 2	2015.1			
Summary	of Cr	itical Re	sults b	y Maxi	mum Leve	l (Ra	ank 1)	for Storm
		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
1 000	0.01	0 110	0 000	0 1 4		0 0		
1.000	CPI	-0.112	0.000	0.14		2.3	OK	
2.000	CPZ DET1	-0.150	0.000	0.00		0.0	OK	
2.001	CLII C1	-0.150	0.000	0.00		0.0	OK	
3 000	200	-0.009	0.000	0.55		2.5	OK	
4 000	CP4	-0 092	0.000	0.15		19 5	OK	
1.002	S2	-0.072	0.000	0.78		29.9	OK	
5.000	CP5	-0.156	0.000	0.20		6.4	OK	
5.001	53	-0.149	0.000	0.25		9.6	OK	
6.000	CP6	-0.170	0.000	0.14		5.2	OK	
7.000	CP7	-0.092	0.000	0.65		19.5	OK	
1.003	S4	-0.156	0.000	0.63		61.6	OK	
8.000	CP8	-0.084	0.000	0.40		4.3	OK	
1.004	S5	-0.152	0.000	0.66		65.0	OK	
9.000	CP11	-0.170	0.000	0.13		4.8	OK	
9.001	S6	-0.165	0.000	0.16		6.1	OK	
9.002	S7	-0.144	0.000	0.28		10.2	OK	
1.005	S8	-0.158	0.000	0.63		77.6	OK	
10.000	CP12	-0.014	0.000	0.42		14.2	OK	
1.006	S9	-0.115	0.000	0.80		86.2	OK	
11.000	CP15	-0.157	0.000	0.20		5.8	OK	
11.001	S10	-0.165	0.000	0.16		5.8	OK	

RPS Burk	s Gree	en							Pa	age 13
Sherwood	House	5								
Sherwood	l Aveni	le							2	
Newark	NG24 1	00								~~~
Date 07/	10/201	5 12.1	8	De	signed	hu dean	wate	on	N	licro
		0 TTD N			signed	by uean	·wats	011		rainace
FILE PRO	POSED	SIIE N	EIWORK M		ескеа к	ру				
Micro Dr	ainage	9		Ne	twork 2	2015.1				
						_				
<u>St</u>	ummary	of Cri	ltical Re	esults	by Maxı	mum Leve	el (Ra	ank I)	for Sto	orm
										Water
	US/MH		Return	Climate	First ()	X) First	(Y) Fi	rst (Z)	Overflow	v Level
PN	Name	Storm	Period	Change	Surchar	ge Flood	d Ov	verflow	Act.	(m)
1 007	011	15 51	1							01 570
1.007	SII RVD1	15 Winte	er 1	+U3 +02						21.570
12 000	S12	15 Winte	-r 1	+0%						23 991
13 000	S13	15 Winte	-r 1	+0%						24 003
12.001	S14	15 Winte	-r 1	+0%						23.854
12.002	S15	15 Winte	-r 1	+0%						23.816
12.003	S16	15 Winte	er 1	+0%						23.768
12.004	S17	15 Winte	er 1	+0%						23.684
12.005	S18	15 Winte	er 1	+0%						23.569
14.000	S20	15 Winte	er 1	+0%						23.974
14.001	S21	15 Winte	er 1	+0%						23.897
14.002	S22	15 Winte	er 1	+0%						23.751
14.003	S23	15 Winte	er 1	+0%						23.599
12.006	S19	15 Winte	er 1	+0%						22.618
15.000	S24	15 Summe	er 1	+0%						22.353
12.007	S25	15 Winte	er 1	+0%						21.423
1.009	S26	15 Winte	er 1	+0%						19.253
		2	Surcharged	l Flooded	1		Pipe			
		US/MH	Depth	Volume	Flow /	Overflow	Flow		Level	
	PN	Name	(m)	(m³)	Cap.	(l/s)	(l/s)	Status	Exceeded	1
	1 007	S11	-0 093	0 000	0 92		90 4	OK		
	1.008	BYP1	-0.103	0.000	0.88		90.5	OK		
	12.000	S12	-0.169	0.000	0.14		5.1	OK		
	13.000	S13	-0.121	0.000	0.43		15.8	OK		
	12.001	S14	-0.155	0.000	0.46		26.2	OK		
	12.002	S15	-0.148	0.000	0.51		28.2	OK		
	12.003	S16	-0.156	0.000	0.47		29.4	OK		
	12.004	S17	-0.145	0.000	0.52		33.8	OK		
	12.005	S18	-0.132	0.000	0.60		38.5	OK		
	14.000	S20	-0.176	0.000	0.11		3.9	OK		
	14.001	S21	-0.126	0.000	0.39		12.2	OK		
	14.002	S22	-0.129	0.000	0.38		14.0	OK		
	14.003	S23	-0.124	0.000	0.42		14.1	OK		
	12.006	S19	-0.099	0.000	0.78		56.7	OK		
	15.000	S24	-0.155	0.000	0.21		7.3	OK		
	12.007	S25	-0.083	0.000	0.87		59.9	OK		
	1.009	S26	-0.297	0.000	0.25		149.8	OK		

RPS Bur	ks Gr	een						Pag	re 1
Sherwoo	d Hou	se							
Sherwoo	d Ave	nue						4	~
Newark	NG24	1QQ						N/I	- Um
Date 07	/10/2	015 12:	12	Ι	Designed by	dean.wat	son		
File PR	OPOSE	D SITE	NETWORK	м (Checked by				ainage
Micro D	raina	ge		1	Jetwork 201	5.1			
	Summar	ry of Ci	ritical	Results	by Maximu	n Level (Rank 1) :	for Stor	rm
Mar	nhole H	Areal Re Ho Hot St Headloss	duction F t Start (art Level Coeff (Gl	<u>Simu</u> actor 1. mins) (mm) obal) 0.	lation Crites 000 Additic 0 MA 0 500 Flow per	<u>ria</u> onal Flow - DD Factor * Ir Person per	- % of Tota 10m³/ha S let Coeffi Day (l/pe	al Flow 0 Storage 2 .ecient 0 er/day) 0	.000 .000 .800 .000
E	'oul Se	ewage per	hectare	(l/s) 0.	000				
		Number o Number	of Input H of Onlin	Hydrograp ne Contro	ohs O Number ols O Number	of Storage of Time/Ar	Structure: ea Diagram	s 0 s 0	
		Number	of Offlir	ne Contro	ols O Number	of Real Ti	me Control:	s 0	
				Synthet	ic Rainfall D	etails			
		Rai	nfall Moo	del Lon Engli	FSR	Ratio	R 0.408		
			M5-60 (r	nm)	19.200	Cv (Summe Cv (Winte	r) 0.840		
		Margin	for Flood	d Risk Wa Analysi	arning (mm) 3 is Timesten	00.0 D' Fine Inert	VD Status	ON	
				Anarysi	DTS Status	ON ON	Ia Status	011	
			Profi	le(s)		S	ummer and 1	Winter	
		Dura	cion(s) (r	mins) 15	, 30, 60, 120	, 180, 360	, 600, 720	, 1440	
	Re	turn Per	Lod(s) (ye	ears)				30	
		CITIN	ate change	= (°)				0	
									1 7 - 4
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	water v Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)
1 000	CP1	15 Winte	vr 30	+0%	30/15 Summer				24 237
2.000	CP2	15 Winte	er 30	+0%	30/15 Summer				24.212
2.001	RET1	15 Winte	er 30	+0%	30/15 Summer				24.215
1.001	S1	15 Winte	er 30	+0%	30/15 Summer				24.219
3.000	CP3	15 Winte	er 30	+0%					24.083
4.000	CP4	15 Winte	er 30	+0%	30/15 Summer				23.979
1.002	SZ CD5	15 Winte	r = 30	+0%	30/15 Summer				23.898
5 001	53	15 Winte	r 30	+0%					23.783
6.000	CP6	15 Winte	er 30	+0%					24.040
7.000	CP7	15 Summe	er 30	+0%	30/15 Summer				24.078
1.003	S4	15 Winte	er 30	+0%	30/15 Summer				23.343
8.000	CP8	15 Summe	er 30	+0%					24.018
1.004	S5	15 Winte	er 30	+0%	30/15 Summer				23.180
9.000	CP11	15 Winte	er 30	+0%					23.739
9.001	S6	15 Winte	er 30	+0%					23.657
9.002	5 / < 2	15 Winte	r 30	+U8 +N9	30/15 Summer				22.999 22 546
10.000	CP12	15 Winte	er 30	+0%	30/15 Summer				22.343
1.006	S9	15 Winte	er 30	+0%	30/15 Summer				22.272
11.000	CP15	15 Summe	er 30	+0%	-				24.161
11.001	S10	15 Summe	er 30	+0%					22.495
				©1982-2	015 XP Sol	itions			
1									

RPS Bu	irks Gr	een							Page 2
Sherwo	od Hou	se							
Sherwo	od Ave	nue							L'
Newark	NG24	1QQ							Micco
Date 0	7/10/2	015 1	2:12	Ι	Designe	d by dea	n.wat	son	
File P	ROPOSE	D SIT	E NETWORK	м о	Checked	l by			Diamada
Micro	Draina	ge		1	Network	2015.1			
	Summar	y of	Critical H	Results	s by Ma	ximum Le	vel (Rank 1) f	or Storm
			Surcharged	Flooded	L		Pipe		
		US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
	PN	Name	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
	1.000	CP1	0.262	0.000	0.51		8.1	SURCHARGED	
	2.000	CP2	0.237	0.000	0.12		1.9	SURCHARGED	
	2.001	RET1	0.328	0.000	0.30		4.7	SURCHARGED	
	1.001	S1	0.428	0.000	1.19		20.4	SURCHARGED	
	3.000	CP3	-0.092	0.000	0.32		5.3	OK	
	4.000	CP4	0.449	0.000	1.33		39.8	SURCHARGED	
	1.002	S2	0.480	0.000	1.50		57.4	SURCHARGED	
	5.000	CP5	-0.112	0.000	0.50		15.8	OK	
	5.001	53 CP6	-0.092	0.000	0.00		24.8 12 7	OK	
	7.000	CP7	0.063	0.000	1.61		48.1	SURCHARGED	
	1.003	S4	0.165	0.000	1.36		133.0	SURCHARGED	
	8.000	CP8	-0.032	0.000	0.98		10.6	OK	
	1.004	S5	0.090	0.000	1.46		143.6	SURCHARGED	
	9.000	CP11	-0.136	0.000	0.33		11.7	OK	
	9.001	S6	-0.125	0.000	0.40		15.2	OK	
	9.002	S7	-0.076	0.000	0.75		27.8	OK	
	1.005	S8	0.682	0.000	1.41		173.7	SURCHARGED	
	10.000	CP12	0.700	0.000	0.93		31.8	SURCHARGED	
	11 000	CD15	0.545	0.000	1.82		194.6	SURCHARGED	
	11 001	S10	-0.114	0.000	0.49		14.1	OK OK	
	11.001	510	0.120	0.000	0.55		14.1	010	

RPS Burks Green		Page 3
Sherwood House		
Sherwood Avenue		L.
Newark NG24 1QQ		Micco
Date 07/10/2015 12:12	Designed by dean.watson	
File PROPOSED SITE NETWORK M	Checked by	Diamage
Micro Drainage	Network 2015.1	

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

													Water
	US/MH			Return	Climate	Firs	t (X)	First	(Y)	First	(Z)	Overflow	Level
PN	Name	5	Storm	Period	Change	Surc	harge	Floo	bd	Overf	low	Act.	(m)
1.007	S11	15	Winter	30	+0%	30/15	Summer						22.015
1.008	BYP1	15	Winter	30	+0%	30/15	Summer						21.736
12.000	S12	15	Winter	30	+0%	30/15	Summer						24.186
13.000	S13	15	Winter	30	+0%	30/15	Summer						24.251
12.001	S14	15	Winter	30	+0%	30/15	Summer						24.164
12.002	S15	15	Winter	30	+0%	30/15	Summer						24.088
12.003	S16	15	Winter	30	+0%	30/15	Summer						24.013
12.004	S17	15	Winter	30	+0%	30/15	Summer						23.923
12.005	S18	15	Winter	30	+0%	30/15	Summer						23.766
14.000	S20	15	Winter	30	+0%								24.059
14.001	S21	15	Winter	30	+0%	30/15	Summer						24.040
14.002	S22	15	Winter	30	+0%								23.862
14.003	S23	15	Winter	30	+0%								23.723
12.006	S19	15	Winter	30	+0%	30/15	Summer						23.151
15.000	S24	15	Winter	30	+0%								22.398
12.007	S25	15	Winter	30	+0%	30/15	Summer						21.818
1.009	S26	15	Winter	30	+0%								19.348

		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
1 007	011	0 252	0 000	2 00		204 0	CUDCUADCED	
1.007	DVD1	0.332	0.000	2.00		204.0	SURCHARGED	
1.008	BILI	0.213	0.000	2.00		206.0	SURCHARGED	
12.000	S12	0.026	0.000	0.31		11.5	SURCHARGED	
13.000	S13	0.127	0.000	0.97		35.4	SURCHARGED	
12.001	S14	0.155	0.000	0.94		53.5	SURCHARGED	
12.002	S15	0.124	0.000	1.02		56.5	SURCHARGED	
12.003	S16	0.089	0.000	0.96		60.4	SURCHARGED	
12.004	S17	0.094	0.000	1.09		71.1	SURCHARGED	
12.005	S18	0.065	0.000	1.28		82.8	SURCHARGED	
14.000	S20	-0.091	0.000	0.24		8.8	OK	
14.001	S21	0.017	0.000	1.05		33.0	SURCHARGED	
14.002	S22	-0.018	0.000	0.97		36.0	OK	
14.003	S23	0.000	0.000	1.03		34.7	OK	
12.006	S19	0.434	0.000	1.75		128.0	SURCHARGED	
15.000	S24	-0.110	0.000	0.52		18.0	OK	
12.007	S25	0.312	0.000	2.01		138.3	SURCHARGED	
1.009	S26	-0.202	0.000	0.58		345.0	OK	

RPS Burks	Green						Page	1
Sherwood H	louse							
Sherwood A	venue						2	~
Newark NG	24 1QQ						Mic	in the second
Date 07/10	/2015 12:1	10	1	Designed by	dean.wat	son	Dca	inado
File PROPO	SED SITE 1	NETWORK	м (Checked by			DIG	maye
Micro Drai	nage]	Network 2015	5.1			
Sum	mary of Cr	itical R	Results	s by Maximum	Level (H	Rank 1) f	or Storm	1
Manhol Foul	Areal Rec Hot Hot Sta e Headloss C Sewage per	duction Fa Start (m art Level Coeff (Glo hectare (<u>Simu</u> actor 1. ains) (mm) obal) 0. (1/s) 0.	Alation Criter 000 Additio 0 MAD 0 .500 Flow per .000	<u>ia</u> nal Flow - D Factor * In: Person per	% of Total 10m³/ha St let Coeffic Day (l/per	L Flow 0.0 corage 2.0 ecient 0.8 c/day) 0.0	000 000 000 000
	Number o Number Number	f Input Hy of Online of Offline	ydrograg e Contro e Contro	phs 0 Number o ols 0 Number o ols 0 Number o	of Storage of Time/Are of Real Tim	Structures a Diagrams e Controls	0 0 0	
	Rai	nfall Mode Regio	Synthet el on Engl	ic Rainfall De FSR and and Wales	etails Ratio Cv (Summer	R 0.408) 0.750		
		M5-60 (mr	m)	19.200	Cv (Winter) 0.840		
	Margin	for Flood	Risk Wa	arning (mm) 30	0.0 DV	D Status O	N	
			Analys	is Timestep F	'ine Inerti	a Status O	N	
				DIS SLALUS	ON			
	Durat	Profil	e(s) ins) 15	. 30. 60. 120.	Su	mmer and W 600. 720.	inter 1440	
	Durat Return Peri	Profile ion(s) (m od(s) (ye	e(s) ins) 15 ars)	, 30, 60, 120,	Su 180, 360,	mmer and W 600, 720,	inter 1440 100	
	Durat Return Peri Clima	Profil ion(s) (m od(s) (ye te Change	e(s) ins) 15 ars) (%)	, 30, 60, 120,	Su 180, 360,	mmer and W 600, 720,	inter 1440 100 20	
	Durat Return Peri Clima	Profile ion(s) (m od(s) (ye te Change	e(s) ins) 15 ars) (%)	, 30, 60, 120,	Su . 180, 360,	mmer and W 600, 720,	inter 1440 100 20	
	Durat Return Peri Clima	Profili ion(s) (m od(s) (ye te Change	e(s) ins) 15 ars) (%)	, 30, 60, 120,	Su 180, 360,	mmer and W 600, 720,	inter 1440 100 20	Water
US/I	Durat Return Peri Clima	Profil ion(s) (m od(s) (ye te Change Return C	e(s) ins) 15 ars) (%) Climate	, 30, 60, 120, First (X)	Su 180, 360, First (Y)	mmer and W 600, 720, First (Z)	inter 1440 100 20 Overflow	Water Level
US/I PN Nam	Durat Return Peri Clima MH e Storm	Profil ion(s) (m od(s) (ye te Change Return C Period (e(s) ins) 15 ars) (%) Climate Change	, 30, 60, 120, First (X) Surcharge	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m)
US/1 PN Nam 1.000 C	Durat Return Peri Clima MH e Storm 21 15 Winter	Profil ion(s) (m od(s) (ye te Change Return C Period (100	e(s) ins) 15 ars) (%) Climate Change +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136
US/1 PN Nam 1.000 C: 2.000 C: 2.001 DE	Durat Return Peri Clima MH e Storm P1 15 Winter P2 15 Winter	Profile ion(s) (m od(s) (yes te Change Return C Period (s) 100	e(s) ins) 15 ars) (%) Climate Change +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102
US/1 PN Nam 1.000 C: 2.000 C: 2.001 RE' 1.001	Durat Return Peri Clima 4H e Storm 21 15 Winter 21 15 Winter 21 15 Winter 21 15 Winter	Profil- ion(s) (m od(s) (ye- te Change Return C Period (s) 100 100	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.102
US/1 PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 C: 3.000 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 51 15 Winter 53 15 Winter	Profil ion(s) (m od(s) (yea te Change Return C Period (100 100 100	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690
US/1 PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 51 15 Winter 53 15 Winter 23 15 Winter 24 15 Winter	Profil ion(s) (m od(s) (yea te Change Return C Period (100 100 100 100 100	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 SE 3.000 C: 4.000 C: 1.002 SE	Durat Return Peri Clima MH e Storm 21 15 Winter 22 15 Winter 31 15 Winter 33 15 Winter 23 15 Winter 24 15 Winter	Profil. ion(s) (m od(s) (yeate Change Return C Period (s) 100 100 100 100 100 100 100	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 1.002 5.000 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 21 15 Winter 21 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter	Profil. ion(s) (m od(s) (ye. te Change Return C Period 0 100 100 100 100 100 100 100 100	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 1.002 5.000 C: 5.001 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter	Profil. ion(s) (m od(s) (ye. te Change Return C Period (100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.000 C: 5.001 c: 6.000 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 21 15 Winter 21 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter	Profil- ion(s) (m od(s) (ye- te Change Return C Period 0 100 100 100 100 100 100 100 100 100 1	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.000 C: 5.001 C: 5.001 C: 7.000 C: 7.000 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer	Profile ion(s) (m od(s) (yea te Change Return C Period 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 1.002 5.000 C: 5.001 6: 6.000 C: 7.000 C: 1.003 6: 9.000 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 24 15 Winter 27 25 Summer 24 15 Winter	Profil ion(s) (m od(s) (yea te Change Return C Period (s) 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.234
US/1 PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 C: 4.000 C: 4.000 C: 5.000 C: 5.001 C: 5.001 C: 5.001 C: 5.001 C: 6.000 C: 7.000 C: 1.003 C: 8.000 C: 1.004	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 34 15 Winter 27 15 Summer 35 15 Winter	Profile ion(s) (m od(s) (yea te Change Return C Period of 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084
US/1 PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.000 C: 5.001 5.000 C: 1.002 5.001 6.000 C: 1.003 8.000 C: 1.004	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 26 15 Winter 27 15 Summer 28 15 Summer 29 15 Summer 29 15 Winter	Profile ion(s) (m od(s) (yea te Change Return C Period (s) 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.764
US/1 PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.001 C: 5.001 C: 5.001 C: 5.001 C: 1.003 8.000 C: 1.004 C: 9.001 C: 9.001 C: 5.001 C: 5.000 C: 5.001 C: 5.000 C: 5.001 C:	Durat Return Peri Clima 4H e Storm 21 15 Winter 21 15 Winter 21 15 Winter 21 15 Winter 23 15 Winter 23 15 Winter 23 15 Winter 23 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 26 15 Summer 26 15 Winter 27 15 Summer 28 15 Summer 29 15 Summer 20 15 Winter 20 15 Winter 20 15 Winter 21 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter	Profil ion(s) (m od(s) (yea te Change Return C Period (s) 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.070 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.644 23.647
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.001 C: 5.001 C: 5.001 C: 5.001 C: 1.003 C: 8.000 C: 1.004 C: 9.001 C: 9.001 C:	Durat Return Peri Clima 4H e Storm Pl 15 Winter Pl 15 Wi	Profile ion(s) (m od(s) (yea te Change Return C Period C 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.644 23.647 23.460
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 1.002 5.000 C: 5.001 C: 5.001 C: 5.001 C: 1.003 C: 1.003 C: 1.004 C: 9.000 CP 9.001 CP 9.001 CP 9.001 CP 9.001 CP	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 28 15 Summer 29 15 Summer 29 15 Winter 20 15 Winter 20 15 Winter 20 15 Winter 21 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 28 15 Winter 29 15 Winter 20 15 Winter 20 15 Winter 20 15 Winter 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter	Profil- ion(s) (m od(s) (ye- te Change Return C Period O 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.644 23.647 23.460 23.336
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 28 15 Summer 29 15 Winter 29 15 Winter 20 15 Winter 20 15 Winter 20 15 Winter 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 28 15 Winter 29 15 Winter 20 15 Winter 20 15 Winter 20 15 Winter	Profil. ion(s) (m od(s) (ye. te Change Return C Period O 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.644 23.644 23.647 23.460 23.336 22.963
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.000 C: 5.001 6.000 C: 7.000 C: 1.003 8.000 C: 1.004 9.000 CP 9.001 9.002 1.005 10.000 CP 1.006 c.	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 28 15 Summer 29 15 Winter 29 15 Winter 20 15 Winter 20 15 Winter 20 15 Winter 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 26 15 Winter 27 15 Winter 28 15 Winter 29 15 Winter	Profil. ion(s) (m od(s) (ye. te Change Return C Period O 100 100 100 100 100 100 100 100 100 10	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.644 23.644 23.647 23.460 23.336 22.963 22.877
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.000 C: 5.001 C: 5.001 C: 5.001 C: 1.003 C: 1.003 C: 1.004 C: 1.004 C: 1.004 C: 1.004 C: 1.005 C: 1.005 C: 1.006 C: 1.000 C: 1.006 C: 1.000 C: 1.000 C: 1.000 C: 1.005 C: 1.000 C: 1.000 C: 1.000 C: 1.005 C: 1.000 C: 1.000 C: 1.005 C: 1.000	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 28 15 Summer 29 15 Winter 29 15 Winter 29 15 Winter 20 15 Winter 20 15 Winter 20 15 Winter 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 26 15 Winter 27 15 Winter 28 15 Winter 29 15 Winter 29 15 Winter	Profil. ion(s) (m od(s) (ye. te Change Return C Period 0 100 100 100 100 100 100 100 100 100 1	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.644 23.644 23.667 23.460 23.336 22.963 22.877 24.198
US/I PN Nam 1.000 C: 2.000 C: 2.001 RE 1.001 3.000 C: 4.000 C: 5.001 C: 5.001 C: 5.001 C: 5.001 C: 1.003 C: 1.003 C: 1.004 C: 1.004 C: 1.004 C: 1.004 C: 1.005 C: 1.006 C: 11.000 C: 11.001 S: 11.001 S	Durat Return Peri Clima 4H e Storm 21 15 Winter 22 15 Winter 23 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 25 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 28 15 Summer 29 15 Winter 29 15 Winter 29 15 Winter 20 15 Winter 20 15 Winter 20 15 Winter 21 15 Winter 22 15 Winter 23 15 Winter 24 15 Winter 25 15 Winter 26 15 Winter 27 15 Summer 27 15 Winter 28 15 Winter 29 15 Winter 20 15 Summer 20 15 Summer	Profil- ion(s) (m od(s) (ye- te Change Return C Period 0 100 100 100 100 100 100 100 100 100 1	e(s) ins) 15 ars) (%) Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	<pre>, 30, 60, 120, First (X) Surcharge 100/15 Summer 100/15 Summer</pre>	Su 180, 360, First (Y) Flood	mmer and W 600, 720, First (Z) Overflow	inter 1440 100 20 Overflow Act.	Water Level (m) 25.136 25.097 25.102 25.109 24.690 24.690 24.816 24.670 24.116 24.049 24.066 24.239 23.880 24.084 23.644 23.644 23.644 23.644 23.644 23.336 22.963 22.963 22.877 24.198 22.525

RPS Burks Gr	een							Page 2
Sherwood Hou	se							
Sherwood Ave	nue							L.
Newark NG24	1QQ							Micco
Date 07/10/2	015 1	2:10	1	Designe	d by dea	ın.wat	son	
File PROPOSE	D SITI	E NETWORK	М	Checked	by			Diamage
Micro Draina	ge		1	Network	2015.1			
Summar	y of	Critical 1	Results	s by Ma	ximum Le	vel (Rank 1) f	or Storm
		Surcharged	Flooded	1		Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow	.	Level
PN	Name	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
1.000	CP1	1.161	0.000	0.70		11.3	FLOOD RISK	
2.000	CP2	1.122	0.000	0.27		4.2	FLOOD RISK	
2.001	RET1	1.215	0.000	0.54		8.4	FLOOD RISK	
3.000	CP3	0.515	0.000	0.45		27.6	SURCHARGED	
4.000	CP4	1.286	0.000	1.97		59.0	FLOOD RISK	
1.002	S2	1.252	0.000	1.84		70.5	SURCHARGED	
5.000	CP5	0.191	0.000	0.93		29.3	SURCHARGED	
5.001	CP6	0.1/4	0.000	0.96		36.8 19.8	SURCHARGED	
7.000	CP7	0.224	0.000	2.48		74.1	SURCHARGED	
1.003	S4	0.702	0.000	1.82		178.2	SURCHARGED	
8.000	CP8	0.034	0.000) 1.53		16.6	SURCHARGED	
1.004	CD11	0.554	0.000) 1.90		187.0	SURCHARGED	
9.000	S6	-0.095	0.000	0.62		23.6	OK	
9.002	S7	0.385	0.000) 1.11		41.3	SURCHARGED	
1.005	S8	1.472	0.000	1.82		224.9	SURCHARGED	
10.000	CP12	1.320	0.000	1.44		48.9	SURCHARGED	
11.000	CP15	-0.077	0.000	0.76		22.0	OK	
11.001	S10	-0.098	0.000	0.61		22.0	OK	

RPS Burks Green		Page 3
Sherwood House		
Sherwood Avenue		L.
Newark NG24 1QQ		Micco
Date 07/10/2015 12:10	Designed by dean.watson	
File PROPOSED SITE NETWORK M	Checked by	Diamage
Micro Drainage	Network 2015.1	

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

	US/MH			Return	Climate	First	= (X)	First	(Y)	First	(Z)	Overflow	Water Level
PN	Name	5	Storm	Period	Change	Surcl	narge	Floo	bd	Overf	low	Act.	(m)
1.007	S11	15	Winter	100	+20%	100/15	Summer						22.435
1.008	BYP1	15	Winter	100	+20%	100/15	Summer						21.947
12.000	S12	15	Winter	100	+20%	100/15	Summer						24.831
13.000	S13	15	Winter	100	+20%	100/15	Summer						24.990
12.001	S14	15	Winter	100	+20%	100/15	Summer						24.800
12.002	S15	15	Winter	100	+20%	100/15	Summer						24.722
12.003	S16	15	Winter	100	+20%	100/15	Summer						24.634
12.004	S17	15	Winter	100	+20%	100/15	Summer						24.474
12.005	S18	15	Winter	100	+20%	100/15	Summer						24.172
14.000	S20	15	Winter	100	+20%	100/15	Summer						24.459
14.001	S21	15	Winter	100	+20%	100/15	Summer						24.434
14.002	S22	15	Winter	100	+20%	100/15	Summer						24.171
14.003	S23	15	Winter	100	+20%	100/15	Summer						23.915
12.006	S19	15	Winter	100	+20%	100/15	Summer						23.787
15.000	S24	15	Winter	100	+20%								22.436
12.007	S25	15	Winter	100	+20%	100/15	Summer						22.214
1.009	S26	15	Winter	100	+20%								19.401

		Surcharged	Flooded			Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Flow		Level
PN	Name	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
1.007	S11	0.772	0.000	2.76		272.0	SURCHARGED	
1.008	BYP1	0.424	0.000	2.64		272.9	SURCHARGED	
12.000	S12	0.671	0.000	0.36		13.3	SURCHARGED	
13.000	S13	0.866	0.000	1.31		47.5	SURCHARGED	
12.001	S14	0.791	0.000	1.42		80.8	SURCHARGED	
12.002	S15	0.758	0.000	1.53		84.9	SURCHARGED	
12.003	S16	0.710	0.000	1.39		87.9	SURCHARGED	
12.004	S17	0.645	0.000	1.58		102.7	SURCHARGED	
12.005	S18	0.471	0.000	1.83		118.3	SURCHARGED	
14.000	S20	0.309	0.000	0.32		11.8	SURCHARGED	
14.001	S21	0.411	0.000	1.46		45.9	SURCHARGED	
14.002	S22	0.291	0.000	1.38		51.5	SURCHARGED	
14.003	S23	0.192	0.000	1.46		49.0	SURCHARGED	
12.006	S19	1.070	0.000	2.46		180.1	SURCHARGED	
15.000	S24	-0.072	0.000	0.80		28.0	OK	
12.007	S25	0.708	0.000	2.78		191.6	SURCHARGED	
1.009	S26	-0.149	0.000	0.78		462.9	OK	

rpsgroup.com/uk

Annex 8.A.3: AD Bund Wall Height Calculations

rpsgroup.com/uk

()

Calculation Sheet

Page of 4 lob No: Project Ref: Drawing Ref: RENESCIONCE, NORTHWICH MK018157 PUINT BUND CAPACITY Subject: AD Date: Date: Checked by: By: 29/09/15 SPT IS GB SW Calculations Output TANK SCHEDULE :-No. OFF TOTAL VOLUME DIGESTER TANK 6,000m 24,000m³ 4 (LIQUID ONLY) 5,100 m³ (20, 400m³ 4 · POST DIGESTER TANK Z, SOOM³ 5,000~3 2 MAX. 85% (LIQUID ONLY) 2,125 m3 $(4, 225m^3)$ 2 • FEED TANK 1,200 m 3 Z,400m³ 2 MAX 85% (LIQUID onus) 1,020 m3 $(2,040m^{3})$ 2 BIOLIQUID 500m³ 500 m RESIDUAL TANK 1 Max 85% (LIQUID only) 425m3 425 m³ TOTAL TANK VOULDE (maximum) $= 31,900 \,\mathrm{m}^3$ TOTAL TANK VOLUME (LIQUID FRACTION ONLY) = (27,090 m) BUND CONTRIMENT: 110 % OF UTRGEST TANK @ 5, 100 m = 5, 610 m 25 % OF TOTAL GRAVP @ 27,090 m = 6,773 m <or

rpsgroup.com

Calculation Sheet

Page 2 of 4 Job No: Project Ref: Drawing Ref: NK018157 PUTT BUND CAPACITY Subject: AD Date: SEPT IS Checked by: Date: By: GB Output OPTION 1 - 110% OF LARGEST TANK. (DIGESTOR TANK) MAX. CONTRINMENT = 5610 m RETURNED. TOTAL PLAN AREA OF A.D TAMES IN BUND :- $D.T = 804 m^2 \times 4 = 3216 m^2$ $D \cdot T = 804 m \times 4$ $A \cdot D \cdot T = 491 m^{2} \times 2 = 982 m^{2}$ $F \cdot T = 133 m^{2} \times 2 = 266 m^{2}$ $C \cdot T = 64 m^{2} \times 1 = \frac{64 m^{2}}{4528 m}$ TOTAL PUN AREA OF OTHER STRUCTURES IN AD BUND = 267m TOTAL PUL AREA OF A.D BUND = 8,851 m2 MAXIMUM AREA OF FREE STURAGE = 8,851m2 LEJE ALL AD TANKS, (-4528 ~2), LESS OTHER SHURINAES (-267 m2) ADD ANDA OF TANK SUBJEGT TO $FAIWle^{*}(+804m^{2}) = 4,860m^{2}$. * WATER/LIQUE STORAGE HEIGHT IS 6:34 IN TAME WARR FALL CONDITIONS, THEREFORE THIS AREA CONFRIBUTES TO WARDS TOTAL BIND ANEA FOR STORAGE. $m_{\rm IN}$ Bund $m_{\rm M}$ HT = $\frac{5610}{4860}$ = 1.15 m ALLON FOR 100 m ~ FREEDOARD . BUND WALL MEIGHT NEQUIRED = 1.25 on

Calculation Sheet

Page **3** of **U** Job No: Project Ref: Drawing Ref: NK018157 AD PLANT BUND CAPACITY Subject: By: Date: SEPT 15 Checked by: Date: G Output OPTION 2 - 25% OF TOTAL TAKK VOL. MXXX. CONTRIMMENT = 6,773 m OFRIRED AS, OPTION / TOTAL PLAN AMOA OF AD TAMES IN Bund = 4528 mTOTAL PLAN AMERA OF OTHER SNEW CHINES = 267~ TOTAL PUT AREA OF AD BUND = 8851 ~2. MAXIMUM ANEA OF FREE STURAGE = 8851 - 4,528 - 267 - 267 + TANK ANDA SUBJECT TOFAILINE * AS ONLY COMPLETE TANKS GAN FAIL (UP TO 25%) Consider $1 \times DT = 804m^2$, $2 \times FT = 266m^2$ pws $1 \times CT = 64m^2 = 1134m^2 (25.0\%).$ MAX. WATER LAVEL IN EACH ANE 6.34 m, 7.88 m, 6.68 m RESPECTIVELY ... Can CONTRIBUTE USCABLE AREA. MAX. FREE STURAGE = 8851 - 4528 - 267 + 1134 $= 5190 m^2$ $m_{\rm IN}$ Bund WALL HT = $\frac{6773}{5190} = 1.305 \, {\rm m}$ ALLOW FOR 100 mm MIN FREED OARD ... BUNP WALL HETGHT NEWIRED = 1.450m

rpsgroup.com

 (\cdot)

Calculation Sheet

Page 4 of ¥ Drawing Ref: Project Ref: Job No: N-018157 AD PUTNT BUND CAPACITY Subject: Date: REPT IS Date: Checked by: By: GS Calculations AD TANK BUND TO ALLOW FOR ADDITIONAL VOLUME OF RANNATER RUNOFF CONTAINMENT IN ADDITION, TO ACCIDENTAL SPILLAGE USING MICHODRAINAGE SOURCE CONTRAL, MAMMUM ATTONNATION VOLUME FOR RAINFAUL IS 1012 m DERIVED FROM I IN 100 YEAR STURM EVENT (10080 minus Duramon) RUS CLIMATE CHANGE @ 20 1/4. FROM PREMOUS CALCULATIONS, OPTION 2 SEEMARIO IS MOST SIGNIFICAT. THEREFORE ONORM EMORGONEY AND FLOOD AMENUATION STURAGE IN AD BUND IS :- $6773 m^{3} + 1012 m^{3} = 1.500 m$ 5190 m ALLOWING 100mm FREEBOARD, MAX. BUND WALL HEIGHT = 1.500 + 0.100 = 1.600m

KPS BURKS Green							Page 1
Sherwood House							<u>ر</u>
Sherwood Avenue							K .
Newark NG24 100							1 All
D_{2} to 21/09/2015 0	0.31	Docian	od by	aorde	on harr	and	MICIO
Date 21/09/2010 0	2.J4	Design	eu by	yorud	JII. Dali	iaru	Drainagr
File AD Tank Bund	Rainfall	Checke	d by				
Micro Drainage		Source	Cont	rol 20	014.1		
Summary	of Results f	or 100	year	Return	n Perio	od (+20%)	1
	`						
	Outflow is too	low. Des:	ign is	unsatis	factory.		
	Storm	Max Torrol	Max	Max	Status		
	Event	(m)	(ຫ)	(m ³)			
		()	()	()			
	15 min Summ	er 23.521	0.021	189.2	ОК		
	30 min Summ	er 23.528	0.028	247.8	OK		
	oU min Summ	er 23.535	0.035	309.3			
	180 min Summ	er 23.542	0,042	411.7	0 K		
	240 min Summ	er 23.550	0.050	438.8	O K		
	360 min Summ	er 23.554	0.054	476.9	ОК		
	480 min Summ	er 23.557	0.057	506.3	ОК		
	600 min Summ	er 23.560	0.060	530.0	ОК		
	720 min Summ	er 23.562	0.062	549.9	ОК		
	960 min Summ	er 23.566	0.066	582.4	ОК		
	1440 min Summ	er 23.571	0.071	630.6			
	2880 min Summ	er 23.577	0.077	719 8	OK		
	4320 min Summ	er 23.588	0.088	776.1	O K		
	5760 min Summ	er 23.592	0.092	817.9	ОК		
	7200 min Summ	er 23.596	0.096	851.5	ОК		
	8640 min Summ	er 23.599	0.099	879.6	ОК		
	10080 min Summ	er 23.602	0.102	903.9	ОК		
	15 Min Winte 30 min Winte	Pr 23.524	0.024	211.9	OK		
		201001	0.001	277.0	•		
•							
	Storm	Rain	Floo	ded Tim	e-Peak		
	Event	(mm/hr) Volu	ume (r	ains)		
			(m²	3)			
	15 min Summ	ar 11/ 00	1	0.0	27		
	30 min Summ	r 74.66	- 7	0.0	42		
	60 min Summ	- 16 60					
		ler 40.00	1	0.0	72		
	120 min Summ	er 48.80 er 28.13	1 1	0.0 0.0	72 132		
	120 min Summ 180 min Summ	er 28.13 er 20.67	1 1 6	0.0 0.0 0.0	72 132 192		
	120 min Summ 180 min Summ 240 min Summ	er 28.13 er 20.67 er 16.52	1 1 6 8	0.0 0.0 0.0 0.0	72 132 192 252		
	120 min Summ 120 min Summ 240 min Summ 360 min Summ	er 28.13 er 20.67 er 16.52 er 11.97	1 1 6 8 5	0.0 0.0 0.0 0.0 0.0	72 132 192 252 372		
	120 min Summ 120 min Summ 240 min Summ 360 min Summ 480 min Summ 600 min Summ	er 28.13 er 20.67 er 16.52 er 11.97 er 9.53	1 1 6 8 5 5 4	0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612		
	120 min Summ 120 min Summ 240 min Summ 360 min Summ 480 min Summ 600 min Summ 720 min Summ	er 48.80 er 28.13 er 20.67 er 16.52 er 11.97 er 9.53 er 7.98 er 6.90	1 6 8 5 5 4 4	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732		
	120 min Summ 120 min Summ 240 min Summ 360 min Summ 480 min Summ 600 min Summ 720 min Summ 960 min Summ	ler 46.60 ler 28.13 ler 20.67 ler 16.52 ler 11.97 ler 9.53 ler 7.98 ler 6.90 ler 5.48	1 1 6 8 5 5 4 4 4 4	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732 972		
	120 min Summ 120 min Summ 240 min Summ 360 min Summ 480 min Summ 600 min Summ 720 min Summ 960 min Summ 1440 min Summ	ler 46.60 ler 28.13 ler 20.67 ler 16.52 ler 11.97 ler 9.53 ler 7.98 ler 6.90 ler 5.48 er 3.95	1 1 6 5 5 4 4 4 9	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732 972 1452		
	120 min Summ 120 min Summ 240 min Summ 360 min Summ 480 min Summ 600 min Summ 720 min Summ 960 min Summ 1440 min Summ	ler 46.60 ler 28.13 ler 20.67 ler 16.52 ler 11.97 ler 9.53 ler 7.98 ler 6.90 ler 5.48 ler 3.95 ler 2.85	1 1 6 5 5 4 4 4 9 3	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732 972 1452 2172		•
	120 min Summ 120 min Summ 180 min Summ 240 min Summ 360 min Summ 480 min Summ 600 min Summ 720 min Summ 960 min Summ 1440 min Summ 2160 min Summ	er 28.13 er 20.67 er 16.52 er 11.97 er 9.53 er 7.98 er 6.90 er 5.48 er 3.95 er 2.85 er 2.25	1 1 6 8 5 5 4 4 4 9 3 9	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732 972 1452 2172 2892		. · ·
	120 min Summ 120 min Summ 180 min Summ 240 min Summ 360 min Summ 480 min Summ 720 min Summ 960 min Summ 1440 min Summ 2160 min Summ 2880 min Summ	der 46.60 der 28.13 der 20.67 ler 16.52 der 11.97 der 9.53 der 7.98 der 6.90 der 5.48 der 3.95 der 2.85 der 2.25 der 1.62	1 1 6 8 5 5 4 4 4 9 9 3 9 4	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732 972 1452 2172 2892 4332		
	120minSumm120minSumm180minSumm240minSumm360minSumm480minSumm720minSumm960minSumm1440minSumm2160minSumm2880minSumm4320minSumm7760minSumm	46.60 wer 28.13 wer 20.67 ver 16.52 wer 11.97 wer 9.53 wer 7.98 wer 6.90 wer 5.48 wer 3.95 wer 2.85 wer 1.62 wer 1.62	1 1 6 8 5 5 5 4 4 4 9 3 9 4 4 9	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732 972 1452 2172 2892 4332 5776 7216		
	100minSumm120minSumm180minSumm240minSumm360minSumm480minSumm720minSumm960minSumm1440minSumm2160minSumm2880minSumm5760minSumm7200minSumm7200minSumm	46.60 wer 28.13 wer 20.67 wer 16.52 wer 16.52 wer 11.97 wer 9.53 wer 7.98 wer 6.90 wer 5.48 wer 2.85 wer 1.62 wer 1.62 wer 1.28 wer 1.28 wer 1.06 wer 0.92	1 1 6 8 5 5 5 4 4 4 9 9 4 4 9 9 4 4 9 9		72 132 192 252 372 492 612 732 972 1452 2172 2892 4332 5776 7216 8656	 	
	120 min Summ 120 min Summ 180 min Summ 240 min Summ 360 min Summ 360 min Summ 360 min Summ 480 min Summ 600 min Summ 960 min Summ 960 min Summ 2160 min Summ 2880 min Summ 3760 min Summ 7200 min Summ 8640 min Summ 10080 min Summ	40.60 wer 28.13 wer 20.67 wer 16.52 wer 16.52 wer 11.97 wer 9.53 wer 7.98 wer 6.90 wer 5.48 wer 2.85 wer 1.62 wer 1.62 wer 1.28 wer 1.06 wer 0.92 wer 0.81	1 1 6 8 5 5 5 4 4 4 9 9 4 4 9 9 4 4 9 9 4 4 9 9 9 4 4 9 9 9 4 4 9		72 132 192 252 372 492 612 732 972 1452 2172 2892 4332 5776 7216 8656 10096		
· · · · · · · · · · · · · · · · · · ·	120minSumm120minSumm240minSumm360minSumm480minSumm600minSumm720minSumm960minSumm1440minSumm2160minSumm280minSumm5760minSumm7200minSumm5760minSumm8640minSumm10080minSumm15minWint	40.80 eer 28.13 eer 20.67 eer 16.52 eer 11.97 eer 9.53 eer 7.98 eer 6.90 eer 5.48 eer 2.85 eer 1.62 eer 1.62 eer 1.28 eer 0.92 eer 0.81 eer 114.02	1 1 6 8 5 5 5 4 4 9 9 4 4 9 9 4 4 9 9 9 4 4 9 9 9 9		72 132 192 252 372 492 612 732 972 1452 2172 2892 4332 5776 7216 8656 10096 27		•
	120minSumm120minSumm180minSumm240minSumm360minSumm480minSumm720minSumm960minSumm1440minSumm2160minSumm2800minSumm5760minSumm7200minSumm5760minSumm8640minSumm10080minSumm15minWint30minWint	48.80 eer 28.13 eer 20.67 eer 16.52 eer 11.97 eer 9.53 eer 7.98 eer 6.90 eer 5.48 eer 2.85 eer 1.62 eer 1.62 eer 1.62 eer 1.62 eer 1.06 eer 0.92 eer 0.81 eer 114.02 eer 74.66	1 1 6 8 5 5 4 4 4 9 9 4 4 9 9 4 4 9 9 1 0 0 1 0 0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	72 132 192 252 372 492 612 732 972 1452 2172 2892 4332 5776 7216 8656 10096 27 42		

RPS Burks Green		Page 2
Sherwood House		
Sherwood Avenue		
Newark NG24 1QQ		VER
Date 21/09/2015 09:34	Designed by gordon.barnard	Daipago
File AD Tank Bund Rainfall	Checked by	Diginarie
Micro Drainage	Source Control 2014.1	· · · · · · · · · · · · · · · · · · ·

Summary of Results for 100 year Return Period (+20%)

	Stor Ever	rm it	Max Level (m)	Max Depth (m)	Max Volume (m³)	Status
60	min	Winter	23.539	0.039	346.4	ОК
120	min	Winter	23.547	0.047	418.2	ОК
180	min	Winter	23.552	0.052	461.1	ОК
240	min	Winter	23.556	0.056	491.5	οĸ
360	min	Winter	23.560	0.060	534.2	ОК
480	min	Winter	23.564	0.064	567.1	ОК
600	min	Winter	23.567	0.067	593.6	ОК
720	min	Winter	23.570	0.070	615.9	OK
960	min	Winter	23.574	0.074	652.3	ОК
1440	min	Winter	23.580	0.080	706.3	ОК
2160	min	Winter	23.586	0.086	763.5	ОК
2880	min	Winter	23.591	0.091	806.2	ОК
4320	min	Winter	23.598	0.098	869.2	ОК
5760	min	Winter	23.604	0.104	916.1	ОК
7200	min	Winter	23.608	0.108	953.7	ОК
8640	min	Winter	23.611	0.111	985.2	ОК
10080	min	Winter	23.614	0.114	1012.4	<u>ok</u>

	Stor Ever	rm it	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
60	min	Winter	46.601	0.0	72
120	min	Winter	28.131	0.0	132
180	min	Winter	20.676	0.0	192
240	min	Winter	16.528	0.0	252
360	min	Winter	11.975	0.0	372
480	min	Winter	9.535	0.0	492
600	min	Winter	7.984	0.0	612
720	min	Winter	6.904	0.0	732
960	min	Winter	5.484	0.0	972
1440	min	Winter	3.959	0.0	1452
2160	min	Winter	2.853	0.0	2172
2880	min	Winter	2.259	0.0	2892
4320	min	Winter	1.624	0.0	4332
5760	min	Winter	1.284	0.0	5776
7200	min	Winter	1.069	0.0	7216
8640	min	Winter	0.920	0.0	8656
10080	min	Winter	0.811	0.0	10096

Annex 8.A.4: Bioreactor Bund Wall Height Calculations

rpsgroup.com/uk



Calculation Sheet

Page of 2 Project Ref: PONESCIENCE, NORTHWICH ob No: Drawing Ref: MO18157 BIOREACTOR BUND CAPACITY Subject: Date: 29 09 15 Date: Checked by: SEPT 15 By: 66 0w Ref Calculations Output BIORRACTUR WIT MAS SINGLE CAPACITY OF 270m (UQUD CAPACITY) CONTRINMENT BUNG MAS ZNO. BIOREA OTOR UNITS. TANK VOUME (MATMUM) = $270m^3 \times 2 = 540m^3$ BUND CONTRINMENT : 110% OF LARGEST SINGLE MARKE @ 270m = 297m 3 OF TOTAL GRAP @ 540 m 3 = 135m 25% OR CONSIDER FAILURE OF SINGLE BIOREAODR DANC. TITME PLAN AREA OF BUND = 17.5m + 39m = 683m PUTN AREA OF TANK SUPPORT PUNTIS = Smx1.5m x 16No. 2 120 m² MAXMUM AVERA OF FREE STORAGE = 683-170 = 563m BIND TO ANON FOR ADDITIONAL VOLUME OF RETIREAL consistingent in APDITION TO ACCIDENTIAL SALLAGES. MICRO DRAINAGE SOURCE CONROL COLUMNAN FOR



()

 \bigcirc

Calculation Sheet

						Page Z	of Z
Job No:	NC01875-	7	Project Ref:				Drawing Ref:
Subject:	BIOM	EACTOR	BUNG) CAPACI	тY		
^{By:} G	a B	C	Date: SEPT		ecked by:		Date:
				•			
Ref				Calculations			Output
) YEAA	STUR	n Event	(+ zo %	LUMATE	EFATURS)
							Ø 2 3
	UNDER	100 87	צהוח (DURTION	/ (7 A	A7S =	81-2m
							~
	101AL	STORAGE	; VoUk	ne = _	297 -	t 81.2 m	- = 378.2
	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·				
	. Bi	no WA	U MA	GMT REQUI	160 = 3 7	78·2	0.672m.
						>0.3	
	Arcon	MNG	100~~~	FUEBo	ARD mi	NIMM,	
	mar	Brow	wm	MEIGHT	= 0.672	+ 0 · 100	~ 0. 800.
				· · · · · · · · · · · · · · · · · · ·			
							······································
				·····		· · · · · · · · · · · · · · · · · · ·	
) 			

Sherwood House Sherwood Avenue Newark NG24 1QQ Date 21/09/2015 10:24 File AD Tank Bund Rainfall Checked by Micro Drainage Source Control 2014. Summary of Results for 100 year Return Pe Outflow is too low. Design is unsatisfact Storm Max Max Max Sta Event Level Depth Volume (m) (m) (m ³) 15 min Summer 24.522 0.022 15.2 30 min Summer 24.535 0.035 24.8 (a) (m) (m ³) 15 min Summer 24.532 120 min Summer 24.543 0.041 180 min Summer 24.543 0.035 240 min Summer 24.543 0.047 33.0 (180 min Summer 24.555 240 min Summer 24.556 0.058 480 min Summer 24.561 0.061 240 min Summer 24.561 0.061 270 min Summer 24.562 0.062 270 min Summer 24.562 0.082 280 min Summer 24.562 0.082 280 min Summer 24.594 0.094 2860 min Summer 24.604 0.0101 2860 min Summer 24.604 0.0104 <t< th=""><th>varnard 1 eriod (+20%) bry. cus</th></t<>	varnard 1 eriod (+20%) bry. cus
Sherwood Avenue Newark NG24 1QQ Date 21/09/2015 10:24 Designed by gordon.t File AD Tank Bund Rainfall Checked by Micro Drainage Source Control 2014. Summary of Results for 100 year Return Pe Outflow is too low. Design is unsatisfact Storm Max Max Max Star Event Level Depth Volume (m) (m) (m ⁻¹) 15 min Summer 24.522 0.022 15.2 (model) 30 min Summer 24.532 0.025 19.9 (model) 0.035 24.8 (model) 60 min Summer 24.535 0.035 24.8 (model) 120 min Summer 24.535 0.035 24.8 (model) 120 min Summer 24.550 0.055 38.3 (model) 130 min Summer 24.550 0.055 38.3 (model) 130 min Summer 24.550 0.055 38.3 (model) 360 min Summer 24.556 0.055 38.3 (model) 140 min Summer 24.561 0.061 42.5 (model) 140 min Summer 24.562 0.062 57.7 (model) 1440 min Summer 24.572 0.072 50.6 (model) 2160 min Summer 24.572 0.072 50.6 (model) 1420 min Summer 24.572 0.073 50.6 (model) 1420 min Summer 24.572 0.073 50.6 (model) 1420 min Summer 24.572 0.074 50.0 (model) 1560 min Summer 24.572 0.075 50.6 (model) 1420 min Summer 24.572 0.075 50.6 (model) 166 (model) 1420 min Summer 24.572 0.076 54.7 (model) 166 (model) 1420 min Summer 24.578 0.07	varnard 1 eriod (+20%) bry. cus
Newark NG24 1QQ Date 21/09/2015 10:24 Designed by gordon.k File AD Tank Bund Rainfall Checked by Micro Drainage Source Control 2014. Source Control 2014. Summary of Results for 100 year Return Pe Outflow is too low. Design is unsatisfact Storm Max Max Max Sta Event Level Depth Volume (m) (m) (m ³) 15 min Summer 24.522 0.022 15.2 30 min Summer 24.522 0.022 15.2 Go min Summer 24.522 0.022 15.2 Go min Summer 24.528 0.028 19.9 Go min Summer 24.528 0.028 19.9 Go min Summer 24.528 0.028 19.9 Go min Summer 24.543 0.043 30.0 120 min Summer 24.543 0.043 30.0 24.50 min Summer 24.543 0.058 40.6 Add min Summer 24.558 0.058 40.6 Add min Summer 24.558 0.058 40.6 Add min Summer 24.558 0.063 44.1 Colspan="2">Colspan="2">Add min Summer 24.558 0.063 44.1 Add min Summer 24.558 0.063 44.1 Colspan="2"Add min Summer	Micro Drainage 1 miod (+20%) ory.
Date 21/09/2015 10:24 Designed by gordon.r File AD Tank Bund Rainfall Checked by Micro Drainage Source Control 2014. Source Control 2014. Source Control 2014. Summary of Results for 100 year Return Performance Outflow is too low. Design is unsatisfact Storm Max Max Max Star Event Level Depth Volume (m) (m) (m ³) 15 min Summer 24.522 0.022 15.2 (m) (m ³) 15 min Summer 24.522 0.022 15.2 (m) (m ³) 15 min Summer 24.522 0.022 15.2 (m) (m ³) 15 min Summer 24.522 0.022 15.2 (m) (m ³) 15 min Summer 24.522 0.022 15.2 (m) (m ³) 15 min Summer 24.522 0.022 15.2 (m) (m ³) 15 min Summer 24.522 0.022 15.2 (m) (m ³) 15 min Summer 24.528 0.028 19.9 (m) (m ³) 15 min Summer 24.528 0.028 19.9 (m) (m ³) 15 min Summer 24.528 0.028 19.9 (m) (m) (m ³) 10 min Summer 24.558 0.055 38.3 (m) (m) (m) (m ³) 10 min Summer 24.558 0.058 40.6 (m) (m) (m) (m) (m) (m) (m) Summer 24.558 0.058 40.6 (m) (m) Summer 24.558 0.058 40.6 (m) (m) Summer 24.558 0.058 40.6 (m) (m) Summer 24.559 0.059 62.3 (m) (m) Summer 24.559 0.059 62.3 (m) (m)	Micro Drainage 1 rriod (+20%) ory.
Date 21/09/2013 10:24 Designed by gordon.r File AD Tank Bund Rainfall Checked by Micro Drainage Source Control 2014. Summary of Results for 100 year Return Pe Outflow is too low. Design is unsatisfact Storm Max Max Max Max Sta Event Level Depth Volume (m) (m) 15 min Summer 24.522 0.022 15.2 30 min Summer 24.528 0.028 19.9 60 min Summer 24.528 0.035 24.8 120 min Summer 24.543 0.043 30.0 240 min Summer 24.553 0.055 38.3 480 min Summer 24.558 0.056 35.2 360 min Summer 24.558 0.056 40.6 600 min Summer 24.558 0.056 40.1 2160 min Summer 24.558 0.063 44.1 960 min Summer 24.567 0.067 46.7 2160 min Summer 24.589 0.082 57.7 2280 min Summer 24.589 0.082 55.6 7200 min Summer 24.590 0.094 65.6 7200 min Summer 24.590 0.098 68.3 6840 min Summer 24.591 0.011 70.6 7200 min Summer 24.502 0.022 22.3 6840 min Summer 24.503 0.032 22.3 7200 min	Drainard 1 ariod (+20%) pry. cus
Micro Drainage Source Control 2014. Summary of Results for 100 year Return Pe Outflow is too low. Design is unsatisfact Storm Max Max Max Star Outflow is too low. Design is unsatisfact Storm Max Max Max Star Outflow is too low. Design is unsatisfact Storm Max Max Max Star Is min Summer 24.522 Outflow is too low. Design is unsatisfact Storm Max Max Max Star Is min Summer 24.522 0.022 15.2 Gammary of Results Gammary of Results Max Max Max Max Star 15 min Summer 24.522 0.022 15.2 0.030 15.2 0.030 15.2 0.030 0.041	1 eriod (+20%) pry.
Micro Drainage Source Control 2014. Summary of Results for 100 year Return Pe Outflow is too low. Design is unsatisfact Storm Max Max Max Star Event Level Depth Volume (m) (m) (m) 15 min Summer 24.522 0.022 15.2 0 0 30 min Summer 24.528 0.022 15.2 0 0 10 min Summer 24.528 0.022 15.2 0 0 10 min Summer 24.528 0.022 15.2 0 0 10 min Summer 24.528 0.022 15.2 0 0 0 120 min Summer 24.528 0.035 24.8 0 0 0 0 240 min Summer 24.550 0.055 38.3 0 0 0 0 0 0 360 min Summer 24.550 0.055 38.3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 priod (+20%) pry. cus
Summary of Results for 100 year Return Perform Outflow is too low. Design is unsatisfact Storm Max Max Max Star Event Max Max Max Star Star 15 min Summer 24.522 0.022 15.2 0.035 24.8 0.028 19.9 0.035 24.8 0.028 19.9 0.035 24.8 0.043 30.0 0.058 40.6 0.060 180 min Summer 24.555 0.055 38.3 0.044 10.0 10.0 10.0 10.0 10.0 <	eriod (+20%) pry. cus
Outflow is too low. Design is unsatisfact Storm Max Max Max Star Star Event Level Depth Volume (m) (m) (m) 15 min Summer 24.522 0.022 15.2 0.30 0.01 (m) (m) (m) 15 min Summer 24.522 0.022 15.2 0.30 0.01 (m) (m) (m) 10 min Summer 24.528 0.028 19.9 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.028 19.9 0.01 0.01 0.028 19.9 0.01 0.01 0.01 0.01 0.01 0.028 19.9 0.01 0.028 19.9 0.01	cus
Storm Max Max Max Max Max Star Event Level Depth Volume (m ³) 15 min Summer 24.522 0.022 15.2 0.035 30 min Summer 24.528 0.028 19.9 0.060 60 min Summer 24.535 0.035 24.8 0.021 120 min Summer 24.543 0.043 30.0 0.021 180 min Summer 24.543 0.043 30.0 0.024 240 min Summer 24.553 0.050 35.2 0.035 360 min Summer 24.555 0.055 38.3 0.038 480 min Summer 24.551 0.061 42.5 0.038 40.6 0.036 960 min Summer 24.561 0.061 442.5 0.046.7 0.046.7 0.046.7 0.046.7 0.046.7 0.046.7 0.046.7 0.046.7 0.046.7 0.046.6 0.046.7 0.046.7	tus
15 min Summer 24.522 0.022 15.2 30 min Summer 24.528 0.028 19.9 60 min Summer 24.528 0.035 24.8 120 min Summer 24.535 0.035 24.8 120 min Summer 24.543 0.043 30.0 240 min Summer 24.557 0.047 33.0 240 min Summer 24.555 0.055 38.3 360 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.067 46.7 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 960 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.082 57.7 4320 min Summer 24.589 0.082 57.7 4320 min Summer 24.594 0.094 65.6 7200 min Summer 24.594 0.024 17.0 30 min Winter 24.532 0.032 22.3 30 min Winter 24.532 0.032 <td< td=""><td></td></td<>	
15 min Summer 24.522 0.022 15.2 30 min Summer 24.528 0.028 19.9 60 min Summer 24.535 0.035 24.8 120 min Summer 24.536 0.043 30.0 180 min Summer 24.547 0.047 33.0 240 min Summer 24.550 0.055 38.3 240 min Summer 24.555 0.055 38.3 240 min Summer 24.556 0.058 40.6 600 min Summer 24.558 0.063 44.1 960 min Summer 24.561 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 960 min Summer 24.578 0.078 54.7 1440 min Summer 24.578 0.078 54.7 2800 min Summer 24.578 0.078 54.7 2800 min Summer 24.582 0.082 57.7 4320 min Summer 24.598 0.098 68.3 5760 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.598 0.024 17.0 30 min Winter 24.532 0.032 22.3 0 30 min Winter 24.532 0.032 22.3	
30 min Summer 24.528 0.028 19.9 60 min Summer 24.535 0.035 24.8 120 min Summer 24.543 0.043 30.0 180 min Summer 24.547 0.047 33.0 240 min Summer 24.550 0.055 38.3 360 min Summer 24.555 0.055 38.3 480 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.061 42.5 720 min Summer 24.561 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.572 0.072 50.6 2160 min Summer 24.570 0.078 54.7 2160 min Summer 24.589 0.082 57.7 4320 min Summer 24.589 0.082 57.7 4320 min Summer 24.589 0.082 65.6 7200 min Summer 24.598 0.098 68.3 5760 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.532 0.032 22.3 15 min Winter 24.532 0.032 22.3 0 min Winter 24.532 0.032 22.3 0 min Winter 24.532 0.032 22.3 0 min Winter 24.532 0.032 22.3	
120 min Summer 24.543 0.043 30.0 180 min Summer 24.547 0.047 33.0 240 min Summer 24.547 0.047 33.0 240 min Summer 24.550 0.050 35.2 360 min Summer 24.555 0.055 38.3 480 min Summer 24.555 0.055 38.3 480 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.058 40.6 600 min Summer 24.551 0.061 42.5 720 min Summer 24.561 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 1440 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.078 54.7 2180 min Summer 24.582 0.082 57.7 4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.599 0.089 62.3 5760 min Summer 24.598 0.098 68.3 6440 min Summer 24.598 0.098 68.3 8640 min Summer 24.598 0.098 68.3 8640 min Summer 24.604 0.104 72.5 15 min Winter 24.524 0.024 17.0 30 min Winter 24.532 0.032 22.3	
180 min Summer 24.547 0.047 33.0 240 min Summer 24.550 0.050 35.2 360 min Summer 24.550 0.055 38.3 480 min Summer 24.555 0.055 38.3 480 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.058 40.6 600 min Summer 24.556 0.061 42.5 720 min Summer 24.561 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 1440 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.078 54.7 2880 min Summer 24.589 0.082 57.7 4320 min Summer 24.589 0.082 57.7 4320 min Summer 24.594 0.094 65.6 7200 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.532 0.032 22.3 00 min Winter 24.532 0.032 22.3	D K
240 min Summer 24.550 0.050 35.2 360 min Summer 24.555 0.055 38.3 480 min Summer 24.555 0.055 38.3 480 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.061 42.5 720 min Summer 24.561 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 1440 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.078 54.7 2880 min Summer 24.578 0.078 54.7 2880 min Summer 24.589 0.082 57.7 4320 min Summer 24.589 0.082 57.7 4320 min Summer 24.594 0.094 65.6 5760 min Summer 24.598 0.098 68.3 640 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.522 0.032 22.3 30 min Winter 24.532 0.032 22.3 515 min Winter 24.532 0.032 22.3) K
360 min Summer 24.555 0.055 38.3 480 min Summer 24.558 0.058 40.6 600 min Summer 24.558 0.058 40.6 600 min Summer 24.561 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 1440 min Summer 24.567 0.067 46.7 1440 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.078 54.7 2880 min Summer 24.582 0.082 57.7 4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 6640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.522 0.032 22.3 6 Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m³)) K
480 min summer 24.558 0.058 40.6 600 min Summer 24.561 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 1440 min Summer 24.567 0.067 46.7 1440 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.078 54.7 2880 min Summer 24.582 0.082 57.7 4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 6640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.522 0.032 22.3 Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m³)	K
720 min Summer 24.563 0.061 42.5 720 min Summer 24.563 0.063 44.1 960 min Summer 24.567 0.067 46.7 1440 min Summer 24.567 0.067 46.7 1440 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.078 54.7 2880 min Summer 24.580 0.082 57.7 4320 min Summer 24.582 0.082 57.7 4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.524 0.024 17.0 30 min Winter 24.532 0.032 22.3 6 Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m³)) K
960 min Summer 24.567 0.067 46.7 (1440 min Summer 24.572 0.072 50.6 (2160 min Summer 24.578 0.078 54.7 (2880 min Summer 24.582 0.082 57.7 (4320 min Summer 24.589 0.089 62.3 (5760 min Summer 24.594 0.094 65.6 (7200 min Summer 24.598 0.098 68.3 (8640 min Summer 24.601 0.101 70.6 (10080 min Summer 24.601 0.101 70.6 (10080 min Summer 24.604 0.104 72.5 (15 min Winter 24.524 0.024 17.0 (30 min Winter 24.532 0.032 22.3 (Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)) K
1440 min Summer 24.572 0.072 50.6 2160 min Summer 24.578 0.078 54.7 2880 min Summer 24.578 0.078 54.7 2880 min Summer 24.582 0.082 57.7 4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.589 0.089 62.3 5760 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.524 0.024 17.0 30 min Winter 24.532 0.032 22.3 6 10 min Winter 24.532 0.032 22.3 10 min Winter 24.532 0.032 22.3) K
2160 min Summer 24.578 0.078 54.7 2880 min Summer 24.582 0.082 57.7 4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.524 0.024 17.0 30 min Winter 24.532 0.032 22.3 Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m³)) K
2880 min Summer 24.582 0.082 57.7 4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.524 0.024 17.0 30 min Winter 24.532 0.032 22.3 Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m³)) К
4320 min Summer 24.589 0.089 62.3 5760 min Summer 24.594 0.094 65.6 7200 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.524 0.024 17.0 30 min Winter 24.532 0.032 22.3 Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)	
7200 min Summer 24.598 0.098 68.3 8640 min Summer 24.601 0.101 70.6 10080 min Summer 24.604 0.104 72.5 15 min Winter 24.524 0.024 17.0 30 min Winter 24.532 0.032 22.3 Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)) K
8640 min Summer 24.601 0.101 70.6 (10080 min Summer 24.604 0.104 72.5 (15 min Winter 24.524 0.024 17.0 (30 min Winter 24.532 0.032 22.3 (Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)) K
10080 min Summer 24.604 0.104 72.5 (15 min Winter 24.524 0.024 17.0 (30 min Winter 24.532 0.032 22.3 (Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)) K
15 min Winter 24.524 0.024 17.0 (30 min Winter 24.532 0.032 22.3 (Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)) K
30 min Winter 24.532 0.032 22.3 (Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)	K
Storm Rain Flooded Time-Per Event (mm/hr) Volume (mins) (m ³)	
Storm Rain Flooded Time-Pe Event (mm/hr) Volume (mins) (m ³)	
Event (mm/hr) Volume (mins) (m ³)	ak
(m ³)	
15 min Summer 114 021 0.0	77
30 min Summer 74 667 0 0	12
60 min Summer 46.601 0.0	72
120 min Summer 28.131 0.0 1	32
180 min Summer 20.676 0.0 1	92
240 min Summer 16.528 0.0 2	52
360 min Summer 11.975 0.0 3'	12
$\frac{1}{600 \text{ min Summer } 7.984 0.0 6}$	2
720 min Summer 6.904 0.0 7	32
960 min Summer 5.484 0.0 97	2
1440 min Summer 3.959 0.0 14	
2160 min Summer 2.853 0.0 21	52
$\frac{2880 \text{ min Summer } 2.259 0.0 \qquad 289}{4320 \text{ min Summer } 1.624 \qquad 0.0 \qquad 427}$	2
5760 min Summer 1.284 0.0 57'	2 2 22 22
7200 min Summer 1.069 0.0 72:	52 72 52 52 6
8640 min Summer 0.920 0.0 865	52 72 72 72 72 72 76 76
10080 min Summer 0.811 0.0 1009	52 72 72 76 76 76
15 min Winter 114.021 0.0 2	52 72 52 52 76 6 6 6 6 6
30 min winter /4.66/ 0.0 4	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

RPS Burks Green				,, <u></u> , <u></u> , <u>_</u>	Page 2
Sherwood House					
Sherwood Avenue					
Newark NG24 100					
$\frac{100}{2015}$		Designed	h		— Micro
Date 21/09/2015 10	.24	Designed	by goraon.c	arnard	Drainarre
File AD Tank Bund	Rainfall	Checked by	/		
Micro Drainage		Source Cor	ntrol 2014.	1	
Summary	of Results	for 100 year	Return Pe	riod (+20	응)
	Storm	May Ma	. Mars Chad		
	Event	Level Dep	b Volume	us	
		(m) (m)	(m ³)		
	CO 1 - 1				
	60 min Win 120 min Win	ter $24.540 \ 0.04$	10 27.8 C) K	
	180 min Win	ter 24.553 0.0	3 37.0 C	K	
	240 min Win	ter 24.556 0.05	i6 39.4 C	K	
	360 min Win	ter 24.561 0.00	51 42.9 C	K	
0	480 min Wint	ter $24.565 0.06$	5 45.5 C	K	
	720 min Win	cer 24.500 0.00	00 4/.0 C	K K	
	960 min Wint	cer 24.575 0.07	5 52.3 0	K	
	1440 min Wint	er 24.581 0.08	1 56.7 0	K	
	2160 min Wint	er 24.588 0.08	8 61.3 C	K	
	2880 min Wint	er 24.592 0.09	2 64.7 C	K	
	5760 min Wint	cer 24.605 0.10	5 73.5 C	K	
	7200 min Wint	er 24.609 0.10	9 76.5 C	K	
	8640 min Wint	er 24.613 0.11	3 79.0 C	K	
	10080 min Wint	<u>er 24_616_0.11</u>	<u>6 81.2 c</u>	<u> </u>	
	Storm	Rain Fl	ooded Time-Pea	ık	
	Event	(mm/hr) Vo	lume (mins)		
			m ³)		
	CO min Win			· · ·	
	120 min Win	ter 28.131	0.0 13	2	
	180 min Win	ter 20.676	0.0 19	2	
	240 min Win	ter 16.528	0.0 25	2	
	360 min Win	ter 11.975	0.0 37	2	
	480 min Win 600 min Win	ter 9.535 ter 7.984	0.0 49	2	
	720 min Win	ter 6.904	0.0 73	2	
	960 min Win	ter 5.484	0.0 97	2	
	1440 min Win	ter 3.959	0.0 145	2	
	2160 min Wint 2880 min Wint	ter 2.853	0.0 217	2	
	4320 min Win	ter 1.624	0.0 289	2	
	5760 min Wint	cer 1.284	0.0 577	6	
	7200 min Wint	cer 1.069	0.0 721	6	
	8640 min Wint	ter 0.920	0.0 865	6	
	TOOSO WIN WIN	.er 0.811	0.0 1009	o .	
1		•			



© 2015 RPS Group

Notes

- This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
- If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used. This drawing should be read in conjunction with all other relevant drawings and specifications.

Key:



Rev Description

Existing Impermeable Area Total Area = 2.19 Hectares

ige Assessment
9 Hectares
rates to Wade Brook:-
38.1L/s (15 min, winter)
428.7L/s (15 min, winter)
502.9L/s (15 min, winter)

ev	Description		Ву	Ckd	Date
S S T	therwood Hou therwood Aver :+44 (0)1636	se, nue, Newark, Nottinghamshire, NG24 1QQ 605 700 E: rpsnewark@rpsgroup.com F:+44	¥ (0)10	636 61	10 696
C	Client	REne scie	e from	Ce	e
F	Project	REnescience Northwich			
٦	Fitle	Existing Site Plan Showing Impermeable Areas	ļ		
S	Status Final	Scale Dat 1:500 @A1 11.	te Cr 09.2	eate 015	d
F A	Project Lead	der Drawn By Cho CW GB	ecke	d by	
D	ocument Number		Revisi	on	Suitability
F	igure 8.A		-		S2
Pr	oject Number	Originator - Zone - Level - Type - Role - Drawing Number		I	I
		rpsgroup.	con	า	





© 2015 RPS Group

Notes

This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
 If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

 This drawing should be read in conjunction with all other relevant drawings and specifications.

Key:



Total Proposed Development Impermeable Area Area = 23,642m²

Proposed Anaerobic Digester Plant Bund Containment Area (Controlled Discharge) Area = 8,851m²



Proposed Bioreactor Bund Containment Area (Controlled Discharge) Total Area = 713m²

Net Impermeable Area (Free Discharge) Area = 23,642 - 8,851 - 713 = <u>14,078m²</u>

	С	Site plan up	dated.	DW	GB	29.09.15
	В	Key notation	updated.	DW	GB	25.09.15
	Α	Minor amen	dments.	cw	DW	23.09.15
ľ	Rev	Description		Ву	Ckd	Date
					I	
	S S T	herwood Hou herwood Ave :+44 (0)1636	ISE, nue, Newark, Nottinghamshire, NG24 1QQ 605 700 E: rpsnewark@rpsgroup.com F:+4	4 (0)1	636 6	10 696
	·			. (0) .	0000	
	(Client	REne scie	Pn re fron	Ce	2 ° te
	F	Project	REnescience Northwich			
	٦	Title	Proposed Site Plan Showi Impermeable Areas	ng		
	S	status Final	Scale Da 1:500 @A1 18	te Cr .09.2	eate 015	d
	F A	Project Lead	der Drawn By Ch CW DV	ecke V	d by	
	Do	ocument Number		Revisi	on	Suitability
	F	igure 8.B		С		S2
	Pr	pject Number	Originator - Zone - Level - Type - Role - Drawing Number			
			rpsgroup.	con	n	



(within 10m of building)

D Site plan up C Minor drawi **B** Drawing siz A Minor drawi



All primary siphonic rainwater system downpipes to extend to first external manhole

© 2015 RPS Group

Notes

- This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
- If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
- This drawing should be read in conjunction with all other relevant drawings and specifications.

Key:

150Ø 1/135	
***mmØ 1/300	
F1	Svv Sewer (I/D & Gradient)
<u> </u>	FW Manhole
	SW Manhole
	SW (Process Drainage)
	Internal FW Manhole (≤150ø)
	Internal FW Manhole (>150ø)
(10.00) F1(11.60)	Backdrop Manhole (FW Illustrated)
	Slot Drain (with subsoil drain below)
	SuDS Filter Drain
<u> </u>	SW Pumping Station with Inlet Invert
(11.60)	FW Pumping Station with Inlet Invert
_ <u>***mm O/D</u>	SW HDPE Rising Main (O/D & Gradient)
<u>***mm O/D</u>	FW HDPE Rising Main (O/D & Gradient)
	Trade Effluent (discharge to tank for offsite disposal)
• G	Trapped Gully
■ FG	Trapped Floor Gully
• SVP	Soil Vent Pipe
• AAV	Air Admittance Valve
• DS	Discharge Stack
∘ RWP	Rainwater Pipe (c/w RE)
∘ SDP	Syphonic Primary Downpipe
- Sec	Syphonic Secondary Discharge
° RE	Rodding Eye
CL	Cover Level
CRL	Crown Level
SL	Soffit Level
IL	Invert Level
BD	Back Drop
I/D	Internal Diamater
CP	Catch pit
AP	Access point
	Water retaining bund walls Designed to BS EN 1992-3
SW(P)	SW (Process) Water Containment Tank



	SCALE 1:500			Status Final	Scal 1:50	Scale 1:500 @A1		Date Created 18.09.2015		
ndated	שע	GB	29.09.15	Project Leac AS	ler Drav CW	vn By	Cł D\	necked by W	/	
ving amendments.	cw	DW	25.09.15	Document Number				Revision D	Suitability	
ze amended to A1.	cw	DW	23.09.15	Project Number	Originator - Zone - Level - Type -	Role - Drawing Number				
ving amendments.	DW	GB	21.09.15			rpsg	roup	.com		

			Surfac	ce Wate	r Manho	ole Sche	edule			1		1	I	I	21 252	225	1
	Cover	Manhole		Pine Out		Pipe In			-	-	-	-	-	-	21.352	220	
Manhole	Level	Depth	Manhole	Invert	Pipe Out	Invert	Pipe In Ø	Comments	CP13	25.350	1350	1200	24.000	-	-	-	
Ref	(m)	(mm)	Ø (mm)	Level (m)	Ø (mm)	Level (m)	(mm)	Connicita	CP14	25.000	1350	1200	23.650	-	-	-	
	25 175	1250	1200	22,925	150				CP15	25.500	1350	1200	23.650	225	-	-	
	25.175	1350	1200	23.025	150	-	-		CP16	25.225	1350	1200	23.875	-	-	-	
	25.175	1350	1200	23.825	150	-	-		S10	25.400	3002	1200	22.398	225	-	225	
51	25.215	1574	1200	23.641	150	23.715	150		-	-	-	-	-	-	-	150	
-	-	-	-	-	-	23.041	150		-	-	-	-	-	-	-	150	
-	-	-	-	-	-	-	150		S11	25.180	3.892	1350	21.288	375	21.288	375	
CP3	25.375	1350	1200	24.025	150	-	-		-	-	-	-	-	-	21.288	225	
CP4	25.090	1785	1200	23.305	225	-	-		S13	25.435	1536	1200	23.899	225	-	150	Vented cov
\$2	25.250	2057	1200	23.193	225	23.268	225		S14	25.375	1666	1200	23,709	300	23,784	225	Vented cov
-	-	-	-	-	-	23.268	150								22.794		
-	-	-	-	-	-	23.808	150		-	-	-	-	-	-	23.764	225	
CP5	25.000	1300	1200	23.700	225	-	-		-	-	-	-	-	-	-	150	Vented en
CP6	25.250	1300	1200	23.950	225	-	-		\$15	25.350	1686	1200	23.664	300	23.664	300	vented cov
CP7	25.090	1300	1200	23.790	225	-	-		-	-	-	-	-	-	-	150	
S3	25.275	1625	1200	23.650	225	23.650	225		S16	25.350	1726	1200	23.624	300	23.624	300	Vented cov
-	-	-	-	-	-	-	150		-	-	-	-	-	-	-	150	
-	-	-	-	-	-	-	150		S17	25.375	1846	1200	23.529	300	23.529	300	Vented cov
S4	25.275	2472	1350	22.803	375	22.953	225		-	-	-	-	-	-	-	150	
-	-	-	-	-	-	23.784	225		S18	25.325	1924	1200	23.401	300	23.401	300	Vented cov
-	-	-	-	-	-	23.745	225		-	-	-	-	-	-	-	150	
-	-	-	-	-	-	23.390	225		S19	25.325	2908	1200	22.417	300	23.284	300	Vented cov
CP8	25.200	1300	1200	23.900	150	-	-		-	-	-	-	-	-	23.437	225	
S5	25.240	2525	1350	22.715	375	22.715	375		-	-	-	-	-	-	-	150	
-	-	-	-	-	-	23.870	150		S20	25.350	1425	1200	23.925	225	-	150	Vented cov
CP9	25.325	1350	1200	23.975	150	-	-		S21	25.350	1552	1200	23.798	225	23.798	150	
CP10	25.250	1350	1200	-	-	23.900	150		-	-	-	-	-	-	-	150	
CP11	25.250	1600	1200	23.650	225	-	-		S22	25.260	1605	1200	23.655	225	23.655	225	Vented cov
S6	25.375	1818	1200	23.557	225	23.557	225			-	-	-		-	-	150	
-	-	-	-	-	-	-	150		\$23	25 100	1602	1200	23 498	225	23 498	225	
S7	25.390	2540	1200	22.850	225	23.350	225		S25	25,300	4094	1200	21 206	300	22 206	300	
	25.460	3971	1350	21.489	375	22.620	375			-	-	-	-	-	22 206	225	
-	-	-	-	-	-	22.710	225					<u> </u>	<u> </u>	<u> </u>		150	
CP12	25.025	3607	1200	21.418	225	-	_		-	-	-	-	-	-	-	100	
-	-	-	-	-		-	<u> </u>		S26	23.000(Ex)	3900	1350	19.100	450	21.100	375	
59	25 180	3828	1350	21.352	375	21.352	375		-	-	-	-	-	-	21.100	300	

		© 2015 RPS Group Notes 1. This drawing has appointment with it appointment. RPS by its client and on 2. If received elects scale. Only written	s been pre s client ar accepts n ly for the p ronically it dimension	epared in accord nd is subject to the o liability for any purposes for white is the recipient's ns should be use	ance with t he terms ar use of this ch it was pr s responsib ad.	he scope nd condition documer repared an ility to prir	of RPS's ons of that nt other that nd provide nt to correct	an Id. Ct
		. only written	2	Unionio de USA				
r - siphonic discharge manhole								
r - siphonic discharge manhole								
r - siphonic discharge manhole								
r - siphonic discharge manhole								
er - siphonic discharge manhole								
r - siphonic discharge manhole	Rev	v Description				Date	Initial	Checked
er - siphonic discharge manhole		R	RP:	S				
		6–7 Lovers V T: 01273 546	Valk, Bri	ghton, BN3 31 rpsbn@rpsarc	BE bup.com			
		Client	DON	NG Energ	gy Lim	ited		
		Project	REn	escience	e North	nwich		
		Title	Surf	ace Wate	er Mar	hole	Sche	dule
		Date Create September	ed 2015	Drawn By DW		PN GI	//Check B	ed By
		Job Ref. NK018157 Figure Num	iber			Re	9V	
		8.D				0	.4	
					ŋ	psgro	up.co	m/uk

Figure_8.D_Surface_Water_Manhole_Schedule_rev0