**Radwinter Road (East of Griffin Place), Saffron Walden**

**Rosconn Strategic Land**

***Drainage Statement – Issue 00***

*CTP-20-1142*

*September 2021*

## 1. Site

1.1 Cotswold Transport Planning (CTP) provide expert Transport Planning, Highways, Infrastructure and Flood Risk consultancy services throughout the UK.

1.2 CTP have been commissioned to provide drainage consultancy by Rosconn Strategic Land for an outline residential proposal of up to 233 dwellings on Land South of Radwinter Road (East of Griffin Place), Saffron Walden.

1.3 The purpose of this Drainage Statement is to support the Flood Risk Assessment (FRA) produced by CTP for the site, and to provide response to Consultation response UTT/21/2509/OP by the LLFA, Essex County Council.

## 2. Existing Geology and Infiltration Testing to BRE 365

2.1 As detailed in the FRA, geological data held by the British Geological Survey (BGS) shows that the bedrock geology underlying the site is Chalk. Superficial deposits of Lowestoft Formation Diamicton are present within the southeast of the site.

2.2 Soilscapes mapping indicates the underlying soil as freely draining lime-rich loamy soils.

2.3 The desk study data would indicate permeability to some degree within the site. Therefore, testing was undertaken to BRE 365 during January 2021 by Soils Ltd as detailed within the FRA (reference Appendix D of FRA).

2.4 The test pits were excavated to depths of 2.0 and 3.4 metres below ground level (mbgl). The borehole logs confirm the soils and geology as depicted by the soils and geology mapping.

2.5 Soakaway testing demonstrated very low infiltration rates. Groundwater ingress was not encountered, and all sides were stable in both soakaway test pits.

2.6 As infiltration rates proved unviable the SuDS discharge hierarchy was referenced and discharge to an onsite watercourse was deemed suitable.

## 3. Surface Water Management

### *SuDS Attenuation Strategy and Catchments*

3.1 There are four proposed basins indicated on the Drainage Concept and SuDS Plan, CTP-20-1142_C300C. The purpose of four basins is to stagger attenuation and to provide a Water Quality train, thus providing suitable water quality treatment to site runoff.

3.2 In order to size the attenuation basins a full Innovyze Microdrainage Model has been undertaken. This includes all four basins, flow control measures and carrier pipes for catchment areas.

3.3 Catchment areas have been calculated as follows:

**Figure 3.1 – Site Catchment Areas. (Basin 1 Orange hatch, Basin 2 Purple hatch, Basin 4 Pink hatch)**

| Basin Designation | Catchment Area (ha) |
|---|---|
| Basin 1 | 1.88 |
| Basin 2 | 1.04 |
| Basin 4 | 1.32 |
| **Total** | **4.24** |

**Table 3.2 – Site Catchment Areas**

3.4 Basin 3 does not take any direct catchment but provides storage and water quality benefits for Basins 1 and 2 catchments.

3.5 Further details of these catchments can be found on the Drainage Concept and SuDS Plan, CTP-20-1142_C300C included as supporting information to this Drainage Statement.

3.6 It is important to note that as the masterplan is currently conceptual for outline planning only, and not detailed, roads and plot locations have yet to be confirmed. As such full pipe networks and catchments cannot be generated, nor can internal SuDS corridors be modelled.

3.7 The above proves beneficial at this stage as the site attenuation will be modelled conservatively since no inclusion of flow slowing or attenuation volumes for internal SuDS corridors can be incorporated. Full site wide pipe and manhole volumes are also excluded.

3.8 Conveyance routes, existing ground levels and exceedance flows have been incorporated to the Drainage Concept and SUDS plan and Exceedance Flow Plan, however FFLs cannot be detailed at this stage since the layout is a concept plan and does not fully detail highways and, more importantly, plot locations.

3.9 An engineering layout cannot be produced based on a concept masterplan. There is insufficient detail provided on the masterplan, but every effort has been made to deliver detail where possible. Crucially attenuation volumes and key details such as invert levels, means of controlled discharge, required restriction rates, maximum water depths and final discharge point have been provided.

### *Volume and Flow Control Requirements*

3.10 Microdrainage calculations were undertaken and sufficient storage requirements were met that no pipes were surcharged in the 1 in 1 year event, no flooding within the 1 in 30 year event, and sufficient storage for the 1 in 100 year event + 40% CC.

3.11 Half drain times of 24 hours were met for all attenuation features incorporated within the Microdrainage model.

3.12 The following attenuation and control requirements are required for the site:

| Basin Designation | Invert Level and Max Depth of Water | Attenuation Volume ($m^3$) | Downstream Control Measure |
|---|---|---|---|
| Basin 1 | 77.85m AOD<br>1.3m | 791 | 225mm dia Throttle pipe laid at 1:167 gradient. |
| Basin 2 | 77.80m AOD<br>1.0m | 849 | Hydrobrake flow control with discharge at 1.7 l/s. |
| Basin 3 | 76.70m AOD<br>1.2m | 736 | Hydrobrake flow control with discharge at 16 l/s. |
| Basin 4 | 74.80m AOD<br>1.2m | 876 | Hydrobrake flow control with discharge at 20.8 l/s. |

**Table 3.3 – Attenuation and Flow Control Requirements**

3.13 Innovyze Microdrainage Calculations have been included as supplementary information to this Drainage Statement.

3.14 It should be noted that volume requirements are greater than those provided within the FRA. For this detailed model a cumulative attenuation volume of 3252$m^3$ is required compared to the previously calculated 2700$m^3$ within the FRA.

## 4. Water Quality

4.1 The SuDS Manual (CIRIA C753) states that the design of surface water drainage should consider minimising contaminants in surface water runoff discharged from the site. The level of treatment required depends on the proposed land use, according to the pollution hazard indices. For this site contaminant risks come internal roads and residential plots.

4.2 To ensure that adequate treatment is provided, the SuDS mitigation indices for the development must be equal to, or exceed, the pollution hazard indices. Surface water

runoff from residential roofs are considered to present a very low hazard to water quality, whilst roads present a medium hazard.

4.3 To ensure a suitable mitigation index is achieved the affected stormwater systems have been assessed. The following tables refer to the three catchments detailed in 3.3, Basin 1, Basin 2 and Basin 4 and in respect of the Drainage Concept and SuDS Plan, CTP-20-1142_C300C.

4.4 Note that two components or more in series require a factor of 0.5 to be applied after the first SuDS component. This is to account for the reduced performance of secondary or tertiary components associated with already reduced inflow concentrations.

| | | Pollution Hazard Level | Total suspended solids | Metals | Hydro-carbons |
|---|---|---|---|---|---|
| **Land Use** | Residential Roofs | Very Low | 0.2 | 0.2 | 0.05 |
| | Road | Medium | 0.7 | 0.6 | 0.7 |
| **Total** | | | **0.9** | **0.8** | **0.75** |
| **SuDS Component** | SuDS Corridor - Swale (Primary) | | 0.5 | 0.6 | 0.6 |
| | Basin 1 (Secondary) | | 0.25 | 0.25 | 0.3 |
| | Basin 3 (Tertiary) | | 0.25 | 0.25 | 0.3 |
| | Basin 4 (Quaternary) | | 0.25 | 0.25 | 0.3 |
| **Total** | | | **1.25** | **1.35** | **1.5** |
| **Total SuDS Mitigation Indices ≥ Pollution Hazard Indices** | | | **Yes** | **Yes** | **Yes** |

**Table 4.1: Water Quality Indices – Catchment Area "Basin 1" (as per C753 The SuDS Manual)**

| | | Pollution Hazard Level | Total suspended solids | Metals | Hydro-carbons |
|---|---|---|---|---|---|
| **Land Use** | Residential Roofs | Very Low | 0.2 | 0.2 | 0.05 |
| | Road | Medium | 0.7 | 0.6 | 0.7 |
| **Total** | | | **0.9** | **0.8** | **0.75** |
| **SuDS Component** | Basin 2 (Primary) | | 0.5 | 0.5 | 0.6 |
| | Basin 3 (Secondary) | | 0.25 | 0.25 | 0.3 |
| | Basin 4 (Tertiary) | | 0.25 | 0.25 | 0.3 |
| **Total** | | | **1.0** | **1.0** | **1.2** |
| **Total SuDS Mitigation Indices ≥ Pollution Hazard Indices** | | | **Yes** | **Yes** | **Yes** |

**Table 4.2: Water Quality Indices – Catchment Area "Basin 2" (as per C753 The SuDS Manual)**

| | | Pollution Hazard Level | Total suspended solids | Metals | Hydro-carbons |
|---|---|---|---|---|---|
| **Land Use** | Residential Roofs | Very Low | 0.2 | 0.2 | 0.05 |
| | Road | Medium | 0.7 | 0.6 | 0.7 |
| **Total** | | | **0.9** | **0.8** | **0.75** |
| **SuDS Component** | Permeable Paving | | 0.7 | 0.6 | 0.7 |
| | SuDS Corridor - Swale (Secondary) | | 0.25 | 0.3 | 0.3 |
| | Basin 4 (Tertiary) | | 0.25 | 0.25 | 0.3 |
| **Total** | | | **1.2** | **1.15** | **1.3** |
| **Total SuDS Mitigation Indices ≥ Pollution Hazard Indices** | | | **Yes** | **Yes** | **Yes** |

**Table 4.3: Water Quality Indices – Catchment Area "Basin 4" (as per C753 The SuDS Manual)**

4.5 It is recommended that "Basin 4" catchment area utilises permeable paving on private drives, driveways and parking bays in order to achieve suitable pollutant mitigation for the catchment.

4.6 Tables 4.1 – 4.3 indicate satisfactory water quality is achieved for the catchment areas.

4.7 It is also recommended, as good practise, that gullies and chambers have suitable silt traps/catchpits to reduce sediments entering the system.

## 5. Exceedance Flows

5.1 Exceedance flows have been assessed for the site, and an exceedance flow plan included as supporting information to this Drainage Statement.

5.2 Overall, exceedance flows are expected to be directed by proposed site highways and flow north and west towards the existing onsite watercourse.

## 6. Summary and Conclusion

6.1 Cumulatively, the proposals equate to 6.52 Ha of developable area as per the CTP FRA. Impermeable areas have been estimated at 4.24 Ha on the assumption that 65% of the developable area would become impermeable surfacing with positive drainage. This figure accounts for an assumed 55% impermeable area with 10% to account for future urban creep.

6.2 A series of new SuDS corridors and gravity sewers will convey stormwater flows to the existing watercourse in the north and west of the site.

6.3 Flows from site are to be restricted to an overall of 20.8 l/s via multiple vortex flow devices, the 1 in 1 year greenfield rate as per the LLFA requirements.

6.4 Four basins provide a total attenuation volume of 3252m$^3$. Attenuation is to be located upstream of controls and contribute towards a SuDS treatment train.

6.5 Innovyze Microdrainage calculations were undertaken and sufficient storage requirements were met that no pipes were surcharged in the 1 in 1 year event, no flooding within the 1 in 30 year event, and sufficient storage for the 1 in 100 year event + 40% CC.

6.6 An assessment of pollution mitigation indices has been undertaken using the Simple Index Approach and proven to be acceptable.

6.7 An engineering layout cannot be produced based on a concept masterplan due to insufficient detail provided on the masterplan. Despite this key details including attenuation volumes, invert levels, means of controlled discharge, required restriction rates, maximum water depths and final discharge point have been provided.

## 7. Supporting Information

i. Soakaway Testing Results;
ii. Innovyze Microdrainage Calculations;
iii. Drainage Concept and SuDS Plan, CTP-20-1142_C300C.; and
iv. Exceedance Flow Plan

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# Trial Pit Log

Trial Pit No. **Groundwater**
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: Saffron Waldon | Project No.: 18948 | Method: | Hole Type: TP |
| Location: Saffron Waldon | | Plant: 5 Ton Swingshovel | Scale: 1:25 |
| Client: c/o Cotswold Tranport and Planning | Trial Pit Length: 2.60m | Support: Trial Pit Width: 0.60m | Logged By: KC |
| Dates: 18/01/2021 | Level: | Co-ords: | |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (mAOD) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | 0.25 | D | | 0.20 | | | Brown slightly sandy SILT with frequent rootlets. (Topsoil) |
| | 0.50 | D | | 0.60 | | | Firm brown slightly andy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to round, medium of various lithologies. (Head) |
| | 1.00 | D | | | | | Firm brown slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse, subrounded of flint. (Head) |
| | 1.50 | D | | | | | |
| | 2.00 | D | | 2.20 | | | Dense CHALK with fine to coarse, sub-angular to sub-rounded GRAVEL of flint. |
| | 3.00 | D | | 3.40 | | | End of Pit at 3.400m |

1 2 3 4 5

General Remarks:
Groundwater not encountered. All sides stable.

Groundwater Remarks:

**Sample Type**
D: Disturbed
B: Bulk
J: Jar
W: Water

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# Trial Pit Log

Trial Pit No.
**INF01**
Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: Saffron Waldon | Project No.: 18948 | Method: | Hole Type: TP |
| Location: Saffron Waldon | | Plant: 5 Tone Swingshovel | Scale: 1:25 |
| Client: c/o Cotswold Tranport and Planning | Trial Pit Length: 2.50m | Trial Pit Width: 0.60m | Logged By: JO |
| Dates: 18/01/2021 | Level: | Co-ords: | |

| Water Strike | Samples & In Situ Testing: Depth | Type | Results | Depth (m) | Level (mAOD) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.20 | | | Brown slightly sandy SILT with frequent rootlets. (Topsoil) |
| | 0.25 | D | | 0.20 | | | Firm brown slightly andy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to round, medium of various lithologies. (Head) |
| | 0.50 | D | | | | | Firm brown slightly sandy gravelly CLAY. Sand is fine. Gravel is fine to coarse, subrounded of flint. (Head) |
| | 1.00 | D | | | | | |
| | 1.50 | D | | | | | |
| | 2.00 | D | | 2.00 | | | End of Pit at 2.000m |

1
2
3
4
5

General Remarks:
Groundwater not encountered. All sides stable.

Groundwater Remarks:

**Sample Type**
D: Disturbed
B: Bulk
J: Jar
W: Water

# Soakaway Calculations

| | |
|---|---|
| **Soakaway Test No.** | INF 01 |
| **Contract:** | Saffron Waldon |
| **Contract No.** | 18948 |

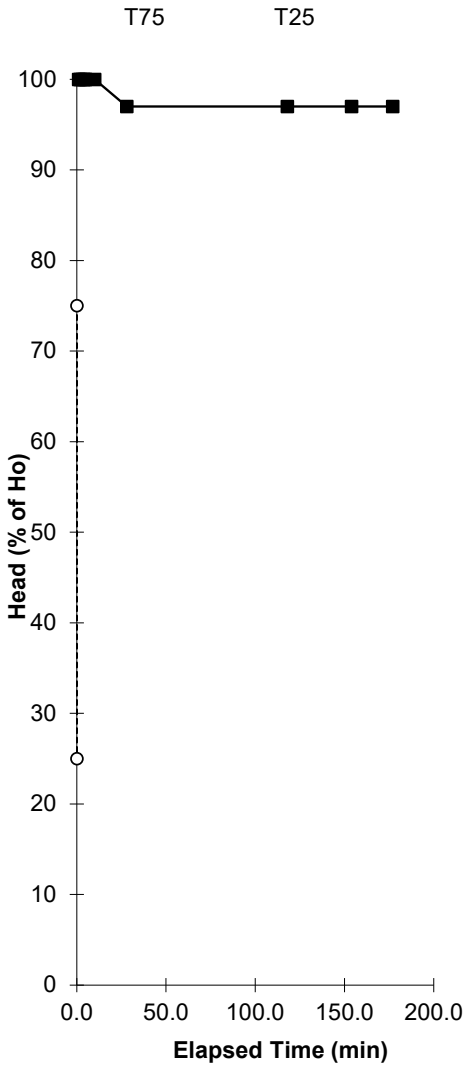
**Field Test**

Trial Pit Log (include details of groundwater):
See trial Pit record

| | | |
|---|---|---|
| **Depth of Pit** | 2.00 | m |
| **Width of Pit** | 0.60 | m |
| **Length of Pit** | 2.50 | m |
| **Depth of Pit Soaked** | 0.80 | m |
| | | |
| **ap50** | 3.98 | m2 |
| **Vp75-25** | 0.6 | m3 |
| **t75-25** | 0.0 | min |
| **water used** | 1.2000 | m3 |
| **f** | #DIV/0! | m/sec. |

**Field Data**

| Depth to Water (m) | Elapsed Time (min) | Head of Water (% of Ho) | Head of Water (m) |
|---|---|---|---|
| 1.00 | 0 | 100 | 1 |
| 1.00 | 1.0 | 100 | 1.00 |
| 1.00 | 2.0 | 100 | 1.00 |
| 1.00 | 3.0 | 100 | 1.00 |
| 1.00 | 4.0 | 100 | 1.00 |
| 1.00 | 5.0 | 100 | 1.00 |
| 1.00 | 10.0 | 100 | 1.00 |
| 1.03 | 28.0 | 97 | 0.97 |
| 1.03 | 118.0 | 97 | 0.97 |
| 1.03 | 154.0 | 97 | 0.97 |
| 1.03 | 177.0 | 97 | 0.97 |




| | | |
|---|---|---|
| T75 | 0.000 | 75 |
| T25 | 0.000 | 25 |
| T75-25 | 0.000 | Derived from Best Fit |

**Comments**

Extrapolated past 120mins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# Soakaway Calculations

| | |
|---|---|
| **Soakaway Test No.** | Groundwater Pit |
| **Contract:** | Saffron Waldon |
| **Contract No.** | 18948 |

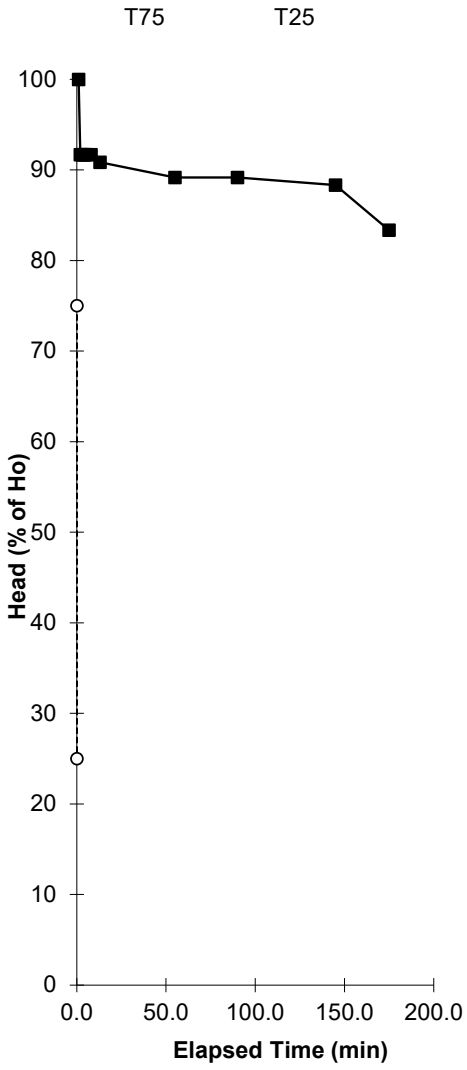
**Field Test**

Trial Pit Log (include details of groundwater):
See trial Pit record

| | | |
|---|---|---|
| **Depth of Pit** | 3.40 | m |
| **Width of Pit** | 0.60 | m |
| **Length of Pit** | 2.60 | m |
| **Depth of Pit Soaked** | 0.80 | m |
| | | |
| **ap50** | 4.12 | m2 |
| **Vp75-25** | 0.624 | m3 |
| **t75-25** | 0.0 | min |
| **water used** | 1.2480 | m3 |
| **f** | #DIV/0! | m/sec. |

**Field Data**

| Depth to Water (m) | Elapsed Time (min) | Head of Water (% of Ho) | Head of Water (m) |
|---|---|---|---|
| 2.20 | 0 | 100 | 1.2 |
| 2.20 | 1.0 | 100 | 1.20 |
| 2.30 | 2.0 | 92 | 1.10 |
| 2.30 | 3.0 | 92 | 1.10 |
| 2.30 | 4.0 | 92 | 1.10 |
| 2.30 | 5.0 | 92 | 1.10 |
| 2.30 | 8.0 | 92 | 1.10 |
| 2.31 | 13.0 | 91 | 1.09 |
| 2.33 | 55.0 | 89 | 1.07 |
| 2.33 | 90.0 | 89 | 1.07 |
| 2.34 | 145.0 | 88 | 1.06 |
| 2.4 | 175.0 | 83 | 1.00 |




| | | |
|---|---|---|
| T75 | 0.000 | 75 |
| T25 | 0.000 | 25 |
| T75-25 | 0.000 | Derived from Best Fit |

**Comments**

Extrapolated past 120mins

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## STORM SEWER DESIGN by the Modified Rational Method

### Network Design Table for Storm

« - Indicates pipe capacity < flow

| PN | Length (m) | Fall (m) | Slope (1:X) | I.Area (ha) | T.E. (mins) | Base Flow (l/s) | k (mm) | HYD SECT | DIA (mm) | Section Type | Auto Design |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 285.000 | 11.200 | 25.4 | 1.882 | 5.00 | 0.0 | 0.600 | o | 600 | Pipe/Conduit | |
| 1.001 | 25.000 | 0.167 | 149.7 | 0.000 | 0.00 | 0.0 | 0.600 | o | 150 | Pipe/Conduit | |
| 2.000 | 145.000 | 9.500 | 15.3 | 1.040 | 5.00 | 0.0 | 0.600 | o | 450 | Pipe/Conduit | |
| 2.001 | 22.313 | 1.100 | 20.3 | 0.000 | 0.00 | 0.0 | 0.600 | o | 100 | Pipe/Conduit | |
| 1.002 | 75.466 | 1.700 | 44.4 | 0.000 | 0.00 | 0.0 | 0.600 | o | 300 | Pipe/Conduit | |
| 3.000 | 265.000 | 9.850 | 26.9 | 1.315 | 5.00 | 0.0 | 0.600 | o | 600 | Pipe/Conduit | |
| 1.003 | 33.000 | 0.300 | 110.0 | 0.000 | 0.00 | 0.0 | 0.600 | o | 900 | Pipe/Conduit | |

### Network Results Table

| PN | Rain (mm/hr) | T.C. (mins) | US/IL (m) | Σ I.Area (ha) | Σ Base Flow (l/s) | Foul (l/s) | Add Flow (l/s) | Vel (m/s) | Cap (l/s) | Flow (l/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 50.00 | 5.98 | 89.250 | 1.882 | 0.0 | 0.0 | 0.0 | 4.84 | 1368.6 | 254.8 |
| 1.001 | 50.00 | 6.49 | 77.850 | 1.882 | 0.0 | 0.0 | 0.0 | 0.82 | 14.5« | 254.8 |
| 2.000 | 50.00 | 5.46 | 87.300 | 1.040 | 0.0 | 0.0 | 0.0 | 5.22 | 830.9 | 140.8 |
| 2.001 | 50.00 | 5.68 | 77.800 | 1.040 | 0.0 | 0.0 | 0.0 | 1.72 | 13.5« | 140.8 |
| 1.002 | 50.00 | 7.02 | 76.700 | 2.922 | 0.0 | 0.0 | 0.0 | 2.37 | 167.3« | 395.7 |
| 3.000 | 50.00 | 5.94 | 84.650 | 1.315 | 0.0 | 0.0 | 0.0 | 4.71 | 1331.0 | 178.1 |
| 1.003 | 50.00 | 7.21 | 74.800 | 4.237 | 0.0 | 0.0 | 0.0 | 2.99 | 1900.4 | 573.7 |

## PIPELINE SCHEDULES for Storm

### Upstream Manhole

| PN | Hyd Sect | Diam (mm) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|---|---|---|---|---|---|---|---|---|
| 1.000 | o | 600 | S01 | 92.000 | 89.250 | 2.150 | Open Manhole | 1200 |
| 1.001 | o | 150 | BASIN 1 | 79.450 | 77.850 | 1.450 | Open Manhole | 1200 |
| 2.000 | o | 450 | S02 | 89.500 | 87.300 | 1.750 | Open Manhole | 1200 |
| 2.001 | o | 100 | BASIN 2 | 79.100 | 77.800 | 1.200 | Open Manhole | 1200 |
| 1.002 | o | 300 | BASIN 3 | 78.200 | 76.700 | 1.200 | Open Manhole | 1200 |
| 3.000 | o | 600 | S03 | 86.000 | 84.650 | 0.750 | Open Manhole | 1200 |
| 1.003 | o | 900 | BASIN 4 | 76.300 | 74.800 | 0.600 | Open Manhole | 1200 |

### Downstream Manhole

| PN | Length (m) | Slope (1:X) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|---|---|---|---|---|---|---|---|---|
| 1.000 | 285.000 | 25.4 | BASIN 1 | 79.450 | 78.050 | 0.800 | Open Manhole | 1200 |
| 1.001 | 25.000 | 149.7 | BASIN 3 | 78.200 | 77.683 | 0.367 | Open Manhole | 1200 |
| 2.000 | 145.000 | 15.3 | BASIN 2 | 79.100 | 77.800 | 0.850 | Open Manhole | 1200 |
| 2.001 | 22.313 | 20.3 | BASIN 3 | 78.200 | 76.700 | 1.400 | Open Manhole | 1200 |
| 1.002 | 75.466 | 44.4 | BASIN 4 | 76.300 | 75.000 | 1.000 | Open Manhole | 1200 |
| 3.000 | 265.000 | 26.9 | BASIN 4 | 76.300 | 74.800 | 0.900 | Open Manhole | 1200 |
| 1.003 | 33.000 | 110.0 | | 75.500 | 74.500 | 0.100 | Open Manhole | 0 |

## Free Flowing Outfall Details for Storm

| Outfall Pipe Number | Outfall Name | C. Level (m) | I. Level (m) | Min I. Level (m) | D,L (mm) | W (mm) |
|---|---|---|---|---|---|---|
| 1.003 | | 75.500 | 74.500 | 0.000 | 0 | 0 |

## Simulation Criteria for Storm

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

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

## Synthetic Rainfall Details

| | | | |
|---|---|---|---|
| Rainfall Model | FSR | M5-60 (mm) | 20.000 |
| Return Period (years) | 100 | Ratio R | 0.439 |
| Region | England and Wales | Profile Type | Summer |

## Synthetic Rainfall Details

Cv (Summer) 0.750 Storm Duration (mins) 30
Cv (Winter) 0.840

## Online Controls for Storm

### Hydro-Brake® Optimum Manhole: BASIN 2, DS/PN: 2.001, Volume (m³): 24.3

| | |
|---|---|
| Unit Reference | MD-SHE-0062-1700-1000-1700 |
| Design Head (m) | 1.000 |
| Design Flow (l/s) | 1.7 |
| Flush-Flo™ | Calculated |
| Objective | Minimise upstream storage |
| Application | Surface |
| Sump Available | Yes |
| Diameter (mm) | 62 |
| Invert Level (m) | 77.800 |
| Minimum Outlet Pipe Diameter (mm) | 75 |
| Suggested Manhole Diameter (mm) | 1200 |

| Control Points | Head (m) | Flow (l/s) | Control Points | Head (m) | Flow (l/s) |
|---|---|---|---|---|---|
| Design Point (Calculated) | 1.000 | 1.7 | Kick-Flo® | 0.549 | 1.3 |
| Flush-Flo™ | 0.270 | 1.6 | Mean Flow over Head Range | - | 1.4 |

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

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|---|---|---|---|---|---|---|---|---|---|
| 0.100 | 1.4 | 0.800 | 1.5 | 2.000 | 2.3 | 4.000 | 3.2 | 7.000 | 4.2 |
| 0.200 | 1.6 | 1.000 | 1.7 | 2.200 | 2.4 | 4.500 | 3.4 | 7.500 | 4.3 |
| 0.300 | 1.6 | 1.200 | 1.8 | 2.400 | 2.5 | 5.000 | 3.6 | 8.000 | 4.4 |
| 0.400 | 1.5 | 1.400 | 2.0 | 2.600 | 2.6 | 5.500 | 3.7 | 8.500 | 4.6 |
| 0.500 | 1.4 | 1.600 | 2.1 | 3.000 | 2.8 | 6.000 | 3.9 | 9.000 | 4.7 |
| 0.600 | 1.3 | 1.800 | 2.2 | 3.500 | 3.0 | 6.500 | 4.0 | 9.500 | 4.8 |

### Hydro-Brake® Optimum Manhole: BASIN 3, DS/PN: 1.002, Volume (m³): 2.3

| | |
|---|---|
| Unit Reference | MD-SHE-0177-1600-1200-1600 |
| Design Head (m) | 1.200 |
| Design Flow (l/s) | 16.0 |
| Flush-Flo™ | Calculated |
| Objective | Minimise upstream storage |
| Application | Surface |
| Sump Available | Yes |
| Diameter (mm) | 177 |
| Invert Level (m) | 76.700 |
| Minimum Outlet Pipe Diameter (mm) | 225 |
| Suggested Manhole Diameter (mm) | 1500 |

| Control Points | Head (m) | Flow (l/s) | Control Points | Head (m) | Flow (l/s) |
|---|---|---|---|---|---|
| Design Point (Calculated) | 1.200 | 16.0 | Kick-Flo® | 0.809 | 13.3 |
| Flush-Flo™ | 0.366 | 16.0 | Mean Flow over Head Range | - | 13.7 |

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

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|---|---|---|---|---|---|---|---|---|---|
| 0.100 | 6.3 | 0.400 | 16.0 | 0.800 | 13.5 | 1.400 | 17.2 | 2.000 | 20.4 |
| 0.200 | 15.1 | 0.500 | 15.8 | 1.000 | 14.7 | 1.600 | 18.3 | 2.200 | 21.4 |
| 0.300 | 15.9 | 0.600 | 15.4 | 1.200 | 16.0 | 1.800 | 19.4 | 2.400 | 22.3 |

## Hydro-Brake® Optimum Manhole: BASIN 3, DS/PN: 1.002, Volume (m³): 2.3

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|---|---|---|---|---|---|---|---|---|---|
| 2.600 | 23.1 | 4.000 | 28.4 | 5.500 | 33.2 | 7.000 | 37.2 | 8.500 | 40.9 |
| 3.000 | 24.8 | 4.500 | 30.1 | 6.000 | 34.6 | 7.500 | 38.5 | 9.000 | 42.1 |
| 3.500 | 26.7 | 5.000 | 31.7 | 6.500 | 35.9 | 8.000 | 39.7 | 9.500 | 43.2 |

## Hydro-Brake® Optimum Manhole: BASIN 4, DS/PN: 1.003, Volume (m³): 81.5

| | |
|---|---|
| Unit Reference | MD-SHE-0199-2080-1200-2080 |
| Design Head (m) | 1.200 |
| Design Flow (l/s) | 20.8 |
| Flush-Flo™ | Calculated |
| Objective | Minimise upstream storage |
| Application | Surface |
| Sump Available | Yes |
| Diameter (mm) | 199 |
| Invert Level (m) | 74.800 |
| Minimum Outlet Pipe Diameter (mm) | 225 |
| Suggested Manhole Diameter (mm) | 1500 |

| Control Points | Head (m) | Flow (l/s) | Control Points | Head (m) | Flow (l/s) |
|---|---|---|---|---|---|
| Design Point (Calculated) | 1.200 | 20.8 | Kick-Flo® | 0.832 | 17.5 |
| Flush-Flo™ | 0.380 | 20.8 | Mean Flow over Head Range | - | 17.7 |

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

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|---|---|---|---|---|---|---|---|---|---|
| 0.100 | 6.9 | 0.800 | 18.2 | 2.000 | 26.5 | 4.000 | 37.0 | 7.000 | 48.5 |
| 0.200 | 18.8 | 1.000 | 19.1 | 2.200 | 27.8 | 4.500 | 39.2 | 7.500 | 50.2 |
| 0.300 | 20.6 | 1.200 | 20.8 | 2.400 | 29.0 | 5.000 | 41.2 | 8.000 | 51.8 |
| 0.400 | 20.8 | 1.400 | 22.4 | 2.600 | 30.1 | 5.500 | 43.2 | 8.500 | 53.3 |
| 0.500 | 20.5 | 1.600 | 23.9 | 3.000 | 32.2 | 6.000 | 45.1 | 9.000 | 54.8 |
| 0.600 | 20.2 | 1.800 | 25.2 | 3.500 | 34.7 | 6.500 | 46.8 | 9.500 | 56.3 |

## Storage Structures for Storm

### Tank or Pond Manhole: BASIN 1, DS/PN: 1.001

Invert Level (m) 77.850

| Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) |
|---|---|---|---|---|---|
| 0.000 | 487.0 | 1.200 | 848.1 | 1.500 | 951.2 |

### Tank or Pond Manhole: BASIN 2, DS/PN: 2.001

Invert Level (m) 77.800

| Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) |
|---|---|---|---|---|---|
| 0.000 | 628.2 | 1.000 | 1081.0 | 1.300 | 1228.0 |

### Tank or Pond Manhole: BASIN 3, DS/PN: 1.002

Invert Level (m) 76.700

| Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) |
|---|---|---|---|---|---|
| 0.000 | 410.5 | 1.200 | 835.1 | 1.500 | 954.2 |

### Tank or Pond Manhole: BASIN 4, DS/PN: 1.003

Invert Level (m) 74.800

| Depth (m) | Area (m²) | Depth (m) | Area (m²) | Depth (m) | Area (m²) |
|---|---|---|---|---|---|
| 0.000 | 546.9 | 1.200 | 929.9 | 1.500 | 1038.7 |

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

### Simulation Criteria

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

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

### Synthetic Rainfall Details

| | | | |
|---|---|---|---|
| Rainfall Model | FSR | M5-60 (mm) 20.000 | Cv (Summer) 0.750 |
| Region England and Wales | | Ratio R 0.438 | Cv (Winter) 0.840 |

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

| | |
|---|---|
| Profile(s) | Summer and Winter |
| Duration(s) (mins) | 15, 30, 60, 120, 240, 360, 480, 960, 1440 |
| Return Period(s) (years) | 1, 30, 100 |
| Climate Change (%) | 0, 0, 40 |

| PN | US/MH Name | Storm | Return Period | Climate Change | First (X) Surcharge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) | Surcharged Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | S01 | 15 Winter | 1 | +0% | | | | | 89.433 | -0.417 |
| 1.001 | BASIN 1 | 120 Winter | 1 | +0% | 1/15 Summer | | | | 78.167 | 0.167 |
| 2.000 | S02 | 15 Winter | 1 | +0% | | | | | 87.431 | -0.319 |
| 2.001 | BASIN 2 | 960 Winter | 1 | +0% | 1/15 Winter | | | | 78.052 | 0.152 |
| 1.002 | BASIN 3 | 360 Winter | 1 | +0% | 30/120 Summer | | | | 76.931 | -0.069 |
| 3.000 | S03 | 15 Winter | 1 | +0% | | | | | 84.803 | -0.447 |
| 1.003 | BASIN 4 | 480 Winter | 1 | +0% | 100/120 Winter | | | | 75.067 | -0.633 |

| PN | US/MH Name | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Half Drain Time (mins) | Pipe Flow (l/s) | Status | Level Exceeded |
|---|---|---|---|---|---|---|---|---|
| 1.000 | S01 | 0.000 | 0.20 | | | 272.1 | OK | |
| 1.001 | BASIN 1 | 0.000 | 1.43 | | | 19.7 | SURCHARGED | |
| 2.000 | S02 | 0.000 | 0.18 | | | 146.7 | OK | |
| 2.001 | BASIN 2 | 0.000 | 0.12 | | | 1.6 | SURCHARGED | |
| 1.002 | BASIN 3 | 0.000 | 0.10 | | | 15.4 | OK | |
| 3.000 | S03 | 0.000 | 0.14 | | | 186.3 | OK | |
| 1.003 | BASIN 4 | 0.000 | 0.02 | | | 20.4 | OK | |

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

### Simulation Criteria

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

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

### Synthetic Rainfall Details

| | | | |
|---|---|---|---|
| Rainfall Model | FSR | M5-60 (mm) 20.000 | Cv (Summer) 0.750 |
| Region | England and Wales | Ratio R 0.438 | Cv (Winter) 0.840 |

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

| | |
|---|---|
| Profile(s) | Summer and Winter |
| Duration(s) (mins) | 15, 30, 60, 120, 240, 360, 480, 960, 1440 |
| Return Period(s) (years) | 1, 30, 100 |
| Climate Change (%) | 0, 0, 40 |

| PN | US/MH Name | Storm | Return Period | Climate Change | First (X) Surcharge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) | Surcharged Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | S01 | 15 Winter | 30 | +0% | | | | | 89.551 | -0.299 |
| 1.001 | BASIN 1 | 120 Winter | 30 | +0% | 1/15 Summer | | | | 78.597 | 0.597 |
| 2.000 | S02 | 15 Winter | 30 | +0% | | | | | 87.515 | -0.235 |
| 2.001 | BASIN 2 | 1440 Winter | 30 | +0% | 1/15 Winter | | | | 78.380 | 0.480 |
| 1.002 | BASIN 3 | 480 Winter | 30 | +0% | 30/120 Summer | | | | 77.295 | 0.295 |
| 3.000 | S03 | 15 Winter | 30 | +0% | | | | | 84.899 | -0.351 |
| 1.003 | BASIN 4 | 960 Winter | 30 | +0% | 100/120 Winter | | | | 75.484 | -0.216 |

| PN | US/MH Name | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Half Drain Time (mins) | Pipe Flow (l/s) | Status | Level Exceeded |
|---|---|---|---|---|---|---|---|---|
| 1.000 | S01 | 0.000 | 0.49 | | | 656.8 | OK | |
| 1.001 | BASIN 1 | 0.000 | 2.15 | | | 29.6 | SURCHARGED | |
| 2.000 | S02 | 0.000 | 0.45 | | | 358.6 | OK | |
| 2.001 | BASIN 2 | 0.000 | 0.12 | | | 1.6 | SURCHARGED | |
| 1.002 | BASIN 3 | 0.000 | 0.10 | | | 16.0 | SURCHARGED | |
| 3.000 | S03 | 0.000 | 0.34 | | | 446.1 | OK | |
| 1.003 | BASIN 4 | 0.000 | 0.02 | | | 20.8 | OK | |

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

### Simulation Criteria

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

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

### Synthetic Rainfall Details

| | | | |
|---|---|---|---|
| Rainfall Model | FSR | M5-60 (mm) 20.000 | Cv (Summer) 0.750 |
| Region England and Wales | | Ratio R 0.438 | Cv (Winter) 0.840 |

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

| | |
|---|---|
| Profile(s) | Summer and Winter |
| Duration(s) (mins) | 15, 30, 60, 120, 240, 360, 480, 960, 1440 |
| Return Period(s) (years) | 1, 30, 100 |
| Climate Change (%) | 0, 0, 40 |

| PN | US/MH Name | Storm | Return Period | Climate Change | First (X) Surcharge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) | Surcharged Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | S01 | 15 Winter | 100 | +40% | | | | | 89.700 | -0.150 |
| 1.001 | BASIN 1 | 120 Winter | 100 | +40% | 1/15 Summer | | | | 79.147 | 1.147 |
| 2.000 | S02 | 15 Winter | 100 | +40% | | | | | 87.617 | -0.133 |
| 2.001 | BASIN 2 | 1440 Winter | 100 | +40% | 1/15 Winter | | | | 78.791 | 0.891 |
| 1.002 | BASIN 3 | 960 Winter | 100 | +40% | 30/120 Summer | | | | 77.898 | 0.898 |
| 3.000 | S03 | 15 Winter | 100 | +40% | | | | | 85.006 | -0.244 |
| 1.003 | BASIN 4 | 960 Winter | 100 | +40% | 100/120 Winter | | | | 75.999 | 0.299 |

| PN | US/MH Name | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Half Drain Time (mins) | Pipe Flow (l/s) | Status | Level Exceeded |
|---|---|---|---|---|---|---|---|---|
| 1.000 | S01 | 0.000 | 0.87 | | | 1166.8 | OK | |
| 1.001 | BASIN 1 | 0.000 | 2.81 | | | 38.7 | SURCHARGED | |
| 2.000 | S02 | 0.000 | 0.81 | | | 652.2 | OK | |
| 2.001 | BASIN 2 | 0.000 | 0.13 | | | 1.7 | SURCHARGED | |
| 1.002 | BASIN 3 | 0.000 | 0.10 | | | 16.0 | SURCHARGED | |
| 3.000 | S03 | 0.000 | 0.63 | | | 810.0 | OK | |
| 1.003 | BASIN 4 | 0.000 | 0.02 | | | 20.8 | SURCHARGED | |

BASIN 4
INVERT LEVEL: 74.80m AOD
MAX WATER DEPTH 1.2m
300mm FREEBOARD
APPROX. ATTENUATION VOLUME: 876m³
FOR BATTER: CUT 1:3, FILL 1:20

SHOULD ROUNDABOUT ACCESS BE REQUIRED, ISLAND TO BE UTILISED AS A SUDS BASIN/POND TO DRAIN CIRCULATORY CARRIAGEWAY.

BASIN 3 OUTLET VIA HYDRO-BRAKE FLOW CONTROL CHAMBER RESTRICTING FLOWS TO 16.0 l/s.

BASIN 3
INVERT LEVEL: 76.70m AOD
MAX WATER DEPTH 1.2m
300mm FREEBOARD
APPROX. ATTENUATION VOLUME: 736m³
FOR BATTER: CUT 1:3, FILL 1:15

BASIN 2 OUTLET VIA HYDRO-BRAKE FLOW CONTROL CHAMBER RESTRICTING FLOWS TO 1.7 l/s.

BASIN 2
INVERT LEVEL: 77.80m AOD
MAX WATER DEPTH 1m
300mm FREEBOARD
APPROX. ATTENUATION VOLUME: 849m³
FOR BATTER: CUT 1:3, FILL 1:15

BASIN 1 OUTLET VIA 225Ø "THROTTLE" PIPE LAID AT 1:167 GRADIENT.

BASIN 1
INVERT LEVEL: 77.85m AOD
MAX WATER DEPTH 1.3m
300mm FREEBOARD
APPROX. ATTENUATION VOLUME: 791m³

SITE ACCESS ARRANGEMENTS TBC

OUTFALL TO EXISTING DITCH

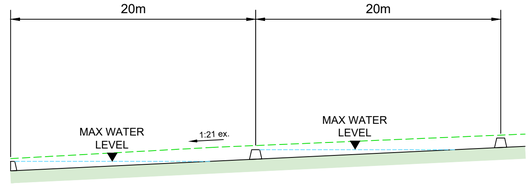
APPROXIMATE LOCATION OF FINAL CONTROL OUTLET. CHAMBER TO CONTAIN HYDROBRAKE RESTRICTING FLOWS TO Q1 YEAR - 20.8 l/s

BASIN 2 CATCHMENT: 1.60 Ha.
AT 65% IMPERMEABLE: 1.04 Ha

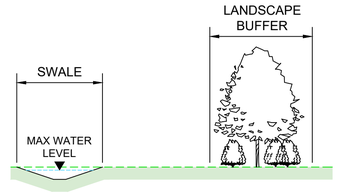
BASIN 4 CATCHMENT: 2.02 Ha.
AT 65% IMPERMEABLE: 1.32 Ha

BASIN 1 CATCHMENT: 2.90 Ha.
AT 65% IMPERMEABLE: 1.88 Ha

SUDS CORRIDOR




## TYPICAL SWALE LONG SECTION
(WITH CHECK DAMS AT 20m)
SCALE: N.T.S




## TYPICAL SWALE CROSS SECTION
SCALE: N.T.S

## NOTES:

1. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN METRES, UNLESS STATED OTHERWISE.
2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER 5 WORKING DAYS IN ADVANCE OF UNDERTAKING ANY WORK.

## KEY

INDICATIVE STORMWATER SEWER ROUTE

## CALCULATIONS

IMPERMEABLE AREA BASED ON 65% OF DEVELOPABLE AREA REFERENCED ON DE436 DRAFT FRAMEWORK PLAN REVISION L (6.52Ha)

IMPERMEABLE AREA: 4.24 Ha
SOIL FACTOR 0.45 DUE TO PRESENCE OF CLAY AS PER INFILTRATION TESTING CONDUCTED ON 18/01/21.

GREENFIELD RATES:

| | | |
|---|---|---|
| Q1 | - | 20.8 l/s |
| Q30 | - | 57.5 l/s |
| Q100 | - | 85.1 l/s |
| QBAR | - | 23.9 l/s |

| Rev | Date | Details | Drawn by | Checked by |
|---|---|---|---|---|
| C | 21/09/21 | CATCHMENT AREAS INCLUDED. BASINS UPDATED. | NT | KT |
| B | 14/07/21 | MASTERPLAN UPDATED | CG | KT |
| A | 19/06/21 | BASIN NUMBER REDUCED. SUDS CORRIDORS AMENDED, GREENFIELD RATES UPDATED | NT | KT |
| - | 18/02/21 | FIRST ISSUE | NT | KT |

COTSWOLD TRANSPORT PLANNING

CLIENT:
ROSCONN STRATEGIC LAND

PROJECT:
RADWINTER ROAD
(EAST OF GRIFFIN PLACE)
SAFFRON WALDEN

TITLE:
DRAINAGE CONCEPT & SUDS PLAN

STATUS:
PLANNING

| SCALE @ A1: | DATE: | DRAWN: | CHECKED: | APPROVED: |
|---|---|---|---|---|
| 1:1000 | 18/02/21 | NT | KT | KT |

| JOB NO: | DRAWING NO: | REVISION: |
|---|---|---|
| CTP-20-1142 | C300 | C |

INDICATIVE


NOTES:

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2. DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER 5 WORKING DAYS IN ADVANCE OF UNDERTAKING ANY WORK.

KEY

INDICATIVE STORMWATER SEWER ROUTE

EXCEEDANCE FLOW PATH

| Rev | Date | Details | Drawn by | Checked by |
|---|---|---|---|---|
| - | 21/09/21 | FIRST ISSUE | NT | KT |

COTSWOLD TRANSPORT PLANNING

CLIENT:
ROSCONN STRATEGIC LAND

PROJECT:
RADWINTER ROAD
(EAST OF GRIFFIN PLACE)
SAFFRON WALDEN

TITLE:
EXCEEDANCE FLOW PLAN

STATUS:
PLANNING

| SCALE @ A1: | DATE: | DRAWN: | CHECKED: | APPROVED: |
|---|---|---|---|---|
| 1:1000 | 21/09/21 | NT | KT | KT |

| JOB NO: | DRAWING NO: | REVISION: |
|---|---|---|
| CTP-20-1142 | C301 | - |

INDICATIVE