



COTSWOLD
TRANSPORT
PLANNING

Rosconn Strategic Land

Radwinter Road (East of Griffin Place),
Saffron Walden

Operations and Maintenance Manual -
Drainage

SEPTEMBER 2021



DOCUMENT REGISTER

| | |
|----------------------|---|
| CLIENT: | Rosconn Strategic Land |
| PROJECT: | Radwinter Road (East of Griffin Place), Saffron Walden |
| PROJECT CODE: | CTP-20-1142 |

| | | | |
|----------------------|---|--------------|-----------------------|
| REPORT TITLE: | Operations and Maintenance Manual - Drainage | | |
| PREPARED BY: | Nicola Tiley | DATE: | September 2021 |
| CHECKED BY: | Kris Tovey | DATE: | September 2021 |

| | |
|-----------------------|-----------------|
| REPORT STATUS: | Issue 00 |
|-----------------------|-----------------|

Prepared by **COTSWOLD** TRANSPORT PLANNING LTD

CTP House
Knapp Road
Cheltenham
Gloucestershire
GL50 3QQ

Tel: 01242 523696

Email: cheltenham@cotswoldtp.co.uk

Web: www.cotswoldtp.co.uk



List of Contents

Sections

| | | |
|---|-----------------------------|---|
| 1 | Introduction | 1 |
| 2 | Pipework and Manholes | 2 |
| 3 | Swale | 4 |
| 4 | Attenuation Basins | 6 |

Appendices

APPENDIX A: Drainage Concept and SuDS Plan, CTP-20-1142_C300C



1 Introduction

- 1.1 Cotswold Transport Planning has been appointed by Rosconn Strategic Land to undertake an Operations and Maintenance Manual (O&M Manual) for the proposed drainage at Radwinter Road (East of Griffin Place), Saffron Walden.

Scope of O&M Manual

- 1.2 This manual is intended to give an overview of the operation and maintenance for the range of SuDs features recommended for the site wide drainage strategy.
- 1.3 Where proprietary products are specified the manufacturer's instructions and recommendations should be followed in priority to this document unless specifically noted otherwise due to project constraints.
- 1.4 The recommended operations and frequencies are typical only and should be more frequent initially to ensure that there are no unforeseen issues with the operation and then adjusted to suit site requirements.
- 1.5 Any components put forth for adoption with Anglian Water under a S104 agreement will be subject to their own operation and maintenance regime. The following sections of this report are intended as a guide only and specific operation and maintenance schedules should be generated by the relevant adopting authority.
- 1.6 As this is an outline planning application features incorporated in the site may change and therefore an updated O&M manual is recommended as part of any reserved matters or subsequent planning application.
- 1.7 It should be noted that the applicant and any successor in title or adopting authority of drainage components must maintain yearly logs of maintenance which should be carried out in accordance with an approved maintenance plan. These must be available for inspection upon a request by the Local Planning Authority.



2 Pipework and Manholes

2.1 Pipes are one of the main conveyance methods across the site with indicative routes shown on the Drainage Concept and SuDS Plan, CTP-20-1142_C300C included in **Appendix A**.

2.2 Pipes are proprietary products, and the materials can vary across the site. As such where used the manufacturer's recommendations should be followed. Regardless of the product used the pipes will be fully compliant with the drainage specification.

Operation

2.3 Pipes are intended to be one of the main conveyances across the development and where oversized they form the attenuation volume required by the limitation of the discharge rate. They are intended to be dry except during rainfall events. These have been designed to be self-cleaning where possible for smaller diameter pipes, and for larger diameters the risk is reduced due to the overall pipe size.

2.4 Access for maintenance is provided through access chambers, manholes, rodding plates and rodding eyes.

Inspection and Maintenance Regime

2.5 Regular inspection and maintenance is important to identify areas which may have been obstructed/clogged and may not be draining correctly thus exposing the development to a greater level of flood risk. Maintenance responsibility for the pipes should be placed with Anglian Water for public sewers, the highways authority for highway only drainage, and the individual resident ('riparian owner') for private drains.

2.6 Sediment\material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, as run-off is taken from potentially contaminated areas such as car parks/service yards.

2.7 Table 2.1 outlines the maintenance requirements for pipework and manholes, as well as the typical frequency for these actions.



| Maintenance Schedule | Required Action | Typical Frequency |
|------------------------|---|--|
| Occasional Maintenance | Stabilise and mow contributing and adjacent areas | As required |
| | Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying | As required – once per year on less frequently used pavements |
| Remedial Actions | Rod through poorly performing runs as initial remediation. | As required |
| | If continued poor performance jet and CCTV survey poorly performing runs. | As required |
| | Seek advice as to remediation techniques suitable for the type of performance issue and location. | As required if above does not improve performance |
| Monitoring | Initial inspection should be provided as post construction CCTV survey. | Monthly for three months after installation |
| | Inspect for evidence of poor operation via water level in chambers and if required, take remedial action | Three monthly, 48 hours after large storms in first six months |
| | Inspect silt accumulation rates and establish appropriate brushing frequencies | Annually |
| | Monitor inspection chambers | Annually |

Table 2.1 – Maintenance Schedule for Pipework & Manholes



3 SuDS Corridor (Swale)

- 3.1 SuDS corridors, which will utilise swales, are intended as source control features, creating a method of conveyance through the site whilst providing treatment of water. The swale provides minimal attenuation, although check dams may be introduced to enable attenuation.
- 3.2 As standing water may be present care should be taken in undertaking maintenance operations.
- 3.3 Access for maintenance can be attained from site from highways, footways, or designated maintenance access routes.

Inspection and Maintenance Regime

- 3.4 Regular inspection and maintenance is important for the effective operation of any onsite swale. Maintenance responsibility for a swale and its surrounding area will be placed with the appropriate authority. Potential authorities include Anglian Water or a resident management company.
- 3.5 Regular trimming/mowing in and around swales is only required along maintenance access routes, amenity areas (e.g., footpaths), and across some embankments.
- 3.6 Plant management, to achieve the required habitat/appearance, should be specified clearly in a maintenance schedule by the landscape architect planned to coincide with other site wide maintenance operations.
- 3.7 Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, especially where run-off is taken from potentially contaminated areas such as car parks/service yards.
- 3.8 Table 3.1 outlines the typical maintenance requirements for swales and the typical frequency for these actions.



| Maintenance Schedule | Required Action | Typical Frequency |
|------------------------|---|--|
| Regular Maintenance | Remove litter and debris | Monthly or as required |
| | Cut grass – to retain grass height within specified design range | Monthly (during growing season), or as required |
| | Manage other vegetation and remove nuisance plants | Monthly (at start, then as required) |
| | Inspect inlets, outlets and overflows for blockages, and clear if required | Monthly |
| | Inspect surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for longer than 48 hours | Monthly, or when required |
| | Inspect vegetation coverage | Monthly for 6 months, quarterly for 2 years then half yearly. |
| | Inspect inlets and facility surface for silt accumulation establish appropriate silt removal frequencies | Half yearly |
| Occasional Maintenance | Reseed areas of poor vegetation growth alter plant types to better suit conditions if required | As required if base soil is exposed over 10% or more of the swale area |
| Remedial Actions | Repair erosion or other drainage by re-turfing or reseeding | As required |
| | Relevel uneven surfaces and reinstate design levels | As required |
| | Scarify and spike topsoil layer to improve infiltration performance. Break up silt deposits and prevent compaction of the soil surface. | As required |
| | Remove build-up of sediment on top of filter strip. | As required |
| | Remove and dispose of oils or petrol residues using safe standard practices | As required |

Table 3.1 – Maintenance Schedule for Swale



4 Attenuation Basins

- 4.1 Attenuation basins require regular maintenance to ensure continuing operation. Maintenance of basins is relatively straightforward.
- 4.2 The basins are located in the north of the site, as indicated on the drainage layout which can be found at **Appendix A**.

Inspection and Maintenance Regime

- 4.3 Regular inspection and maintenance is important for the effective operation of the systems. Maintenance responsibility for the Basins and surrounding areas will be with the appropriate authority. Potential authorities include Anglian Water or a resident management company.
- 4.4 Table 4.1 outlines the typical maintenance requirements for basins and adjoining structures, as well as the typical frequency for these actions.



| Maintenance Schedule | Required Action | Typical Frequency |
|------------------------|---|--|
| Regular Maintenance | Remove litter and debris | Monthly (or as required) |
| | Cut grass - public areas | Monthly (during growing season), or as required |
| | Cut grass in and around basin | Half yearly (spring – before nesting season, and autumn) |
| | Manage other vegetation and remove nuisance plants | Monthly (at start, then as required) |
| | Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage | Monthly |
| | Inspect banksides, structures, pipework etc for evidence of physical damage | Monthly |
| | Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies. | Monthly (for first year), then annually or as required. |
| | Check any penstocks and other mechanical devices | Annually |
| | Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract) | Annually |
| | Remove sediment from inlets, outlets and forebay | Annually, or as required. |
| Occasional Maintenance | Reseed areas of poor vegetation growth | As required |
| | Prune and trim any trees and remove cuttings (Note: tree maintenance is usually part of overall landscape management contract) | Every two years, or as required |
| | Remove sediment from inlets, outlets, forebay and main basin when required. | Every five years, or as required |
| Remedial Actions | Repair erosion or other damage by reseeding or re-turfing | As required |
| | Realignment of rip-rap | As required |
| | Repair/rehabilitation of inlets, outlets and overflows | As required |
| | Relevel uneven surfaces and reinstate design levels | As required |

Table 4.1 – Maintenance Schedule for Attenuation Basins

Appendix A



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

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

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

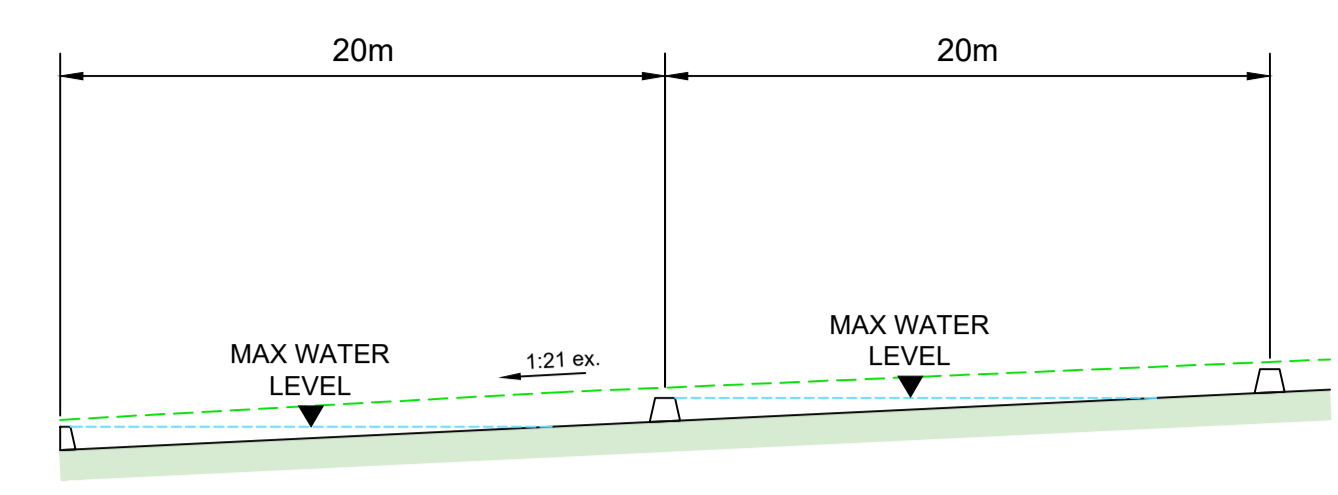
OUTFALL TO
EXISTING DITCH

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

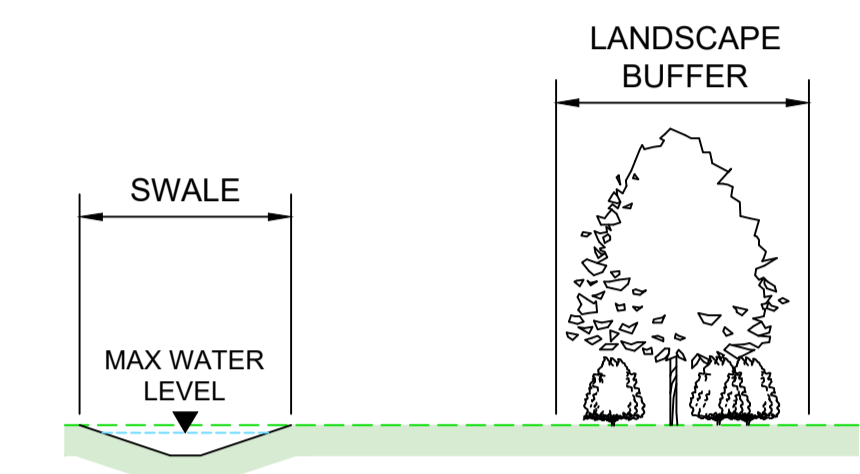
BASIN 2 CATCHMENT: 1.60 Ha.
AT 65% IMPERMEABLE: 1.04 Ha

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

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



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



TYPICAL SWALE CROSS SECTION
SCALE: N.T.S

NOTES:

- DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS ARE IN METRES, UNLESS STATED OTHERWISE.
- 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 |

| | | | | |
|---|----------|---|----|----|
| C | 12/10/21 | 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 |
| - | 19/02/21 | FIRST ISSUE. | NT | KT |

| Rev | Date | Drawn | Checked |
|-----|------|-------|---------|
| | | | |



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 | | |



RESERVED COPYRIGHT