

| DESIGNERS F | RESIDUAL | RISK | SCHEDULE |
|--------------|----------|------|----------|
| CONSTRUCTION | | | |

Surface water drair

Ì

Foul water drain

DRAINAGE STRATEGY LEGEND

 \bigcirc

Surface water inspection chamber

Surface water ab

oove ground pipe.

Foul water inspection chamber

Surface water catchpit manhole

- EXISTING SEWERS / DRAINAGE / SERVICES:
 Refer to existing services layout (ref: 13730:03) / topographical survey (ref: 6546BW/6) / statutory undertaker's records for location of existing drainage / services & overhead cables.
 Works in close proximity to existing sewers / services. Contractor's Construction Health & Safety Plan should include method statement outlining safe method of working agreed with relevant statutory undertaker where necessary.
 Works affected by existing services. Contractor should arrange for diversion / lowering / protection by statutory undertaker where necessary prior to commencement of works.
- <u>a</u> .2

urface water man

Foul water manhole

ıgwork headwall.

- CAVATIONS & EARTHWORKS afer to ground investigation report (ref: RML 5949) for details of aderlying soils. Where ground conditions are found to deviate from lose reported in the site investigation report, the engineer should be syntacted immediately for advice on how to proceed. (cavations where access is required should be temporary supported with opes battered well back and maintained at a safe angle. antractor's Construction Health & Safety Plan should include method atement outlining safe method of working in or adjacent to deep (cavations adjacent to boundaries / structures / embankments / bulk arthworks.

+57.0

Spot level taken from NBW planning drawings

land Flow Route

- Juater may be encountered in excavations. contractor's uction Health & Safety Plan should include method statement ng safe method for dewatering excavations during groundworks.
- the that throut S ON OR ADJACENT TO EXISTING CAR PARK tractor should ensure site personnel have appropriate training & use copriate PPE when carrying out works adjacent to the car park and Construction Health & Safety Plan should include method statement adopts best practice health and safety policies for all site personnel ughout the duration of the works on / adjacent to existing vehicular es.
- CONNECTING TO EXISTING DRAINAGE Contractor's Construction Health & Safety Plan should include method statement that adopts best practice health and safety policies for all site personnel throughout the duration of such works. Contractor should ensure site personnel have appropriate training & use appropriate PPE when making connections to existing drainage.
- σ

ENGINEERING NOTES

- .____ This drawing to be read in conjunction with all relevant Architects, Engineers and Subcontractors drawings and details
- This drawing is based on topogr On Centre Surveys: survey by
- Drawing Number 6546BW/6 Dated June 2016
- ω. 4.
- ъ All levels relate to levels given on survey drawing. Refer to Architects drawings for details of all soft landscaping, fences, gates & bollards. For lighting, service supplies & ducting requirements, M&E drawings. refer to
- <u></u>б All works to be carried out in accordance with BS EN 752 "Drain and sewer systems outside buildings" and the current edition of The Building Regulations "Approved document H".
- 7. New drainage connections are to be made with appr lengths of rocker pipes & couplings.
- <u>.</u>00
- .9 All manhole chamber covers to be installed parallel to final kerbs, edgings, paving joints or building lines as appropriate.
- This drawing details all below ground drainage up to finished floor level. For details of drainage above finished floor level, refer to Architects drawings.
- 10. A stack connections under buildings to be minimum 100mm ameter solid PVC-U to BS EN 1401-1/BS4660 & laid at a nimum gradient of 1 in 80 unless otherwise noted. If the ack is greater than 100mm then the diameter of the nnection is to be increased to match it
- $\stackrel{\sim}{\rightarrow}$ RWP connections to be minimum 100mm diameter solid C-U to BS EN 1401-1/BS4660 & laid at a minimum adient of 1 in 80 unless otherwise noted. If the RWP is ater than 100mm then the diameter of the connection is be increased to match it.

MK P1

REVISION

 BCT
 22.10.21

 BY
 DATE

FIRST ISSUE

FINAL

RAWING TITLE

DRAINAGE LAYOUT SHEET 2 OF 2

DRAWING STATUS

- 12. All private foul water pipework up to 150mm in diameter to be PVC-U to BS EN 1401-1/BS4660.
- 13. 2 tó₿) pri
- private surface water pipework up to 150mm in diameter be solid PVC-U to BS EN 1401-1/BS4660. All private 'ace water pipework 225mm and above to be structured plastic sewer pipe complying with clause 518 of the plication for highway works.
- 14 . Concrete m 5911-3. shall cor ply with BS EN 1917 and BS
- tic ch ers shall cor
- 16. 15.
- completion of development all drainage shall be jet aned and CCTV surveyed.
- c∣e On

CHESSINGTON WORLD OF ADVENTURES LODGES

17.

1 be

dundant drainage & services marked to be removed are to dug out with chambers demolished & void filled with Type material to clause 803 & 806.

 $\overrightarrow{\infty}$

On ≚i

All by pro pits

Il existing services shown are based on topographical survey y On Centre Surveys. Location of all services in close roximity to works should be confirmed by means of trial its under supervision of statutory undertaker & in ccordance with HSE document "Avoiding Danger from nderground Services"

Smpson two

8 Friday Street Henley on Thames Oxfordshire RG9 1AH T.01491 576221

LOSI Regional Area

London, Henley-on Thames and Gloucester
Drawn
BCT
MC
Scales
Date
Date
Date
Date
Date
DISCHARGE OF CONDITIONS

13730 : 501

P1

London, Drawn BCT

- nply with BS 7158.

ROJECT

Project Number 13730



| Image: Second | 54.33 452.76 51.82 54.33 100 10.100 452.76 51.82 54.33 100 | 2.254 grass 24 grass | 9.4.3 49.13 49.15 49 |
|--|--|--|--|
| | 452.85 452.85 452.85 452.85 452.85 52.22+ 452.85 52.22+ 452.85 52.22+ 52.00 51.95 52.22+ 52.00 51.95 52.00 51.95 52.22+ 52.00 52.00 51.95 52.00 52.00 52.00 52.00 52.00 52.00 52.00 52.00 52.00 51.95 52.00 52.00 51.95 52.00 52.00 52.00 51.95 52.00 52.00 52.00 51.95 52.00 52.00 51.95 52.22+ 52.00 52.00 51.95 52.00 52.00 51.95 52.22+ 52.00 52 | 51.28 +50.15 51.28 +50.15 1000 - 000 1000 - 000 10 | +49.30 +49.30 +49.30 +49.30 +49.30 +49.30 +49.30 +49.74 +40 |
| U 56.44 U 50.44 U 5 | 453.07 454.01 453.02 452.94 | 5) 45, 100 2039 91,15 gross 91,15 gross 90,15 gross 90,15 gross 90,15 gross 91,10 gross 9 | |
| | 45 15397 45148 45121 452.76 9 Ef52.29 | | 49.09 48.95 18.99 +49.09 48.95 18.99 +40.09 18.95 18.99 +40.09 18.95 18.90 +40.09 18.95 18.90 +40.09 18.95 18.90 +40.09 |

| ₂₁



LEGEND Overland Flow Rou



DRAINAGE NOTES

- This drawing is to be read in conjunction with all relevant architect's, engineers and subcontractors drawings and details.
- 4. $\stackrel{\text{N}}{\cdot}$ Dimensions not to be scaled.

- Refer to drainage schedule for grade of cover and frame.

- Hard landscaping (Footpath/parking bay/yard)

- U. Refer to Arch all paving typ landscaping, Architects drawings for details of g types & patterns, soft ing, fences & gates.
- All works to be carried out in accordance BS EN 752 "Drain and sewer systems outside buildings" and the current edition of The Building Regulations "Approved document H".
- , С New drainage connections are to be made with appropriate lengths of rocker pipes & couplings.

(Min)

- 225mm deep GEN concrete plinth to support cover and frame.

S

 $\overrightarrow{}$ All manhole chamber covers to be installed parallel to final kerbs, edgings, paving joints or building lines as appropriate.

-150mm thick bed and surround of well compacted granular material.

- .0 . All stack connections under buildings to be minimum 100mm diameter solid PVC-U to BS EN 1401-1/BS4660 & laid at a minimum gradient of 1 in 80 unless otherwise noted. If the stack is greater than 100mm then the diameter of the connection is to be increased to match it
- 10 .

LANDSCAPING

D. All RWP connections to be minimum 100mm diameter solid PVC-U to BS EN 1401-1/BS4660 & laid at a minimum gradient of 1 in 80 unless otherwise noted. If the RWP is greater than 100mm then the diameter of the connection is to be increased to match it.

Bagwork to be constructed to suit profile of bank.

Pipe to be cut flush to angle of bank.

Existing ditch

- All private foul water pipework up to 150mm in diameter to be PVC-U to BS EN 1401-1/BS4660.
- 12. 2. All private surface water pipework up to 150mm in diameter to be solid PVC-U to BS EN 1401-1/BS4660. All private surface water pipework 225mm and above to be structured wall plastic sewer pipe complying with clause 518 of the specification for highway works.
- _____ ____ Plastic chambers shall comply with BS EN 1917 and BS 5911-3.

BAG

HEADWALL

- (Plan)
- above by-60. (Section) F -pass doc 150 . ۲ Gen 3 concrete mounting block Intake 0 Hydrobrake or similar approved installed in accordance with manufacturer's requirements. Outlet spigot

surface

ater

catchpit

0|e

constructior

13730:505

Ď

501 for details

of Hydro

-Brak

Of

control

dev

used.





DISCHARGE OF CONDITIONS

13730:506

P<u>1</u>

Jy-on Th Ch'kd MC

Scales SHOWN

Date OCT '21

| | | | | NAL VERTICAL BACKDROP | To channel. | ound). | Concrete | junction. | <u>m</u> | | | rse sand base ompacted. | impermeable geomembrane to create a watertight seal. xtile laver. | A A A A A A A A A A A A A A A A A A A | | Type 1 granular material suitably compacted. | Road construction. | |
|---|--|------------------------------|---|-----------------------|------------------|---|--|-----------|---|---|---|---|---|---|--|---|--|--------------------------|
| Simpson two B Friday Street Henley on Thames Oxfordshire RG9 1AH T.01491 576221 | CHESSINGTON WORLD OF ADVENTURES LODGES | SUDS DETAILS SHEET 2 OF 2 | P1 ISSUED FOR DISCHARGE OF CONDITION 10 BCT 22.10.21 MK REVISION BY DATE DRAWING STATUS FINAL FINAL | | - Concrete base. | Inside face of manhole. Straight outlet pipe for 150mm and 225mm diameters only. For larger diameter pipes bends are to be built through the manhole wall. Banching | Rodding eye. Invert of rodding eye to be not greater than 1.5m above top of benching (unless specific man access requirements are provided). | | 3. Plastic chambers shall comply with BS EN 1917 and BS 5911-3. | 2. All private surface water pipework up to 150mm in diameter to be solid PVC-U to BS EN 1401-1/BS4660. All private surface water pipework 225mm and above to be structured wall plastic sewer pipe complying with clause 518 of the specification for highway works. | 1. All private foul water pipework up to 150mm in diameter to be PVC-U to BS EN $1401-1/BS4660$. | 0. All RWP connections to be minimum 100mm diameter solid PVC-U to BS EN 1401-1/BS4660 & laid at a minimum gradient of 1 in 80 unless otherwise noted. If the RWP is greater than 100mm then the diameter of the connection is to be increased to match it. | BS EN 1401-1/BS4660 & laid at a minimum gradient of 1 in 80 unless otherwise noted. If the stack is greater than 100mm then the diameter of the connection is to be increased to match it | All manhole chamber covers to be installed parallel to final kerbs, edgings, paving joints or building lines as appropriate. All stack connections under buildings to be minimum 100mm diameter solid PVC-U to | 3. New drainage connections are to be made with appropriate lengths of rocker pipes & couplings. | 5. All works to be carried out in accordance BS EN 752 "Drain and sewer systems outside buildings" and the current edition of The Building Regulations "Approved document H". | Refer to Architects drawings for details of all paving types & patterns, soft landscaping, fences & gates. | DIFFERENCE TO LE SCAFEA. |

DRAINAGE NOTES

This drawing is to be read in conjunction with all relevant architect's, engineers and subcontractors drawings and details.

.____`

car park. car park used by HGV's.

N · Dimensions not to be scaled.

APPENDIX F SURFACE WATER DESIGN CALCULATIONS

| Simpson Associates | Page 1 |
|--|--|
| 1 Market Place Mews | |
| Henley-on-Thames | The second secon |
| RG9 2AH | Designed by Drup Touton Micro |
| Date 21/10/2021 11:31 | Checked by Bryn. Tawton Drainage |
| Micro Drainage | Network 2017 1 2 |
| | |
| STORM SEWER DESIGN 1 | by the Modified Rational Method |
| Design | Criteria for Storm |
| Pipe Sizes STA | IDARD Manhole Sizes STANDARD |
| FSR Rainfall | Model - England and Wales |
| Return Period (years) | 1 PIMP (%) 100 20 000 Add Flow / Climate Change (%) 0 |
| Ratio R | 0.400 Minimum Backdrop Height (m) 0.200 |
| Maximum Rainfall (mm/hr) | 50 Maximum Backdrop Height (m) 1.500 |
| Maximum Time of Concentration (mins) Foul Sewage (1/s/ha) | 0.000 Min Vel for Auto Design only (m/s) 1.00 |
| Volumetric Runoff Coeff. | 0.750 Min Slope for Optimisation (1:X) 500 |
| Designe | d with Level Soffits |
| Network D | esign Table for Storm |
| | |
| PN Length Fall Slope I.Area T.E (m) (m) (1:X) (ha) (mir | . Base k HYD DIA Section Type Auto s) Flow (1/s) (mm) SECT (mm) Design |
| 1.000 24.900 0.250 99.6 0.028 4. | 00 0.0 0.600 o 150 Pipe/Conduit 🔒 |
| 2.000 24.900 0.250 99.6 0.028 4. | 00 0.0 0.600 o 150 Pipe/Conduit 🔒 |
| 1.001 56.700 2.150 26.4 0.088 0. | 00 0.0 0.600 o 225 Pipe/Conduit 🔒 |
| 3.000 17.400 0.870 20.0 0.015 4. | 00 0.0 0.600 o 150 Pipe/Conduit 🔒 |
| 4.000 9.400 0.118 79.7 0.015 4. | 00 0.0 0.600 o 150 Pipe/Conduit 🔒 |
| 5.000 53.410 2.100 25.4 0.035 4. | 00 0.0 0.600 o 150 Pipe/Conduit 🔒 |
| 1.002 9.600 0.100 96.0 0.000 0. | 00 0.0 0.600 o 300 Pipe/Conduit 🔒 |
| Netwo | rk Results Table |
| PN Rain T.C. US/IL Σ I.A: (mm/hr) (mins) (m) (ha | rea ΣBase Foul Add Flow Vel Cap Flow Flow (l/s) (l/s) (l/s) (m/s) (l/s) (l/s) |
| 1.000 50.00 4.41 59.400 0.0 | 0.0 0.0 0.0 1.01 17.8 3.8 |
| 2.000 50.00 4.41 59.400 0.0 | 0.0 0.0 0.0 1.01 17.8 3.8 |
| 1.001 50.00 4.78 59.100 0.3 | 44 0.0 0.0 0.0 2.56 101.7 19.5 |
| 3.000 50.00 4.13 59.300 0.1 | 0.0 0.0 0.0 2.26 40.0 2.0 |
| 4.000 50.00 4.14 56.970 0.0 | 0.0 0.0 0.0 1.13 19.9 2.0 |
| 5.000 50.00 4.44 59.100 0. | 0.0 0.0 0.0 2.00 35.4 4.7 |
| 1.002 50.00 4.88 56.700 0.3 ©1982- | 209 0.0 0.0 0.0 1.60 113.4 28.3 2017 XP Solutions |

| Simpso | on Asso | ciate | S | | | | | | | | | Page | e 2 |
|--------|---------|--------|--------|---------|--------|-------|-------|---------|-------|------|-------|----------|--------|
| 1 Marl | ket Pla | ce Mer | WS | | | | | | | | | | |
| Henley | y-on-Th | ames | | | | | | | | | | 4 | A |
| RG9 22 | AH | | | | | | | | | | | MB | Jun |
| Date 2 | 21/10/2 | 021 1 | 1:31 | | Des | signe | d by | Brvn. | Tawto | on | | | uu |
| File M | Main Ne | twork | Simula | ation. | Che | ecked | by | 1 | | | | Ufa | linage |
| Micro | Draina | ge | | | Net | work | 2017 | .1.2 | | | | | |
| | | | | | | | | | | | | | |
| | | | 1 | letwork | Desig | gn Ta | ble f | for St | orm | | | | |
| PN | Length | Fall | Slope | I.Area | T.E. | Ba | se | k | HYD | DIA | Secti | ion Type | a Auto |
| | (m) | (m) | (1:X) | (ha) | (mins) | Flow | (l/s) | (mm) | SECT | (mm) | | | Design |
| 1.003 | 143.000 | 2.400 | 59.6 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 300 | Pipe/ | /Condui | t 🐴 |
| 1.004 | 29.860 | 2.600 | 11.5 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 300 | Pipe/ | /Conduit | t 🖌 |
| 1.005 | 23.480 | 2.110 | 11.1 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 300 | Pipe/ | /Conduit | t 🦰 |
| 6.000 | 57.200 | 2.860 | 20.0 | 0.032 | 4.00 | | 0.0 | 0.600 | 0 | 300 | Pipe | /Conduit | t 🔒 |
| 6.001 | 51.230 | 0.171 | 300.0 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 300 | Pipe/ | /Conduit | t 🐴 |
| 6.002 | 51.230 | 0.171 | 300.0 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 300 | Pipe, | /Conduit | t 🖌 |
| 6.003 | 10.000 | 0.033 | 300.0 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 300 | Pipe/ | /Condui | t 💣 |
| 7.000 | 78.100 | 3.800 | 20.6 | 0.022 | 4.00 | | 0.0 | 0.600 | 0 | 150 | Pipe, | /Conduit | t 🖰 |
| 7.001 | 14.260 | 1.120 | 12.7 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 150 | Pipe/ | /Conduit | t 💣 |
| 6.004 | 1.085 | 0.002 | 500.0 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 150 | Pipe, | /Conduit | t 🐴 |
| 6.005 | 16.460 | 0.206 | 80.0 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 150 | Pipe, | /Conduit | t 🍎 |
| 6.006 | 53.770 | 2.920 | 18.4 | 0.038 | 0.00 | | 0.0 | 0.600 | 0 | 150 | Pipe, | /Conduit | t 🦰 |
| 6.007 | 8.120 | 2.610 | 3.1 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 150 | Pipe/ | /Conduit | t |
| 1.006 | 11.980 | 0.040 | 299.5 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 300 | Pipe, | /Condui | t 🦰 |
| 1.007 | 11.020 | 0.010 | 1081.8 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 375 | Pipe/ | /Conduit | t 🗗 |
| 1.008 | 14.600 | 0.290 | 50.3 | 0.000 | 0.00 | | 0.0 | 0.600 | 0 | 375 | Pipe/ | /Conduit | t ੌ |
| | | | | Ne | twork | Resu | lts T | able | | | | | |
| | | | | 110 | CHOTIC | 1.000 | 100 1 | <u></u> | | | | | |
| 1 | PN Rai | in T | .c. បន | S/IL E | I.Area | ΣВ | ase | Foul | Add F | low | Vel | Cap 1 | Flow |

| 111 | INGLII | 1.0. | 00/11 | a r.mea | | Juse | LOUT | Had LTOM | Ver | cap | 1104 | |
|-------|---------|--------|--------|---------|------|-------|-------|----------|-------|-------|-------|--|
| | (mm/hr) | (mins) | (m) | (ha) | Flow | (l/s) | (l/s) | (l/s) | (m/s) | (l/s) | (l/s) | |
| 1.003 | 50.00 | 6.05 | 56.600 | 0.209 | | 0.0 | 0.0 | 0.0 | 2.04 | 144.2 | 28.3 | |
| 1.004 | 49.76 | 6.16 | 54.200 | 0.209 | | 0.0 | 0.0 | 0.0 | 4.66 | 329.7 | 28.3 | |
| 1.005 | 49.44 | 6.24 | 51.600 | 0.209 | | 0.0 | 0.0 | 0.0 | 4.74 | 335.0 | 28.3 | |
| 6.000 | 50.00 | 4.27 | 60.320 | 0.032 | | 0.0 | 0.0 | 0.0 | 3.53 | 249.6 | 4.3 | |
| 6.001 | 50.00 | 5.22 | 55.870 | 0.032 | | 0.0 | 0.0 | 0.0 | 0.90 | 63.8 | 4.3 | |
| 6.002 | 49.73 | 6.16 | 55.699 | 0.032 | | 0.0 | 0.0 | 0.0 | 0.90 | 63.8 | 4.3 | |
| 6.003 | 49.04 | 6.35 | 55.528 | 0.032 | | 0.0 | 0.0 | 0.0 | 0.90 | 63.8 | 4.3 | |
| 7.000 | 50.00 | 4.58 | 60.320 | 0.022 | | 0.0 | 0.0 | 0.0 | 2.23 | 39.4 | 3.0 | |
| 7.001 | 50.00 | 4.67 | 56.520 | 0.022 | | 0.0 | 0.0 | 0.0 | 2.84 | 50.2 | 3.0 | |
| 6.004 | 48.88 | 6.39 | 55.400 | 0.054 | | 0.0 | 0.0 | 0.0 | 0.44 | 7.8 | 7.1 | |
| 6.005 | 48.00 | 6.63 | 55.380 | 0.054 | | 0.0 | 0.0 | 0.0 | 1.12 | 19.9 | 7.1 | |
| 6.006 | 46.70 | 7.01 | 55.170 | 0.092 | | 0.0 | 0.0 | 0.0 | 2.36 | 41.7 | 11.6 | |
| 6.007 | 46.62 | 7.03 | 52.250 | 0.092 | | 0.0 | 0.0 | 0.0 | 5.76 | 101.7 | 11.6 | |
| 1.006 | 45.90 | 7.26 | 49.490 | 0.301 | | 0.0 | 0.0 | 0.0 | 0.90 | 63.8 | 37.4 | |
| 1.007 | 44.85 | 7.59 | 49.375 | 0.301 | | 0.0 | 0.0 | 0.0 | 0.54 | 59.9 | 37.4 | |
| 1.008 | 44.56 | 7.69 | 49.365 | 0.301 | | 0.0 | 0.0 | 0.0 | 2.56 | 282.6 | 37.4 | |
| | | | | | | | | | | | | |

| Simpson Associates | | Page 3 |
|---------------------------------|--|---------------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | |
| File Main Network Simulation | Checked by | Diamaye |
| Micro Drainage | Network 2017.1.2 | |
| | | |
| Free Flowing | Outfall Details for Storm | |
| | | |
| Outfall Outfall C | . Level I. Level Min D,L W | |
| | | |
| | | |
| 1.008 | 51.100 49.075 49.150 525 0 | |
| Simulatio | on Criteria for Storm | |
| | STICETTA TOT SCOTIN | |
| Volumetric Runoff Coeff (| 0.750 Additional Flow - % of Total Fl | ow 0.000 |
| Areal Reduction Factor | 1.000 MADD Factor * 10m ³ /ha Stora | ge 2.000 |
| Hot Start (mins) | 0 Inlet Coeffiecie | nt 0.800 |
| Hot Start Level (mm) | U Flow per Person per Day (l/per/da | y) 0.000 |
| Foul Sewage per hectare (1/s) (| 0.000 Output Interval (min | s) 60 s) 1 |
| | | . – |
| Number of Input Hydrogr | aphs 0 Number of Storage Structures 2 | |
| Number of Online Cont | rols 2 Number of Time/Area Diagrams 0 | |
| | TOTS O NUMBER OF REAL TIME CONCLOSS O | |
| Synthet | ic Rainfall Details | |
| | | |
| Rainfall Model | FSR Profile Type Summ | ner |
| Return Period (years) | 1 Cv (Summer) 0.7 | 750 |
| M5-60 (mm) | 20,000 Storm Duration (mins) | 30 |
| Ratio R | 0.400 | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

| ll'impaon Aggagatat | | | | | Dago / |
|--|---|---|--|--|--|
| | | | | | Fage 4 |
| I Market Place Mews | | | | | |
| Henley-on-Thames | | | | | Ly m |
| RG9 2AH | | | | | Micco |
| Date 21/10/2021 11:31 | Designed | by Bryn | n.Tawton | | Desinado |
| File Main Network Simulation | Checked k | су | | | Dialiage |
| Micro Drainage | Network 2 | 2017.1.2 | 2 | | |
| | | | | | |
| Online | Controls | for Sto | rm | | |
| | 0011010 | 101 000 | | | |
| | | | | | |
| Hydro-Brake® Optimum Manho | le• 17. D | s/pn· 6 | 005. Vo | lume (m³) | • 0 9 |
| | 10, 1, 2 | 0, 11. 0 | | 201110 (111) | |
| Unit | Reference | MD-SHE-0 | 103-4000-0 | 400-4000 | |
| Desig | n Head (m) | | | 0.400 | |
| Design | Flow (l/s) | | | 4.0 | |
| | Flush-Flo™ | | Ca | alculated | |
| | Objective | Minimis | e upstrear | n storage | |
| P | pplication | | | Surface | |
| Sump | Available | | | Yes | |
| Dia - | meter (mm) | | | 103 | |
| Minimum Outlot Pino Dia | meter (m) | | | JJ.38U 150 | |
| Suggested Manhole Dia | meter (mm) | | | 1200 | |
| | miceer (mm) | | | 1200 | |
| Control Po | ints 1 | Head (m) | Flow (l/s |) | |
| Design Point (C | alculated) | 0.400 | 4. | 0 | |
| | Flush-Flo™ | 0.156 | 4. | 0 | |
| | Kick-Flo® | 0.306 | 3. | 5 | |
| Mean Flow over 1 | Head Range | - | 3. | 2 | |
| | | | | | |
| | | | | | |
| The hydrological calculations have k | een based c | on the He | ad/Dischar | ge relatio | onship for the |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. | een based o Should anot | on the He | ad/Dischar of contro | ge relation device c | onship for the other than a |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated | peen based c Should anot en these sto | on the He cher type orage rou | ad/Dischar of contro ting calcu | rge relation device c lations wi | onship for the other than a .ll be |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated | peen based o Should anot en these sto | on the He Cher type orage rou | ad/Dischar of contro ting calcu | rge relatic ol device c ulations wi | onship for the other than a ll be |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow | peen based o Should anot en these sto w (l/s) Dep | on the He ther type orage rou th (m) F | ad/Dischan of contro ting calcu Low (l/s) | rge relatio ol device c alations wi Depth (m) | nship for the ther than a ll be Flow (1/s) |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow | w (l/s) Dep | on the He ther type orage rou th (m) F: | ad/Dischar of contro ting calcu Low (l/s) | cge relatic ol device c llations wi Depth (m) | nship for the ther than a ll be Flow (1/s) |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 | w (1/s) Dep | th the He ther type prage rou th (m) F: 3.000 | ad/Dischar of contro ting calcu Low (l/s) | cge relatic ol device c llations wi Depth (m) 7.000 7 500 | nship for the ther than a ll be Flow (1/s) 15.5 16 1 |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0 300 3 6 1 600 | w (1/s) Dep 6.7 7.2 7.6 | th (m) F: 3.000 4.000 | ad/Dischar of contro ting calcu low (1/s) 10.3 11.1 11 8 | cge relatic ol device c ulations wi Depth (m) 7.000 7.500 8.000 | <pre>ponship for the other than a ll be Flow (1/s) 15.5 16.1 16.6</pre> |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 | w (1/s) Dep 6.7 7.2 7.6 8.1 | on the He ther type prage rou th (m) F: 3.000 3.500 4.000 4.500 | ad/Dischar of contro ting calcu low (1/s) 10.3 11.1 11.8 12.4 | rge relation ol device of alations wi Depth (m) 7.000 7.500 8.000 8.500 | nship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow (1/s) 0.100 3.5 0.200 4.0 0.300 3.6 0.400 4.0 0.500 4.4 | Deeen based c Should anot anot en these sto ø (1/s) Dep 6.7 7.2 7.6 7.6 8.1 8.5 | th (m) F: 3.000 3.500 4.000 5.000 | ad/Dischar of contro ting calcu low (1/s) 10.3 11.1 11.8 12.4 13.1 | rge relation ol device of alations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 | nship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 |
| Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 | been based of Should anot en these sto an (1/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 | th (m) F: 3.000 3.500 4.000 4.500 5.000 5.500 | ad/Dischar of contro ting calcu low (l/s) 10.3 11.1 11.8 12.4 13.1 13.7 | rge relation ol device of alations with Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 | nship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 |
| The hydrological calculations have be Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 | <pre>opeen based of Should anot en these sto w (l/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2</pre> | <pre>n the He her type prage rou th (m) F: 3.000 3.500 4.000 4.500 5.000 5.500 6.000</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 | rge relation ol device of alations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 | nship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 0.200 4.0 0.300 3.6 0.400 4.0 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 | been based of Should anot en these sto m (1/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 | n the He her type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 | ad/Dischar of contro ting calcu low (1/s) 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 | rge relatic ol device c ulations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 | nship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 | been based of Should anot en these store m (1/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 | n the He cher type orage rou th (m) F: 3.000 3.500 4.000 4.500 5.000 5.500 6.000 6.500 | ad/Dischar of contro ting calco 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 | rge relatic ol device c ulations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 | nship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 | Deeen based of Should anot en these store w (1/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 | <pre>n the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 | rge relatic ol device c ulations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 | <pre>nship for the ther than a ll be Flow (1/s)</pre> |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 | Deen based of Should anot en these store 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 1e: 22, Data | <pre>n the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.000 5.500 6.000 6.500 S/PN: 1</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 | rge relatic ol device c llations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 | <pre>enship for the other than a ll be Flow (1/s)</pre> |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhor Unit | been based of Should anot en these sto w (1/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 | <pre>m the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 .008, Vo | rge relatic l device c lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) | enship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 : 5.0 |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhor Unit Design Design | been based of Should anot en these sto m (1/s) Dep 6.7 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 1e: 22, D 2 c. Reference (n Head (m) D Dep (1) (1) | <pre>m the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 1.585-1400 1.585 | <pre>mship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 : 5.0</pre> |
| The hydrological calculations have here Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhor Unit Design Design | Deen based of Should anot en these stores x (1/s) Dep 0.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 1e: 22, Dep 1e: 22 | <pre>m the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0</pre> | ad/Dischar of contro ting calcu low (1/s) 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 .008, Vo 050-1400-1 | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 1.585-1400 1.585 1.4 | <pre>mship for the other than a ll be Flow (1/s)</pre> |
| The hydrological calculations have here Hydro-Brake® Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhop Unit Design Design | Deen based of Should anot en these sto an (1/s) Dep (6.7) 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 1e: 22, D c Reference (n Head (m)) Flow (1/s) Flush-Flow Objective | m the He her type orage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 | ad/Dischar of contro ting calcu low (1/s) 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 .008, Vo 050-1400-1 | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 1.585-1400 1.585 1.4 alculated | <pre>mship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 : 5.0</pre> |
| The hydrological calculations have here Hydro-Brake® Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhoo Unit Design Design | been based of Should anotShould anotan these storean these storean (1/s)Dep6.77.27.68.18.58.99.29.6 | n the He her type orage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 Minimis | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 008, Vo 050-1400-1 Ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 585-1400 1.585 1.4 alculated a storage Surface | <pre>mship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 : 5.0</pre> |
| The hydrological calculations have here Hydro-Brake® Optimum® be utilised the Invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manho Unit Design 2.200 | been based of Should anot en these sto (1/s) Dep (6.7) 7.2 7.6 8.1 8.5 8.9 9.2 9.6 (1e: 22, D) (1e: 22, D) (1e: 22, D) (1e: 1/s) Flow (1/s) Flow (1/s) Flow (1/s) Flow (1/s) Cojective (1/s) | n the He cher type orage rou th (m) F: 3.000 3.500 4.000 4.000 5.000 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 Minimis | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-1 Ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 1.585-1400 1.585 1.4 alculated a storage Surface Yes | enship for the other than a a a a a a a a a a a a a a a a a a |
| The hydrological calculations have hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manho Unit Design Unit | been based of Should anot en these sto (1/s) Dep (6.7) 7.2 7.6 8.1 8.5 8.9 9.2 9.6 (1e: 22, D) Cle: 22, D) Cle: 22, D) Cle: 22, D) Cle: 1/s) Flow (1/s) Flow (1/s) Flow (1/s) Flow-Flo™ Objective opplication o Available imeter (mm) | n the He cher type orage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 Minimis | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-1 Ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 585-1400 1.585 1.4 alculated a storage Surface Yes 50 | <pre>enship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 : 5.0</pre> |
| The hydrological calculations have h Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhoo Unit Design Jia Invert | been based of Should anot en these stores an these stores block block <tr< td=""><td>n the He cher type orage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 Minimis</td><td>ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-2 ca e upstrear</td><td>rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m³) 1.585-1400 1.585 1.4 alculated a storage Surface Yes 50 49.365</td><td><pre>enship for the other than a .11 be Flow (1/s)</pre></td></tr<> | n the He cher type orage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 Minimis | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-2 ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 1.585-1400 1.585 1.4 alculated a storage Surface Yes 50 49.365 | <pre>enship for the other than a .11 be Flow (1/s)</pre> |
| The hydrological calculations have here Hydro-Brake® Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhoo Unit Design Dia Invert Minimum Outlet Pipe Dia | Description Should anot Should anot en these store Ø Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 Lle: 22, D D c Reference m Head (m) Flow (1/s) Flush-Flo™ Objective opplication Available meter (mm) Level (m) meter (mm) | n the He cher type grage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 Minimis | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-2 ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 585-1400 1.585 1.4 alculated a storage Surface Yes 50 49.365 75 | <pre>enship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 : 5.0</pre> |
| The hydrological calculations have he Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhod Unit Design Minimum Outlet Pipe Dia Suggested Manhole Dia | Description Should anot Should anot en these sto Ø Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 1e: 22, D 0.6 c. Reference m Head (m) Flow (1/s) Flush-Flo™ Objective 0.00000000000000000000000000000000000 | <pre>m the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1 MD-SHE-0 Minimis</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-3 ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 585-1400 1.585 1.4 alculated a storage Surface Yes 50 49.365 75 1200 | <pre>enship for the other than a ll be Flow (1/s) 15.5 16.1 16.6 17.1 17.6 18.1 : 5.0</pre> |
| The hydrological calculations have here hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhod Unit Design P Sump Dia Invert Minimum Outlet Pipe Dia Suggested Manhole Dia | x (1/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 Dec Reference m Head (m) Flow (1/s) Flush-Flo™ Objective upplication Available meter (mm) Level (m) meter (mm) | <pre>m the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.000 6.500 6.500 S/PN: 1 MD-SHE-0 Minimis</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-1 Ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 585-1400 1.585 1.4 alculated a storage Surface Yes 50 49.365 75 1200 | <pre>enship for the other than a ll be Flow (1/s)</pre> |
| The hydrological calculations have he Hydro-Brake® Optimum as specified. Hydro-Brake Optimum® be utilised the invalidated Depth (m) Flow (1/s) Depth (m) Flow 0.100 3.5 1.200 0.200 4.0 1.400 0.300 3.6 1.600 0.400 4.0 1.800 0.500 4.4 2.000 0.600 4.8 2.200 0.800 5.5 2.400 1.000 6.1 2.600 Hydro-Brake® Optimum Manhod Unit Design Dia Invert Minimum Outlet Pipe Dia Suggested Manhole Dia | been based of Should anot en these sto m (1/s) Dep 6.7 7.2 7.6 8.1 8.5 8.9 9.2 9.6 | <pre>m the He cher type rage rou th (m) F: 3.000 3.500 4.000 4.500 5.000 6.500 6.500 S/PN: 1 MD-SHE-0 Minimis</pre> | ad/Dischar of contro ting calcu 10.3 11.1 11.8 12.4 13.1 13.7 14.4 15.0 050-1400-1 Ca e upstrear | rge relation l device of lations wi Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500 lume (m ³) 585-1400 1.585 1.4 alculated a storage Surface Yes 50 49.365 75 1200 | enship for the other than a a a a a a a a a a a a a a a a a a |

| Simpson Associates | | | | | Page 5 |
|--|---|--|--|--|---|
| 1 Market Place Mews | | | | | |
| Henley-on-Thames | | | | | 4 |
| RG9 2AH | | | | | Micco |
| Date 21/10/2021 11:3 | 31 | Designed | by Bryn.I | awton | |
| File Main Network S: | imulation | . Checked | by | | Diamaye |
| Micro Drainage | | Network | 2017.1.2 | | |
| Hydro-Brake® (| Optimum Manh | nole: 22, I | DS/PN: 1.00 |)8, Volume (| (m ³): 5.0 |
| | Control 1 | Points | Head (m) Flo | ow (1/s) | |
| I | Design Point (| Calculated) | 1.585 | 1.4 | |
| | | Flush-Flo™ | 0.219 | 1.0 | |
| N | Mean Flow over | Head Range | U.446 _ | 0.8 1.0 | |
| | | | | | |
| The hydrological calc Hydro-Brake® Optimum Hydro-Brake Optimum® invalidated | ulations have as specified. be utilised t | been based Should ano hen these st | on the Head/ ther type of orage routin | Discharge rel control devi g calculation | ationship for the ce other than a s will be |
| Depth (m) Flow (l/s) | Depth (m) Fl | ow (l/s) Dep | oth (m) Flow | (1/s) Depth | (m) Flow (l/s) |
| 0.100 0.9 | 1.200 | 1.2 | 3.000 | 1.9 7. | 000 2.8 |
| 0.200 1.0 | 1.400 | 1.3 | 3.500 | 2.0 7. | 500 2.9 |
| 0.300 1.0 | 1.600 | 1.4 | 4.000 | 2.1 8. | 500 <u>2.9</u> |
| 0.500 0.8 | 2.000 | 1.6 | 5.000 | 2.4 9. | 000 3.1 |
| 0.600 0.9 | 2.200 | 1.6 | 5.500 | 2.5 9. | 500 3.2 |
| 0.800 1.0 | 2.400 | 1.7 | 6.000 | 2.6 | |
| 1.000 1.1 | 2.600 | 1.7 | 6.500 | 2.7 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Simpson Associates | | Page 6 |
|-----------------------------------|---|---------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | |
| File Main Network Simulation | Checked by | Diamaye |
| Micro Drainage | Network 2017.1.2 | |
| | | |
| Storage | Structures for Storm | |
| | | |
| Terels are Devel | Markeles 16 DO (DNs 6 004 | |
| | Mannole: 16, DS/PN: 0.004 | |
| Inve | rt Level (m) 55.400 | |
| | | |
| Depth (m) Are | ea (m²) Depth (m) Area (m²) | |
| 0.000 | 60.0 0.200 98.0 | |
| | | |
| Cellular Storag | e Manhole: 22, DS/PN: 1.008 | |
| | | |
| Inver Infiltration Coefficient | rt Level (m) 49.440 Safety Factor 2.0 | |
| Infiltration Coefficient | Side (m/hr) 0.00000 F0103129 0.93 | |
| | | |
| Depth (m) Area (m²) Inf. Are | ea (m²) Depth (m) Area (m²) Inf. Area (| (m²) |
| 0.000 150.0 | 150.0 1.501 0.0 22 | 25.0 |
| 1.500 150.0 | 225.0 | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| ©1982- | -2017 XP Solutions | |
| | | |

| Simpson | Associates | | | | | Page 7 |
|----------|-----------------------|------------------------------------|----------------------------------|------------------------------|----------------------------|----------------------------|
| 1 Market | Place Mew | S | | | | |
| Henley-o | n-Thames | | | | | L |
| RG9 2AH | | | | | | Micco |
| Date 21/ | 10/2021 11 | :31 | Designed by | y Bryn.Taw | rton | Dcainago |
| File Mai | n Network | Simulation | Checked by | | | Diamaye |
| Micro Dr | ainage | | Network 201 | 17.1.2 | | |
| 1 year 1 | Return Per: | iod Summary o | f Critical Re | esults by | Maximum I | Level (Rank 1) |
| | | <u> </u> | for Storm | # | | |
| | | | | | | |
| | Areal R | eduction Factor | imulation Crite | eria onal Flow - | s % of ⊤otal | Flow 0 000 |
| | H | ot Start (mins) | 0 MA | ADD Factor * | 10m³/ha St | orage 2.000 |
| Manh | Hot S ole Headloss | tart Level (mm) Coeff (Global) | 0 0.500 Flow per | Ir. Person per | let Coeffie Dav (l/per | cient 0.800 (dav) 0.000 |
| Fo | ul Sewage pe | r hectare (1/s) | 0.000 | | | ,, , |
| | Number | of Input Hydrog | raphs 0 Number | of Storage | Structures | 2 |
| | Numbe Number | er of Online Con of Offline Con | trols 2 Number trols 0 Number | of Time/Are of Real Tim | ea Diagrams me Controls | 0 0 |
| | | Synth | etic Rainfall i | Details | | |
| | Ra | infall Model | FSI | R Ratio | R 0.400 | |
| | | Region En | gland and Wale: | s Cv (Summe: O Cv (Winter | r) 0.750 | |
| | | 145 00 (nun) | 20.000 | U CV (WINCE | 1) 0.040 | |
| | Margin | for Flood Risk | Warning (mm) 1 | 150.0 D' Fine Thert | VD Status O | N |
| | | Allar | DTS Status | ON | ia Status O | LN |
| | | | | | | |
| | Durat | Profile(s) ion(s) (mins) | 15, 30, 60, 3 | 120, 180, 24 | Summer and 40, 360, 480 | Winter 0, 600, |
| | | | 720, 960, | 1440, 2160, | 2880, 4320 | , 5760, |
| | Return Perio | od(s) (years) | | | /200, 8640 | , 10080 30, 100 |
| | Climat | ce Change (%) | | | , (| р, о, о |
| | | | | | | |
| 119 | -/MU | Poturn Climat | o First (V) | First (V) | First (7) | Water |
| PN Na | ame Storm | Period Change | e Surcharge | Flood | Overflow | Act. (m) |
| 1 000 | 1 15 Winte | r 1 +0 | ç. | | | 59 450 |
| 2.000 | 2 15 Winte | r 1 +0 | 00 | | | 59.450 |
| 1.001 | 3 15 Winte | r 1 +0 | 00 | | | 59.167 |
| 3.000 | 4 15 Summe | r 1 +0 | 010 | | | 59.324 |
| 4.000 | 5 15 Summe | r 1 +0 | 0 | | | 57.005 |
| 5.000 | 6 15 Winte | r 1 +0 | ° 100/1⊑ 0 | | | 59.139 |
| 1 002 | o is Winte | r 1 +0 | s IUU/15 Summe. | Ľ | | 56.824 |
| 1 004 | / IC Winte | r 1 10 | ٥ ٩ | | | 30.091 54 260 |
| 1 005 | 9 15 Winte | ⊥ ⊥ +0 r 1 ⊥^ | 0 | | | 51 660 |
| 6 000 | 10 15 Winte | r 1 +0 | े २ | | | 51.000 60 349 |
| 6.001 | 11 15 Winte | r 1 +0 | ् २ | | | 55.926 |
| 6.002 | 12 15 Winte | r 1 +0 | 00 | | | 55.753 |
| 6.003 | 13 15 Winte | r 1 +0 | 00 | | | 55.587 |
| 7.000 | 14 15 Winte | r 1 +0 | 00 | | | 60.349 |
| 7.001 | 15 15 Winte | r 1 +0 | 9 | | | 56.546 |
| 6.004 | 16 60 Winte | r 1 +0 | 90 | | | 55.447 |
| 6.005 | 17 60 Winte | r 1 +0 | % 100/30 Winte | r | | 55.445 |
| 6.006 | 18 15 Winte | r 1 +0 | 00 | | | 55.204 |
| | | ©1982 | -2017 XP Sol | utions | | |

| Simpson Associates | | Page 8 |
|------------------------------|-------------------------|---------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | |
| File Main Network Simulation | Checked by | Diamaye |
| Micro Drainage | Network 2017.1.2 | |

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

| | US/MH | Surcharged Depth | Flooded Volume | Flow / | Overflow | Pipe Flow | | Level |
|-------|-------|---------------------|-------------------|--------|----------|--------------|--------|----------|
| PN | Name | (m) | (m³) | Cap. | (1/s) | (l/s) | Status | Exceeded |
| 1.000 | 1 | -0.100 | 0.000 | 0.25 | | 4.2 | OK | |
| 2.000 | 2 | -0.100 | 0.000 | 0.25 | | 4.2 | OK | |
| 1.001 | 3 | -0.158 | 0.000 | 0.19 | | 18.6 | OK | |
| 3.000 | 4 | -0.126 | 0.000 | 0.06 | | 2.2 | OK | |
| 4.000 | 5 | -0.115 | 0.000 | 0.13 | | 2.2 | OK | |
| 5.000 | 6 | -0.111 | 0.000 | 0.15 | | 5.2 | OK | |
| 1.002 | 6 | -0.176 | 0.000 | 0.35 | | 28.0 | OK | |
| 1.003 | 7 | -0.209 | 0.000 | 0.19 | | 26.4 | OK | |
| 1.004 | 8 | -0.240 | 0.000 | 0.09 | | 26.5 | OK | |
| 1.005 | 9 | -0.240 | 0.000 | 0.09 | | 26.5 | OK | |
| 6.000 | 10 | -0.271 | 0.000 | 0.02 | | 4.8 | OK | |
| 6.001 | 11 | -0.244 | 0.000 | 0.08 | | 4.5 | OK | |
| 6.002 | 12 | -0.246 | 0.000 | 0.07 | | 4.3 | OK | |
| 6.003 | 13 | -0.241 | 0.000 | 0.09 | | 4.2 | OK | |
| 7.000 | 14 | -0.121 | 0.000 | 0.08 | | 3.2 | OK | |
| 7.001 | 15 | -0.124 | 0.000 | 0.07 | | 3.2 | OK | |
| 6.004 | 16 | -0.103 | 0.000 | 0.18 | | 1.9 | OK | |
| 6.005 | 17 | -0.085 | 0.000 | 0.10 | | 1.9 | OK | |
| 6.006 | 18 | -0.116 | 0.000 | 0.11 | | 4.6 | OK | |

| Simpson Associates | | Page 9 |
|------------------------------|-------------------------|-----------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | Desinado |
| File Main Network Simulation | Checked by | Dialitaye |
| Micro Drainage | Network 2017.1.2 | |

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

| | | | | | | | | | Water |
|-------|-------|------------|--------|---------|--------------|-----------|-----------|----------|--------|
| | US/MH | | Return | Climate | First (X) | First (Y) | First (Z) | Overflow | Level |
| PN | Name | Storm | Period | Change | Surcharge | Flood | Overflow | Act. | (m) |
| | | | | | | | | | |
| 6.007 | 19 | 15 Winter | 1 | +0응 | | | | | 52.272 |
| 1.006 | 20 | 240 Winter | 1 | +0% | 30/15 Summer | | | | 49.672 |
| 1.007 | 21 | 240 Winter | 1 | +0% | 30/15 Summer | | | | 49.671 |
| 1.008 | 22 | 240 Winter | 1 | +0% | 30/30 Summer | | | | 49.671 |

| PN | US/MH Name | Surcharged Depth (m) | Flooded Volume (m³) | Flow / Cap. | Overflow (1/s) | Pipe Flow (l/s) | Status | Level Exceeded |
|-------|---------------|----------------------------|---------------------------|----------------|-------------------|-----------------------|--------|-------------------|
| 6.007 | 19 | -0.128 | 0.000 | 0.05 | | 4.6 | OK | |
| 1.006 | 20 | -0.118 | 0.000 | 0.16 | | 8.2 | OK | |
| 1.007 | 21 | -0.079 | 0.000 | 0.17 | | 8.1 | OK | |
| 1.008 | 22 | -0.069 | 0.000 | 0.00 | | 0.9 | OK | |

| Simpso | on Ass | sociates | | | | | | Page | : 10 | | | |
|--|----------|------------------------|--------------------|--------------------|------------------------------|-------------------|----------------------------|--------------------|------------------|--|--|--|
| 1 Marł | ket Pl | ace Mews | | | | | | | | | | |
| Henley | /-on-1 | hames | | | | | | 4 | | | | |
| RG9 24 | ΑH | | | | | | | Mic | Jun | | | |
| Date 2 | 21/10/ | /2021 11 : 3 | 1 | | Designed by | Bryn.Taw | ton | | .iu | | | |
| File M | Main N | Network Si | mulati | on | Checked by | - | | Ura | inage | | | |
| Micro | Drair | nage | | | Network 201 | 7.1.2 | | | | | | |
| | | 2 | | | | | | | | | | |
| 30 ye | ar Re | turn Perio | d Summ | nary of | Critical R | esults by | Maximum | Level (F | ≀ank 1) | | | |
| | | | | | for Storm | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | Arcal Rod | ation T | Sim | ulation Crite | ria enal Elevi | ° of Total | Elerr 0 (| 200 | | | |
| | | Hot | Start (| (mins) | 0000 Additi 0 MA | DD Factor * | 10m³/ha St | corage 2.0 | 000 | | | |
| Hot Start Level (mm) 0 Inlet Coefficient 0.800 | | | | | | | | | | | | |
| М | anhole | Headloss C | oeff (Gl | obal) O | .500 Flow per | Person per | Day (l/per | c/day) 0.0 | 000 | | | |
| | Foul | Sewage per 1 | nectare | (l/s) 0 | .000 | | | | | | | |
| | | Number of | Input | Hvdrogra | phs 0 Number | of Storage | Structures | 2 | | | | |
| | | Number | of Onli | ne Contr | ols 2 Number | of Time/Are | ea Diagrams | 0 | | | | |
| | | Number c | f Offli | ne Contr | ols 0 Number | of Real Tir | me Controls | 0 | | | | |
| | | | | Crupthat | ia Deinfell 1 | | | | | | | |
| | | Rain | fall Mo | del del | <u>IC KAINIAII I</u> FSF | Ratio | B 0.400 | | | | | |
| | | 1.0.11 | Reg | ion Engl | and and Wales | Cv (Summe: | r) 0.750 | | | | | |
| | | | M5-60 (1 | mm) | 20.000 |) Cv (Winte: | r) 0.840 | | | | | |
| | | | | 1 5 1 1 1 | | F.O. 0 | | | | | | |
| | | Margin I | or F100 | a Risk W Analvs | arning (mm) . is Timesten | 50.0 D' | VD Status O ia Status O | N | | | | |
| | | | | rmary0 | DTS Status | ON | La beacab o | | | | | |
| | | | | | | | | | | | | |
| | | | Profile | ·(s) | | | Summer and | Winter | | | | |
| | | Duration | n(s) (mi | .ns) | 15, 30, 60, 3 | 20, 180, 24 | 10, 360, 48 | 0, 600, | | | | |
| | | | | | 720, 960, 2 | 440, 2160, | 2880, 4320 | , 5760, | | | | |
| | De | burne Devied | (-) (| | | | 7200, 8640 | , 10080 | | | | |
| | Re | Climate | (s) (yea Change | .rs) (%) | | | ±, | 30, 100 0. 0. 0 | | | | |
| | | 011macc | onunge | (0) | | | | 0, 0, 0 | | | | |
| | | | | | | | | | | | | |
| | IIS /MH | | Return | Climate | First (X) | First (V) | First (7) | Overflow | Water | | | |
| PN | Name | Storm | Period | Change | Surcharge | Flood | Overflow | Act. | (m) | | | |
| | - | | | | | | | | | | | |
| 1.000 | 1 | 15 Winter | 30 | +0% | | | | | 59.484 | | | |
| 1.001 | 23 | 15 Winter 15 Winter | 30 30 | +03 | | | | | 59.217 | | | |
| 3.000 | 4 | 15 Winter | 30 | +0% | | | | | 59.338 | | | |
| 4.000 | 5 | 15 Summer | 30 | +0읭 | | | | | 57.027 | | | |
| 5.000 | 6 | 15 Winter | 30 | +0% | | | | | 59.163 | | | |
| 1.002 | 6 | 15 Winter | 30 | +0% | 100/15 Summe | r | | | 56.934 | | | |
| 1 004 | / | 15 Winter 15 Winter | 30 30 | +0종 +0% | | | | | 56./5/ 54 299 | | | |
| 1.005 | 9 | 15 Winter | 30 | +0% | | | | | 51.700 | | | |
| 6.000 | 10 | 15 Winter | 30 | +0% | | | | | 60.363 | | | |
| 6.001 | 11 | 15 Winter | 30 | +0% | | | | | 55.959 | | | |
| 6.002 | 12 | 15 Winter | 30 | +0% | | | | | 55.785 | | | |
| 7 000 | 1J 1/ | 15 Winter | 20 20 | +U% +N% | | | | | 33.622 60 366 | | | |
| 7.001 | 15 | 15 Winter | 30 | +0% | | | | | 56.562 | | | |
| 6.004 | 16 | 60 Winter | 30 | +0% | | | | | 55.506 | | | |
| 6.005 | 17 | 120 Winter | 30 | +0% | 100/30 Winte | r | | | 55.513 | | | |
| 6.006 | 18 | 15 Winter | 30 | +0% | | | | | 55.233 | | | |
| | | | | ©1982- | 2017 XP Sol | utions | | | | | | |

| Simpson Associates | | Page 11 |
|------------------------------|-------------------------|---------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | |
| File Main Network Simulation | Checked by | Diamaye |
| Micro Drainage | Network 2017.1.2 | |

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

| | | Surcharged | Flooded | | | Pipe | | |
|-------|--------|------------|---------|--------|----------|-------|--------|----------|
| | US/MH | Depth | Volume | Flow / | Overflow | Flow | | Level |
| PN | Name | (m) | (m³) | Cap. | (1/s) | (l/s) | Status | Exceeded |
| 1 000 | 1 | 0.066 | 0 000 | 0 60 | | 10.0 | OV | |
| 1.000 | 1 1 | -0.000 | 0.000 | 0.00 | | 10.2 | ON. | |
| 2.000 | 2 | -0.066 | 0.000 | 0.60 | | 10.2 | OK | |
| 1.001 | 3 | -0.108 | 0.000 | 0.53 | | 52.1 | OK | |
| 3.000 | 4 | -0.112 | 0.000 | 0.15 | | 5.5 | OK | |
| 4.000 | 5 | -0.093 | 0.000 | 0.31 | | 5.5 | OK | |
| 5.000 | 6 | -0.087 | 0.000 | 0.37 | | 12.8 | OK | |
| 1.002 | 6 | -0.066 | 0.000 | 0.95 | | 75.5 | OK | |
| 1.003 | 7 | -0.143 | 0.000 | 0.50 | | 70.3 | OK | |
| 1.004 | 8 | -0.201 | 0.000 | 0.24 | | 70.3 | OK | |
| 1.005 | 9 | -0.200 | 0.000 | 0.24 | | 70.8 | OK | |
| 6.000 | 10 | -0.257 | 0.000 | 0.05 | | 11.7 | OK | |
| 6.001 | 11 | -0.211 | 0.000 | 0.18 | | 11.1 | OK | |
| 6.002 | 12 | -0.214 | 0.000 | 0.18 | | 10.6 | OK | |
| 6.003 | 13 | -0.207 | 0.000 | 0.21 | | 10.4 | OK | |
| 7.000 | 14 | -0.104 | 0.000 | 0.20 | | 7.9 | OK | |
| 7.001 | 15 | -0.108 | 0.000 | 0.17 | | 7.9 | OK | |
| 6.004 | 16 | -0.044 | 0.000 | 0.37 | | 4.0 | OK | |
| 6.005 | 17 | -0.017 | 0.000 | 0.18 | | 3.4 | OK | |
| 6.006 | 18 | -0.087 | 0.000 | 0.35 | | 14.3 | OK | |

| Simpson Associates | | Page 12 |
|------------------------------|-------------------------|----------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | Dcainago |
| File Main Network Simulation | Checked by | Diamaye |
| Micro Drainage | Network 2017.1.2 | |

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

| | | | | | | | | | Water |
|-------|-------|------------|--------|---------|--------------|-----------|-----------|----------|--------|
| | US/MH | | Return | Climate | First (X) | First (Y) | First (Z) | Overflow | Level |
| PN | Name | Storm | Period | Change | Surcharge | Flood | Overflow | Act. | (m) |
| C 007 | 1.0 | 15 57 | 2.0 | | | | | | F0 001 |
| 6.00/ | 19 | 15 Winter | 30 | +0% | | | | | 52.291 |
| 1.006 | 20 | 480 Winter | 30 | +0% | 30/15 Summer | | | | 50.127 |
| 1.007 | 21 | 480 Winter | 30 | +0읭 | 30/15 Summer | | | | 50.126 |
| 1.008 | 22 | 480 Winter | 30 | +0% | 30/30 Summer | | | | 50.126 |

| PN | US/MH Name | Surcharged Depth (m) | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Pipe Flow (l/s) | Status | Level Exceeded |
|-------|---------------|----------------------------|---------------------------|----------------|-------------------|-----------------------|------------|-------------------|
| 6.007 | 19 | -0.109 | 0.000 | 0.16 | | 14.2 | OK | |
| 1.006 | 20 | 0.337 | 0.000 | 0.21 | | 11.0 | SURCHARGED | |
| 1.007 | 21 | 0.376 | 0.000 | 0.23 | | 10.8 | SURCHARGED | |
| 1.008 | 22 | 0.386 | 0.000 | 0.00 | | 1.0 | SURCHARGED | |

| Simpso | on Ass | sociates | | | | | | Page | 13 | | | | |
|--------|--|------------------------|-----------------|----------------------|---------------|---|----------------------------|------------|------------------|--|--|--|--|
| 1 Marl | ket Pl | Lace Mews | | | | | | | | | | | |
| Henley | y-on-I | Thames | | | | | | z | ~ | | | | |
| RG9 22 | ΑH | | | | | | | Mic | Jun | | | | |
| Date 2 | 21/10/ | /2021 11 : 3 | 1 | | Designed by | / Bryn.Taw | rton | | in ago | | | | |
| File M | Main N | Network Si | mulati | on | Checked by | | | DId | naye | | | | |
| Micro | Drair | nage | | | Network 201 | 7.1.2 | | | | | | | |
| | | | | | | | | | | | | | |
| 100 | year l | Return Per | riod Su | ummary | of Critical | Results | by Maximu | m Level | (Rank | | | | |
| | | | | 1 |) for Stor | <u>n</u> | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | Sim | ulation Crite | ria | | | | | | | |
| | | Areal Red | uction E | actor 1 | .000 Additi | onal Flow - | - % of Total | l Flow 0.0 | 000 | | | | |
| | | Hot | Start | (mins) | 0 MA | .DD Factor * | f 10m³/ha St | torage 2.0 | 000 | | | | |
| | Hot Start Level (mm) 0 Inlet Coefficient 0.800 | | | | | | | | | | | | |
| M | Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per bectare (1/s) 0.000 | | | | | | | | | | | | |
| | 1001 | bonago por . | | (1)0) 0 | | | | | | | | | |
| | | Number of | Input | Hydrogra | phs 0 Number | of Storage | Structures | 2 | | | | | |
| | | Number | of Onli | ne Contr no Contr | ols 2 Number | of Time/Ar | ea Diagrams mo Controls | 0 | | | | | |
| | | Number C | U UIIII | ne conci | OIS 0 NUMBEL | OI Real II | me concrors | 0 | | | | | |
| | | | | Synthet | ic Rainfall 1 | Details | | | | | | | |
| | | Rain | fall Mo | del | FSI | Ratio | R 0.400 | | | | | | |
| | | | Keg M5-60 (1 | ion Engl mm) | and and Wales |) Cv (Summe | r) 0.750 | | | | | | |
| | | | 110 00 (. | , | 20.000 | | 1, 0.010 | | | | | | |
| | | Margin f | or Floo | d Risk W | arning (mm) 1 | _50.0 D | VD Status C | N | | | | | |
| | | | | Analys | DTS Status | Fine Inert | ia Status C | N | | | | | |
| | | | | | DIS Status | ON | | | | | | | |
| | | | | | | | | | | | | | |
| | | Duratio | Profile | (S) | 15 30 60 7 | 20 190 2 | Summer and | Winter | | | | | |
| | | Duración | 1(5) (1111 | .115) | 720, 960, 1 | 120, 180, 2 [.] 1440, 2160, | 2880, 4320 | , 5760, | | | | | |
| | | | | | | | 7200 , 8640 | , 10080 | | | | | |
| | Ret | turn Period | (s) (yea | rs) | | | 1, | 30, 100 | | | | | |
| | | Climate | Change | (8) | | | | 0, 0, 0 | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | Water | | | | |
| DN | US/MH | C t a a a a | Return | Climate | First (X) | First (Y) | First (Z) | Overflow | Level | | | | |
| PN | Name | Storm | Period | Change | Surcharge | F100a | Overiiow | ACL. | (111) | | | | |
| 1.000 | 1 | 15 Winter | 100 | +0% | | | | | 59.501 | | | | |
| 2.000 | 2 | 15 Winter | 100 | +0% | | | | | 59.501 | | | | |
| 3 000 | 3 | 15 Winter 15 Winter | 100 | +0% +0% | | | | | 59.239 59.344 | | | | |
| 4.000 | 5 | 15 Summer | 100 | +0% | | | | | 57.070 | | | | |
| 5.000 | 6 | 15 Winter | 100 | +0% | | | | | 59.173 | | | | |
| 1.002 | 6 | 15 Summer | 100 | +0% | 100/15 Summe | r | | | 57.046 | | | | |
| 1.003 | 7 | 15 Summer | 100 | +0% | | | | | 56.786 | | | | |
| 1.004 | 0 9 | 15 Winter | 100 | +0% | | | | | 51.714 | | | | |
| 6.000 | 10 | 15 Winter | 100 | +0% | | | | | 60.369 | | | | |
| 6.001 | 11 | 15 Winter | 100 | +0% | | | | | 55.972 | | | | |
| 6.002 | 12 | 15 Winter | 100 | +0응 | | | | | 55.798 | | | | |
| 7.000 | 13 14 | 15 Winter | 100 | +0% | | | | | 60.373 | | | | |
| 7.001 | 15 | 15 Winter | 100 | +0% | | | | | 56.568 | | | | |
| 6.004 | 16 | 60 Winter | 100 | +0% | | | | | 55.543 | | | | |
| 6.005 | 17 | 120 Winter | 100 | +0% | 100/30 Winte | r | | | 55.570 | | | | |
| 0.000 | Tβ | ij winter | TOO | +0% | 0.01 | | | | JJ.244 | | | | |
| 1 | | | | ©1982- | 2017 XP Sol | utions | | | | | | | |

| Simpson Associates | | Page 14 |
|------------------------------|-------------------------|-----------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | |
| File Main Network Simulation | Checked by | Dialitaye |
| Micro Drainage | Network 2017.1.2 | |

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

| | 110 /MH | Surcharged | Flooded | Flow / | Overflow | Pipe | | I orrol |
|-------|---------|------------|-------------------|--------------|----------|---------|------------|----------|
| PN | Name | (m) | (m ³) | Cap. | (1/s) | (1/s) | Status | Exceeded |
| | | | | - - · | · · - · | · · · · | | |
| 1.000 | 1 | -0.049 | 0.000 | 0.78 | | 13.2 | OK | |
| 2.000 | 2 | -0.049 | 0.000 | 0.78 | | 13.2 | OK | |
| 1.001 | 3 | -0.086 | 0.000 | 0.69 | | 67.1 | OK | |
| 3.000 | 4 | -0.106 | 0.000 | 0.19 | | 7.1 | OK | |
| 4.000 | 5 | -0.050 | 0.000 | 0.40 | | 7.0 | OK | |
| 5.000 | 6 | -0.077 | 0.000 | 0.48 | | 16.6 | OK | |
| 1.002 | 6 | 0.046 | 0.000 | 1.23 | | 97.1 | SURCHARGED | |
| 1.003 | 7 | -0.114 | 0.000 | 0.63 | | 88.7 | OK | |
| 1.004 | 8 | -0.186 | 0.000 | 0.30 | | 91.2 | OK | |
| 1.005 | 9 | -0.186 | 0.000 | 0.31 | | 91.7 | OK | |
| 6.000 | 10 | -0.251 | 0.000 | 0.06 | | 15.2 | OK | |
| 6.001 | 11 | -0.198 | 0.000 | 0.24 | | 14.4 | OK | |
| 6.002 | 12 | -0.201 | 0.000 | 0.23 | | 13.7 | OK | |
| 6.003 | 13 | -0.194 | 0.000 | 0.27 | | 13.5 | OK | |
| 7.000 | 14 | -0.097 | 0.000 | 0.27 | | 10.3 | OK | |
| 7.001 | 15 | -0.102 | 0.000 | 0.22 | | 10.2 | OK | |
| 6.004 | 16 | -0.007 | 0.000 | 0.39 | | 4.2 | OK | |
| 6.005 | 17 | 0.040 | 0.000 | 0.20 | | 3.8 | SURCHARGED | |
| 6.006 | 18 | -0.076 | 0.000 | 0.46 | | 18.9 | OK | |

| Simpson Associates | | Page 15 |
|------------------------------|-------------------------|----------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:31 | Designed by Bryn.Tawton | Dcainago |
| File Main Network Simulation | Checked by | Diamaye |
| Micro Drainage | Network 2017.1.2 | |

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

| | | | | | | | | | Water |
|-------|-------|------------|--------|---------|--------------|-----------|-----------|----------|--------|
| | US/MH | | Return | Climate | First (X) | First (Y) | First (Z) | Overflow | Level |
| PN | Name | Storm | Period | Change | Surcharge | Flood | Overflow | Act. | (m) |
| C 007 | 1.0 | 15 Minter | 100 | 100 | | | | | F0 007 |
| 6.007 | 19 | 15 Winter | 100 | +08 | | | | | 52.297 |
| 1.006 | 20 | 600 Winter | 100 | +0% | 30/15 Summer | | | | 50.377 |
| 1.007 | 21 | 600 Winter | 100 | +0% | 30/15 Summer | | | | 50.377 |
| 1.008 | 22 | 600 Winter | 100 | +0% | 30/30 Summer | | | | 50.376 |

| | PN | US/MH Name | Surcharged Depth (m) | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Pipe Flow (l/s) | Status | Level Exceeded |
|---|-------|---------------|----------------------------|---------------------------|----------------|-------------------|-----------------------|------------|-------------------|
| (| 6.007 | 19 | -0.103 | 0.000 | 0.21 | | 18.7 | OK | |
| - | 1.006 | 20 | 0.587 | 0.000 | 0.23 | | 11.8 | SURCHARGED | |
| - | 1.007 | 21 | 0.627 | 0.000 | 0.25 | | 11.7 | SURCHARGED | |
| - | 1.008 | 22 | 0.636 | 0.000 | 0.01 | | 1.1 | SURCHARGED | |

| Simpso | n Assoc | ciates | 5 | | | | | | | Pag | e 1 |
|--------|---------|--------|--------|----------|--------|---------------|-------|------------------|----------------------|----------|----------------|
| 1 Mark | et Plac | ce Mer | ٧S | | | | | | | 5 | |
| Henley | -on-Tha | ames | | | | | | | | 2 | 4 |
| RG9 2A | H | | | | | | | | | Mi | |
| Date 2 | 1/10/20 | 021 13 | L:44 | | De | signed by | Bryn. | Tawton | | De | ainado |
| File M | ain Net | twork | Simu | lation | Ch | ecked by | | | | DIG | maye |
| Micro | Drainag | ge | | | Ne | twork 2017 | 7.1.2 | | | | |
| | | STOR | া ওদাআ | FR DESI | GN by | the Modif | ied R | ational | Metho | d | |
| | | 01010 | | | Jon by | che nour. | | | 110 0110 | <u>u</u> | |
| | | | | Networ | k Desi | gn Table : | for S | torm | | | |
| PN | Length | Fall | Slop | e I.Area | T.E. | Base | k | HYD DI | A Sect | ion Type | Auto |
| | (m) | (m) | (1:X |) (ha) | (mins) | Flow (l/s) | (mm) | SECT (m | m) | | Design |
| 1.000 | 24.900 | 0.250 | 99. | 6 0.028 | 4.00 | 0.0 | 0.600 | o 1 | 50 Pipe | /Conduit | ð |
| 2.000 | 24.900 | 0.250 | 99. | 6 0.028 | 4.00 | 0.0 | 0.600 | o 1 | 50 Pipe | /Conduit | ð |
| 1.001 | 56.700 | 2.150 | 26. | 4 0.088 | 0.00 | 0.0 | 0.600 | o 2 | <mark>25</mark> Pipe | /Conduit | ð |
| 3.000 | 17.400 | 0.870 | 20. | 0 0.015 | 4.00 | 0.0 | 0.600 | o 1 | 50 Pipe | /Conduit | ð |
| 4.000 | 9.400 | 0.118 | 79. | 7 0.015 | 4.00 | 0.0 | 0.600 | o 1 | 50 Pipe | /Conduit | ð |
| 5.000 | 53.410 | 2.100 | 25. | 4 0.035 | 4.00 | 0.0 | 0.600 | o 1 | 50 Pipe | /Conduit | ð |
| 1.002 | 9.600 | 0.100 | 96. | 0.000 | 0.00 | 0.0 | 0.600 | o <mark>3</mark> | 00 Pipe | /Conduit | . |
| 1.003 | 143.000 | 2.400 | 59. | 6 0.000 | 0.00 | 0.0 | 0.600 | o <u>3</u> | 00 Pipe | /Conduit | - 8 |
| 1.004 | 29.860 | 2.600 | 11. | 5 0.000 | 0.00 | 0.0 | 0.600 | o 3 | 00 Pipe | /Conduit | - 6 |
| 1.005 | 23.480 | 2.110 | 11. | 1 0.000 | 0.00 | 0.0 | 0.600 | o <u>3</u> | 00 Pipe | /Conduit | |
| 6.000 | 57.200 | 2.860 | 20. | 0 0.032 | 4.00 | 0.0 | 0.600 | o 3 | 00 Pipe | /Conduit | a |
| 6.001 | 51.230 | 0.171 | 300. | 0.000 | 0.00 | 0.0 | 0.600 | o 3 | 00 Pipe | /Conduit | Ä |
| 6.002 | 51.230 | 0.171 | 300. | 0.000 | 0.00 | 0.0 | 0.600 | o <u>3</u> | 00 Pipe | /Conduit | . Ă |
| 6.003 | 10.000 | 0.033 | 300. | 0.000 | 0.00 | 0.0 | 0.600 | o 3 | 00 Pipe | /Conduit | . . |
| | | | | N | etwork | Results T | able | | | | |
| | | | | | ceworn | 1000100 1 | abic | | | | |
| P | N Rai | .n T | .c. | US/IL Σ | I.Area | Σ Base | Foul | Add Flow | w Vel | Cap 1 | Flow |
| | (mm/) | hr) (m | ins) | (m) | (ha) | Flow (l/s) | (l/s) | (1/s) | (m/s) | (l/s) (| 1/s) |
| 1.0 | 00 50 | .00 | 4.41 | 59.400 | 0.028 | 0.0 | 0.0 | 0. | 0 1.01 | 17.8 | 3.8 |
| 2.0 | 00 50 | .00 | 4.41 | 59.400 | 0.028 | 0.0 | 0.0 | 0. | 0 1.01 | 17.8 | 3.8 |

| 2.000 | 50.00 | 4.41 | 59.400 | 0.028 | 0.0 | 0.0 | 0.0 | 1.01 | 17.8 | 3.8 | |
|-------|-------|------|--------|------------|--------|------|-----|------|-------|------|--|
| 1.001 | 50.00 | 4.78 | 59.100 | 0.144 | 0.0 | 0.0 | 0.0 | 2.56 | 101.7 | 19.5 | |
| 3.000 | 50.00 | 4.13 | 59.300 | 0.015 | 0.0 | 0.0 | 0.0 | 2.26 | 40.0 | 2.0 | |
| 4.000 | 50.00 | 4.14 | 56.970 | 0.015 | 0.0 | 0.0 | 0.0 | 1.13 | 19.9 | 2.0 | |
| 5.000 | 50.00 | 4.44 | 59.100 | 0.035 | 0.0 | 0.0 | 0.0 | 2.00 | 35.4 | 4.7 | |
| 1.002 | 50.00 | 4.88 | 56.700 | 0.209 | 0.0 | 0.0 | 0.0 | 1.60 | 113.4 | 28.3 | |
| 1.003 | 50.00 | 6.05 | 56.600 | 0.209 | 0.0 | 0.0 | 0.0 | 2.04 | 144.2 | 28.3 | |
| 1.004 | 49.76 | 6.16 | 54.200 | 0.209 | 0.0 | 0.0 | 0.0 | 4.66 | 329.1 | 28.3 | |
| 1.005 | 49.44 | 6.24 | 51.600 | 0.209 | 0.0 | 0.0 | 0.0 | 4.74 | 335.0 | 28.3 | |
| 6.000 | 50.00 | 4.27 | 60.320 | 0.032 | 0.0 | 0.0 | 0.0 | 3.53 | 249.6 | 4.3 | |
| 6.001 | 50.00 | 5.22 | 55.870 | 0.032 | 0.0 | 0.0 | 0.0 | 0.90 | 63.8 | 4.3 | |
| 6.002 | 49.73 | 6.16 | 55.699 | 0.032 | 0.0 | 0.0 | 0.0 | 0.90 | 63.8 | 4.3 | |
| 6.003 | 49.04 | 6.35 | 55.528 | 0.032 | 0.0 | 0.0 | 0.0 | 0.90 | 63.8 | 4.3 | |
| | | 2.00 | | | | | 2.0 | | 00.0 | | |
| | | | ©198 | 82-2017 XP | Solut: | ions | | | | | |
| | | | | | | | | | | | |

| Simpso | on Asso | ciate | es | | | | | | | | Pa | ge 2 |
|----------------|---------|--------|---------|----------|------------|--------------|-----------|-------------|------|-------|---------------------|-------------|
| 1 Mark | ket Pla | ace Me | ews | | | | | | | | | |
| Henley | y-on-Th | names | | | | | | | | | 4 | 4 |
| RG9 2 <i>A</i> | ΔH | | | | | | | | | | M | licro |
| Date 2 | 21/10/2 | 2021 1 | 1:44 | | De | signed by | Bryn. | .Tawt | on | | | cainado |
| File M | 1ain Ne | etwork | s Simu | lation | Ch | ecked by | | | | | U | amaye |
| Micro | Draina | ige | | | Ne | twork 2017 | 7.1.2 | | | | | |
| | | | | | | | | | | | | |
| | | STOR | M SEWI | ER DESI | GN by | the Modif | ied Ra | ation | al M | letho | d | |
| | | | | NT - 1 - | 1 | | | | | | | |
| | | | | Networ | rk Desi | gn Table : | IOF S | LOIM | | | | |
| PN | Length | Fall | Slope | I.Area | T.E. | Base | k | HYD | DIA | Sect: | ion Typ | pe Auto |
| | (m) | (m) | (1:X) | (ha) | (mins) | Flow (l/s) | (mm) | SECT | (mm) | | | Design |
| | | | | | | | | | | | | |
| 7.000 | 78.100 | 3.800 | 20.6 | 5 0.022 | 4.00 | 0.0 | 0.600 | 0 | 150 | Pipe, | /Condu | it 🔒 |
| 7.001 | 14.260 | 1.120 | 12.7 | 0.000 | 0.00 | 0.0 | 0.600 | 0 | 150 | Pipe, | /Condu | it 💣 |
| 6 004 | 1 0.85 | 0 002 | 500 0 | | 0 00 | 0 0 | 0 600 | 0 | 150 | Pine | /Condu- | it a |
| 6.005 | 16.460 | 0.206 | 80.0 | 0.000 | 0.00 | 0.0 | 0.600 | 0 | 150 | Pipe, | /Condui | it 🔒 |
| 6.006 | 53.770 | 2.920 | 18.4 | 0.038 | 0.00 | 0.0 | 0.600 | 0 | 150 | Pipe, | /Condu | it 👸 |
| 6.007 | 8.120 | 2.610 | 3.1 | 0.000 | 0.00 | 0.0 | 0.600 | 0 | 150 | Pipe, | /Condui | it 🖰 |
| 1.006 | 11.980 | 0.040 | 299.5 | 5 0.000 | 0.00 | 0.0 | 0.600 | 0 | 300 | Pipe | /Condu ⁺ | it 🗛 |
| 1.007 | 11.020 | 0.010 | 1081.8 | 0.000 | 0.00 | 0.0 | 0.600 | 0 | 375 | Pipe, | /Condui | it 🔐 |
| 1.008 | 14.600 | 0.290 | 50.3 | 0.000 | 0.00 | 0.0 | 0.600 | 0 | 375 | Pipe, | /Condu | it 🕜 |
| | | | | | | - 1 | | | | | | |
| | | | | N | etwork | Results 'I | able | | | | | |
| P | 'N Ra | in | т.с. | US/IL Σ | I.Area | Σ Base | Foul | Add F | 'low | Vel | Cap | Flow |
| | (mm, | /hr) (| mins) | (m) | (ha) | Flow (l/s) | (l/s) | (1/: | s) | (m/s) | (l/s) | (1/s) |
| | | | | | | | | | | | | |
| 7.0 | 000 50 | 0.00 | 4.58 6 | 50.320 | 0.022 | 0.0 | 0.0 | | 0.0 | 2.23 | 39.4 | 3.0 |
| 7.0 | 001 50 | 0.00 | 4.67 5 | 56.520 | 0.022 | 0.0 | 0.0 | | 0.0 | 2.84 | 50.2 | 3.0 |
| 6.1 | 004 48 | 8.88 | 6.39 5 | 55.400 | 0.054 | 0.0 | 0.0 | | 0.0 | 0.44 | 7.8 | 7.1 |
| 6.0 | 005 48 | B.00 | 6.63 5 | 55.380 | 0.054 | 0.0 | 0.0 | | 0.0 | 1.12 | 19.9 | 7.1 |
| 6.0 | 006 40 | 6.70 | 7.01 5 | 55.170 | 0.092 | 0.0 | 0.0 | | 0.0 | 2.36 | 41.7 | 11.6 |
| 6.0 | 007 40 | 6.62 | 7.03 5 | 52.250 | 0.092 | 0.0 | 0.0 | | 0.0 | 5.76 | 101.7 | 11.6 |
| 1.1 | 006 4 | 5.90 | 7.26 4 | 19.490 | 0.301 | 0.0 | 0.0 | | 0.0 | 0.90 | 63.8 | 37.4 |
| 1.0 | 007 44 | 4.85 | 7.59 4 | 19.375 | 0.301 | 0.0 | 0.0 | | 0.0 | 0.54 | 59.9 | 37.4 |
| 1.0 | 008 44 | 4.56 | 7.69 4 | 19.365 | 0.301 | 0.0 | 0.0 | | 0.0 | 2.56 | 282.6 | 37.4 |
| | | | | | | fall Data | 41 - E | O+ | | | | |
| | | | 11.66 | = FIOW1 | ing Out | iall Deta | TTR I(| UL ST | OTIU | | | |
| | | 0 | utfall | Outfa | 11 C. L | evel I. Leve | el M | lin | D,L | w | | |
| | | Pip | e Numbe | er Name | e (m | i) (m) | I. 1 (| Level m) | (mm) | (mm) | | |
| | | | 1 00 | 18 | ⊑ 1 | 100 /00 | 75 / | 9 150 | 525 | 0 | | |
| | | | 1.00 | | 51 | .100 49.0 | , 5 4 | | JZJ | U | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | |

| Simpson Associates | | Page 3 |
|--|---|---|
| 1 Market Place Mews | | rage 5 |
| I Maiket Flace Mews | | 2 |
| Henrey-on-manes | | ~ m |
| RG9 ZAH | | Micro |
| Date 21/10/2021 11:44 | Designed by Bryn.'L'awton | Drainarre |
| File Main Network Simulation | Checked by | bremiergie |
| Micro Drainage | Network 2017.1.2 | |
| File Main Network Simulation Micro Drainage Simulation Volumetric Runoff Coeff Areal Reduction Factor Hot Start (mins) Hot Start Level (mm) Manhole Headloss Coeff (Global) Foul Sewage per hectare (1/s) Number of Input Hydrogr Number of Online Cont Number of Offline Cont Synthet Rainfall Model Return Period (years) Region Engla M5-60 (mm) Ratio R | Checked by Network 2017.1.2 on Criteria for Storm 0.750 Additional Flow - % of Total Fl 1.000 MADD Factor * 10m ³ /ha Stora 0 Inlet Coefficcie 0 Flow per Person per Day (1/per/da 0.500 Run Time (min 0.000 Output Interval (min raphs 0 Number of Storage Structures 2 rols 2 Number of Time/Area Diagrams 0 rols 0 Number of Real Time Controls 0 <u>ic Rainfall Details</u> FSR Profile Type Sum 1 Cv (Summer) 0. 20.000 Storm Duration (mins) 0.400 | ow 0.000 ge 2.000 nt 0.800 y) 0.000 s) 60 s) 1 |
| 0.1982- | -2017 XP Solutions | |

| Simpson Ass | ociates | | | | | | Page 4 |
|-------------|--------------|----------------|------------------------|--------------------|--------------------------|------------------------|---|
| 1 Market Pl | ace Mews | | | | | | |
| Henley-on-T | hames | | | | | | 4 |
| RG9 2AH | | | | | | | - Com |
| Date 21/10/ | 2021 11:44 | | Designe | d by Bry | n.Tawton | | MICLO |
| Eilo Main N | otuork Cim | ulation | Chookoo | bu | | | Drainage |
| FILE MAIN N | etwork Sim | | Checked | | | | Annual of the second |
| Micro Drain | age | | Network | 2017.1. | . 2 | | |
| Hydro | -Brake® On | <u>Online</u> | Control | s for St | <u>.orm</u> 6 005 Vol | 11me (m ³) | • 0 9 |
| ilyaro | Diaxee op | | 10. 177 | D0/11. | 0.000, 101 | | <u> </u> |
| | | IInit | Referenc | A MD-SHE- | 0103-4000-0 | 400-4000 | |
| | | Desid | n Head (m | | 0103 1000 0 | 0.400 | |
| | | Design | Flow (l/s |) | | 4.0 | |
| | | | Flush-Flo | TM | Ca | lculated | |
| | | | Objectiv | e Minimi | se upstream | storage | |
| | | A | pplicatio | n | | Surface | |
| | | Sump | Availabl | e | | Yes | |
| | | Dla Tovort | Level (mm |) | | 1UJ 55 380 | |
| | Minimum Ou | tlet Pine Dia | meter (mm |) | | 150 | |
| | Suggeste | d Manhole Dia | meter (mm |) | | 1200 | |
| | | | | , | | | |
| | | Control Po | ints | Head (m) | Flow (l/s) | | |
| | Des | sign Point (Ca | alculated | 0.400 | 9 4.0 |) | |
| | 200 |] | Flush-Flo ¹ | [™] 0.156 | 5 4.0 | | |
| | | | Kick-Flo | 0.306 | 5 3.5 | j. | |
| | Mea | an Flow over H | Head Range | - e | - 3.2 | | |
| | | | | | | | |
| The hydrolo | gical calcul | ations have b | een based | l on the H | ead/Dischar | ge relation | nship for the |
| Hydro-Brake | ® Optimum as | s specified. | Should ar | other typ | e of contro | l device o | ther than a |
| invalidated | optimum® be | e utilised the | en these s | lorage ro | uting calcu | Lations wi | ii be |
| invariaacea | L. | | | | | | |
| Depth (m) | Flow (l/s) | Oepth (m) Flow | w (l/s) D | epth (m) 1 | Flow (l/s) 1 | Depth (m) | Flow (l/s) |
| 0 100 | 2 5 | 1 200 | 67 | 2 000 | 10.2 | 7 000 | 15 5 |
| 0.100 | 3.5 | 1 400 | 0.7 | 3.000 | 10.3 | 7.000 | 15.5 |
| 0.200 | 3.6 | 1 600 | 7.6 | 4 000 | 11 8 | 8 000 | 16.6 |
| 0.400 | 4.0 | 1.800 | 8.1 | 4.500 | 12.4 | 8.500 | 17.1 |
| 0.500 | 4.4 | 2.000 | 8.5 | 5.000 | 13.1 | 9.000 | 17.6 |
| 0.600 | 4.8 | 2.200 | 8.9 | 5.500 | 13.7 | 9.500 | 18.1 |
| 0.800 | 5.5 | 2.400 | 9.2 | 6.000 | 14.4 | | |
| 1.000 | 6.1 | 2.600 | 9.6 | 6.500 | 15.0 | | |
| | | | | | | | |
| Hydro | -Brake® Op | timum Manho | le: 22, | DS/PN: 1 | 1.008, Vol | ume (m³) | : 5.0 |
| | | | | | | | |
| | | Unit | Referenc | e MD-SHE- | 0050-1400-1 | 585-1400 | |
| | | Desig | n Head (m | .) | | 1.585 | |
| | | Design | FLOW (1/S |) TM | Co | 1.4 | |
| | | | Objectiv | Minimi | Ca. | storado | |
| | | Z | oplicatio | e mitiitiit u | se upstream | Surface | |
| | | Sumr | Availabl | e | | Yes | |
| | | Dia | meter (mn |) | | 50 | |
| | | Invert | Level (m |) | | 49.365 | |
| | Minimum Ou | tlet Pipe Dia | meter (mn |) | | 75 | |
| | Suggeste | d Manhole Dia | meter (mm |) | | 1200 | |
| | | | | | | | |
| | | | | | | | |
| | | @1922. | -2017 YD | Solutio | ns | | |
| 1 | | ST JOZ- | | SOT UCTO | | | |

| Simpson Ass | ociates | | | | | | Page 5 |
|----------------------------|-----------------------------|----------------------------|------------------------|-------------------------|--------------|-------------|-----------------------------|
| 1 Market Pl | ace Mews | | | | | | |
| Henley-on-T | hames | | | | | | L |
| RG9 2AH | | | | | | | Micco |
| Date 21/10/ | 2021 11:4 | 4 | Desig | ned by Bi | ryn.Tawton | | |
| File Main N | letwork Si | mulation | . Check | ed by | | | Diamaye |
| Micro Drain | lage | | Netwo | rk 2017.1 | .2 | | |
| Hydro | -Brake® O | ptimum Man | hole: 22 | , DS/PN: | 1.008, Vo | lume (m³) |): 5.0 |
| | | Control | Points | Head (1 | n) Flow (l/s | ;) | |
| | D | esign Point | (Calculate | ed) 1.5 | 35 1. | 4 | |
| | | - | Flush-Fl | Lo™ 0.23 | 19 1. | 0 | |
| | | oon Elere er | Kick-Fl | Lo® 0.4 | 46 0. | 8 | |
| | M | ean Flow ove | r Head Rar | ıge | - 1. | 0 | |
| The hydrold Hydro-Brake | ogical calcu ® Optimum a | lations hav s specified | e been bas . Should | ed on the another ty | Head/Dischar | rge relatio | onship for the other than a |
| Hydro-Brake | e Optimum® k 1 | be utilised | then these | storage r | outing calcu | ulations wi | ill be |
| Depth (m) | Flow (l/s) | Depth (m) F | 'low (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
| 0.100 | 0.9 | 1.200 | 1.2 | 3.000 | 1.9 | 7.000 | 2.8 |
| 0.200 | 1.0 | 1.400 | 1.3 | 3.500 | 2.0 | 7.500 | 2.9 |
| 0.300 | 1.0 | 1.600 | 1.4 | 4.000 | 2.1 | 8.000 | 2.9 |
| 0.500 | 0.8 | 2.000 | 1.6 | 5.000 | 2.4 | 9.000 | 3.1 |
| 0.600 | 0.9 | 2.200 | 1.6 | 5.500 | 2.5 | 9.500 | 3.2 |
| 0.800 | 1.0 | 2.400 | 1.7 | 6.000 | 2.6 | | |
| 1.000 | 1.1 | 2.600 | 1./ | 6.500 | 2.1 | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| Simpson Associates | Page 6 |
|---|----------|
| 1 Market Place Mews | |
| Henley-on-Thames | L |
| RG9 2AH | Micco |
| Date 21/10/2021 11:44 Designed by Bryn.Tawton | Dcaipago |
| File Main Network Simulation Checked by | Diamaye |
| Micro Drainage Network 2017.1.2 | |
| Storage Structures for Storm | |
| Tank or Pond Manhole: 16, DS/PN: 6.004 | |
| Invert Level (m) 55.400 | |
| Depth (m) Area (m ²) Depth (m) Area (m ²) | |
| 0.000 60.0 0.200 98.0 | |
| Cellular Storage Manhole: 22, DS/PN: 1.008 | |
| Invert Level (m) 49.440 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 |) ; |
| Depth (m) Area (m ²) Inf. Area (m ²) Depth (m) Area (m ²) Inf. Area | (m²) |
| 0.000 150.0 150.0 1.501 0.0 22 1.500 150.0 225.0 | 25.0 |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| @1082-2017 VD Salutions | |
| SIGOZ-ZUII AF SULULIONS | |

| Simpson | Ass | ociates | 3 | | | | | | Page | . 7 |
|---------------|---------------|-----------------------|------------|----------------------|--------------|----------|------------------|--------------------------|------------------|------------------|
| 1 Marke | t Pl | ace Mev | IS | | | | | | | |
| Henley- | on-T | hames | | | | | | | 4 | ~ |
| RG9 2AH | | | | | | | | | Mic | Jun |
| Date 21 | /10/ | 2021 11 | :44 | | Design | ed by | Bryn.Taw | ton | | IU |
| File Ma | in N | etwork | Simulat | ion | Checke | d by | | | DIa | inage |
| Micro D | rain | age | | | Networ | k 2017 | .1.2 | | | |
| | | | | | | | | | | |
| <u>100 ye</u> | ear F | Return | Period S | Summary | of Cri | tical | Results | by Maximu | m Level | (Rank |
| | | | | - | L) IOT | Storm | | | | |
| | | | | | | | | | | |
| | | | | Sim | ulation | Criter | La | | | |
| | | Areal H | Reduction | Factor 1 | .000 | Additio | nal Flow - | % of Total | Flow 0.0 | 000 |
| | | I | Hot Start | (mins) | 0 | MADI | D Factor * | 10m³/ha St | orage 2.0 | 000 |
| Man | holo | Hot S | Start Leve | el (mm) Slobal) O | 0 500 El. | ou nor 1 | In Corcor ror | let Coeffie | ecient 0.8 | 300 |
| Man. F | nore oul s | Readios: Sewage pe | er hectare | (1/s) 0 | .000 FI | ow per i | Person per | Day (1/per | (day) 0.0 | 100 |
| | | energe Fr | | - (_, _, _ | | | | | | |
| | | Number | of Input | Hydrogra | aphs 0 N | umber o | f Storage | Structures | 2 | |
| | | Numb | er of Onl | ine Conti | cols 2 N | lumber o | f Time/Are | ea Diagrams | 0 | |
| | | Numbe | r of UIII | ine Conti | COLS U N | umber o | I Real Tir | ne Controls | 0 | |
| | | | | Synthe | tic Rain | fall De | tails | | | |
| | | R | ainfall M | odel | | FSR | Ratio | R 0.400 | | |
| | | | Re | gion Eng | land and | Wales | Cv (Summer | c) 0.750 | | |
| | | | M5-60 | (mm) | | 20.000 | Cv (Winter | c) 0.840 | | |
| | | Marqi | n for Flo | od Risk V | Jarning | (mm) 15 | 0.0 DV | /D Status O | N | |
| | | 2 | | Analys | sis Time | step F | ine Inerti | la Status O | N | |
| | | | | | DTS St | atus | ON | | | |
| | | | | | | | | | | |
| | | | Profil | e(s) | | | | Summer and | Winter | |
| | | Durat | ion(s) (n | nins) | 15, 30, | 60, 12 | 0, 180, 24 | 10, 360, 48 | 0, 600, | |
| | | | | | 120, | 960, 14 | 40, 2160, | 2880, 4320 7200, 8640 | , 5760, 10080 | |
| | Ret | urn Peri | .od(s) (ye | ears) | | | | ,200, 0010 | 100 | |
| | | Clima | te Change | e (응) | | | | | 40 | |
| | | | | | | | | | | |
| | | | | | | | | | | Water |
| US | s/mh | | Return | n Climate | Firs | t (X) | First (Y) | First (Z) | Overflow | Level |
| PN N | lame | Storm | Perio | d Change | Surc | harge | Flood | Overflow | Act. | (m) |
| 1.000 | 1 | 15 Wint | er 100 |) +40% | 100/15 | Summer | | | | 59.584 |
| 2.000 | 2 | 15 Wint | er 100 |) +40% | 100/15 | Summer | | | | 59.585 |
| 1.001 | 3 | 15 Wint | er 100 |) +40왕 | | | | | | 59.275 |
| 3.000 | 4 | 15 Wint | er 100 |) +40% | 100/11- | ~ | | | | 59.353 |
| 4.000 | 5 6 | 15 Wint | er 100 | J +40% D +40% | 100/15 | Summer | | | | 57.221 59 190 |
| 1.002 | 6 | 15 Wint | er 100 |) +40% | 100/15 | Summer | | | | 57.184 |
| 1.003 | 7 | 15 Wint | er 100 |) +40% | | | | | | 56.833 |
| 1.004 | 8 | 15 Wint | er 100 |) +40% | | | | | | 54.337 |
| 1.005 | 9 | 15 Wint | er 100 |) +40% | | | | | | 51.737 |
| 6.000 | 11 | 15 Wint 15 Wint | er 100 |) +40%) +40% | | | | | | 00.380 55.993 |
| 6.002 | 12 | 15 Wint | er 100 |) +40% | | | | | | 55.818 |
| 6.003 | 13 | 15 Wint | er 100 |) +40% | | | | | | 55.655 |
| 7.000 | 14 | 15 Wint | er 100 |) +40% | | | | | | 60.384 |
| 6,004 | 15 16 | LO Wint 60 Wint | er 100 |) +40%) +40% | 100/15 | Winter | | | | 50.578 55.602 |
| 6.005 | 17 | 120 Summ | ner 100 |) +40% | 100/15 | Summer | | | | 55.623 |
| 6.006 | 18 | 15 Wint | er 100 |) +40% | | | | | | 55.262 |
| | 10 | | | | | | | | | 00.202 |

| Simpso | on Assc | ciates | 5 | | | | | | Page | 8 |
|--------|---------|---------|------------|---------|---------|----------|-------|------------|----------|-------|
| 1 Marl | ket Pla | ice Mev | VS | | | | | | | |
| Henley | y-on-Th | ames | | | | | | | 4 | 100 |
| RG9 27 | л ДН | | | | | | | | | m |
| | 21/10/2 | 0.01 11 | | T | | d br Dr | | | — MIC | ſO |
| Date 4 | 21/10/2 | .021 11 | L:44 | 1 | Jesigne | ed by Br | yn.Ta | WEON | Dra | inare |
| File 1 | Main Ne | etwork | Simulatio | on (| Checked | d by | | | Dia | nage |
| Micro | Draina | ıge | | 1 | Networ | < 2017.1 | .2 | | | |
| | | | | | | | | | | |
| 100 | year Re | eturn | Period Su | mmary c | of Crit | ical Res | sults | by Maximu | um Level | (Rank |
| | - | | | 1 |) for (| Storm | | | | |
| | | | | | , - | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | Surcharged | Flooded | | | Pipe | | | |
| | | US/MH | Depth | Volume | Flow / | Overflow | Flow | | Level | |
| | PN | Name | (m) | (m³) | Cap. | (l/s) | (l/s) | Status | Exceeded | |
| | 1 000 | 1 | 0 034 | 0 000 | 1 05 | | 17 8 | SUDCHARCED | | |
| | 2 000 | 2 | 0.034 | 0.000 | 1 05 | | 17.8 | SURCHARGED | | |
| | 1.001 | 3 | -0.050 | 0.000 | 0.94 | | 92.1 | OK | | |
| | 3.000 | 4 | -0.097 | 0.000 | 0.27 | | 10.0 | OK | | |
| | 4.000 | 5 | 0.101 | 0.000 | 0.56 | | 9.8 | SURCHARGED | | |
| | 5.000 | 6 | -0.060 | 0.000 | 0.67 | | 23.1 | OK | | |
| | 1.002 | 6 | 0.184 | 0.000 | 1.69 | | 133.6 | SURCHARGED | | |
| | 1.003 | 7 | -0.067 | 0.000 | 0.90 | | 126.4 | OK | | |
| | 1.004 | 8 | -0.163 | 0.000 | 0.42 | | 127.1 | OK | | |
| | 1.005 | 9 | -0.163 | 0.000 | 0.43 | | 127.2 | OK | | |
| | 6.000 | 10 | -0.240 | 0.000 | 0.09 | | 21.3 | OK | | |
| | 6.001 | 11 | -0.177 | 0.000 | 0.34 | | 20.2 | OK | | |
| | 6.002 | 12 | -0.181 | 0.000 | 0.32 | | 19.0 | OK | | |
| | 6.003 | 13 | -0.173 | 0.000 | 0.37 | | 18.7 | OK | | |
| | 7.000 | 14 | -0.086 | 0.000 | 0.37 | | 14.4 | OK | | |
| | 7.001 | 15 | -0.092 | 0.000 | 0.31 | | 14.3 | OK | | |
| | 6.004 | 16 | 0.052 | 0.000 | 0.40 | | 4.3 | SURCHARGED | | |
| | 6.005 | 17 | 0.093 | 0.000 | 0.21 | | 3.8 | SURCHARGED | | |
| | 6.006 | 18 | -0.058 | 0.000 | 0.66 | | 27.0 | OK | | |
| | | | | | | | | | | |

| Simpson Associates | | Page 9 |
|------------------------------|-------------------------|-----------|
| 1 Market Place Mews | | |
| Henley-on-Thames | | L |
| RG9 2AH | | Micco |
| Date 21/10/2021 11:44 | Designed by Bryn.Tawton | Desipado |
| File Main Network Simulation | Checked by | Dialitaye |
| Micro Drainage | Network 2017.1.2 | |

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

| PN | US/MH Name | Storm | Return Period | Climate Change | First (X) Surcharge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) |
|-------|---------------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|-----------------------|
| 6.007 | 19 | 15 Winter | 100 | +40% | | | | | 52.307 |
| 1.006 | 20 | 960 Winter | 100 | +40% | 100/15 Summer | | | | 50.844 |
| 1.007 | 21 | 960 Winter | 100 | +40% | 100/15 Summer | | | | 50.843 |
| 1.008 | 22 | 960 Winter | 100 | +40% | 100/15 Summer | | | | 50.842 |

| PN | US/MH Name | Surcharged Depth (m) | Flooded Volume (m³) | Flow / Cap. | Overflow (1/s) | Pipe Flow (l/s) | Status | Level Exceeded |
|-------|---------------|----------------------------|---------------------------|----------------|-------------------|-----------------------|------------|-------------------|
| 6.007 | 19 | -0.093 | 0.000 | 0.30 | | 26.7 | OK | |
| 1.006 | 20 | 1.054 | 0.000 | 0.22 | | 11.6 | SURCHARGED | |
| 1.007 | 21 | 1.093 | 0.000 | 0.24 | | 11.4 | SURCHARGED | |
| 1.008 | 22 | 1.103 | 0.000 | 0.01 | | 1.4 | SURCHARGED | |

APPENDIX G SUDS IMPLEMENTATION PLAN



SUDS IMPLEMENTATION PLAN

CHESSINGTON WORLD OF ADVENTURES RESORT

LODGE ACCOMMODATION SCHEME

- 1.1 This SUDS Implementation Plan sets out measures to be implemented during construction of the surface water drainage system for the scheme to ensure the site and areas downstream are protected from runoff during construction of the development. It is recommended that the plan is incorporated into the Contractor's Construction Health and Safety Plan with the development carried out in accordance with the measures proposed.
- 1.2 To assist in managing construction runoff and help settle out the high volumes of sediments created during construction, the following additional measures should be implemented to ensure construction runoff is appropriately managed:
 - Protective coverings should be used to help prevent runoff stripping material stockpiles.
 - Plant and wheel washing should take place in a designated location. The area should be tanked and not allowed to discharge into the drainage system or infiltrate into the ground. Effluent should be treated as contaminated waste and disposed off site by a licensed waste management operator.
 - Surfaces used as access roads and storage areas during construction should be swept regularly to prevent the accumulation of dust and mud.
 - Should groundwater be encountered in excavations such water should not be discharged to the drainage system until the amount of suspended solids has been reduced though the controlled use of skips or tanks, which will act as stilling basins.
 - To prevent contamination associated with the use of oils and hydrocarbons during construction, the Contractor should ensure that the following precautionary measures are employed during construction:
 - Regular maintenance of machinery and plant.
 - Use of drip trays.
 - Regular checking of machinery and plant for oil leaks.
 - Use of correct storage facilities.
 - Regular checks for signs of wear and tear on tanks.
 - Specific procedures are followed when refuelling.
 - Use of a designated area for refuelling.
 - Emergency spill kit to be located near refuelling area.
 - Regular emptying of bunds.
 - Tanks should be located in secure areas to stop vandalism.



- 1.3 The above measures would help to ensure that untreated construction runoff would not be discharged to the surface water drainage system.
- 1.4 During construction all components of the drainage system should be constructed in accordance with relevant drawings, specifications and manufacturer's guidelines. Further to this Building Control should visit site on a regular basis to inspect completed works and ensure that the drainage system is installed correctly.

APPENDIX H SUDS MAINTENANCE PLAN



SUDS MAINTENANCE & MANAGEMENT PLAN

CHESSINGTON WORLD OF ADVENTURES RESORT LODGE ACCOMMODATION SCHEME

On occupation of the development, this maintenance and management plan should be incorporated into the sites Operation and Maintenance Manual with the as-built drainage system operated and maintained in accordance with the regime set out in the tables below.

The Site Manager should ensure that the Maintenance Contractor tasked with carrying out any maintenance works provides a risk assessment and method statement that adopts best practice health and safety policies for maintenance personnel throughout the duration of any maintenance works. Measures may include:

- Ensure the use of safe systems of work and procedures are followed.
- Certificated operatives only to be used for all confined space entry.
- Ensure appropriate PPE is worn at all times including the use of safety goggles, ear defenders and other relevant equipment when using high pressure jetting.
- Do not work in weather conditions where flooding or surging is likely.
- Erect barriers where appropriate and provide adequate lighting.
- No operations to be carried out by operatives working alone.
- Time maintenance to not conflict with other on-site activities.
- Method statement to be prepared and approved prior to entry into confined space.



| Maintenance schedule | Required action | Frequency | |
|-------------------------|---|---|--|
| Deguler | Remove all litter and debris from external hard landscaped areas and adjacent landscaping, which may pose a risk to the performance of the system. | Monthly. | |
| maintenance | Remove build-up of sediment / silt in catch- pits and dispose of oils / petrol residues using safe standard practices. Stabilise and mow adjacent landscaped areas and remove weeds. | - | |
| Remedial actions | Repair or rehabilitate inlet and outlets to ensure they are in good condition and operating as designed. Remediate any landscaping, which has raised to within 50mm of the level of adjacent hard landscaping. | As required. | |
| Monitoring | Check of all inlets / outlets for blockages or evidence of physical damage with any necessary remedial action or clearance carried out if required. | On a monthly basis for the first 3 months of operation, thereafter every 6 months & following severe rainfall events. | |
| | Inspect all surfaces for ponding, or silt accumulation. Record areas where water is ponding for more than 48 hours and carry out any remedial work deemed necessary. | After severe storms. | |

Table 1: Below Ground Drainage System - Operation and Maintenance Requirements



| Maintenance schedule | Required action | Frequency | | |
|-------------------------|--|--|--|--|
| | Litter and debris removal from trench surface, access chambers and pre- treatment devices. | Monthly (or as required). | | |
| Regular | Removal and washing of exposed stones on the trench surface. | Annual (bi-annual the first year) or when silt is evident on the surface. | | |
| | Trimming of any roots that may be causing blockages. | Annually (semi-annual the first year). | | |
| | Remove weeds on the trench surface. | Monthly (at start, then as required) | | |
| | Removal of sediment from pre-treatment devices. | Every 6 months. | | |
| Occasional | Remove tree roots or trees that grow close to the trench. | As required. | | |
| Maintenance | At locations with high pollution loads, remove surface geotextile and replace, and wash or replace filter media. | Every 5 years. | | |
| Remedial actions | Clear perforated pipework of blockages. Rehabilitate infiltration or filtration surfaces. Excavate trench walls to expose clean soils if infiltration performance reduces to unacceptable levels. Replace geotextiles and clean and replace | As required. | | |
| | filter media, if clogging occurs. | | | |
| | for blockages, clogging, standing water and structural damage. | Monthly | | |
| Monitoring | Inspect pre-treatment systems, inlets, trench surfaces and perforated pipework for silt accumulation. Establish appropriate silt removal frequencies. | inlets, bework opriate Every 6 months. | | |

Table 2: Gravel Filter Drains - Operation and Maintenance Requirements



| Maintenance schedule | Required action | Frequency | | |
|-------------------------|--|---|--|--|
| | Inspect and identify any areas that are not operating correctly. If required, take remedial action. | Monthly for first 3 months of operation, then every 6 months. | | |
| | Debris removal from catchment surface (where may cause risks to performance). | Monthly. | | |
| Regular maintenance | Where rainfall infiltrates into blocks from above, check surface of filter for blockage by silt, algae or other matter. Remove and replace surface infiltration medium as necessary. | Monthly / after severe storms. | | |
| | Remove sediment from pre-treatment structures. | Annually, or as required. | | |
| Remedial actions | Repair/rehabilitation of inlets, outlet, overflows and vents. | As required. | | |
| Monitoring | Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed. | Annually and after large storms. | | |

| Table 3: Geocellular Storage | Tanks - Operation | and Maintenance | Requirements |
|------------------------------|-------------------|-----------------|--------------|
|------------------------------|-------------------|-----------------|--------------|



| Maintenance schedule | Required action | Frequency | |
|-------------------------|--|--|--|
| | Litter and debris removal. | Monthly. | |
| | Grass cutting for landscaped areas. | Monthly (during growing season), or as required. | |
| Regular | Grass cutting of meadow grass in and around basin. | Every 6 months (spring - before nesting season, and autumn). | |
| maintenance | Manage other vegetation and remove nuisance plants. | Monthly (at start, then as required). | |
| | Tidy all dead growth before start of growing season. | Annually. | |
| | Remove sediment from inlets, outlet. | Annually or as required. | |
| | Re-seed areas of poor vegetation growth. | Annually or as required. | |
| Occasional | Prune and trim trees and remove cuttings. | Every 2 years or as required. | |
| Maintenance | Remove sediment from inlets, outlet and main basin. | 3 – 10 years (or as required). | |
| | Repair of erosion or other damage by re- seeding or re-turfing. | | |
| Remedial actions | Repair / rehabilitation of inlets and outlets | As required. | |
| | Re-level uneven surfaces and reinstate design levels. | | |
| | Inspect inlets and outlets for blockages, and clear if required. | Monthly (for first year) / | |
| Monitorina | Inspect banksides, structures, pipework, etc for evidence of physical damage. | required. | |
| | Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies. | Every 6 months. | |

Table 4: Detention Basin- Operation and Maintenance Requirements

Table 5: Flow Control Chamber / Non-Return Valves - Operation and Maintenance Requirements

| Maintenance schedule | Required action | Frequency | |
|-------------------------|--|---|--|
| Regular maintenance | Cleaning off the flow control device of any debris/ sediment | As required | |
| Demodial | Flow control device repairs. | | |
| Actions | Repair of erosion damage, or damage to chamber. | As required | |
| Monitoring | Inspection of the chamber for debris and sediment build up. | Monthly for first 3 months, thereafter, every 6 months and following severe storm events. | |