



Miller Homes

Henthorne Road / Montague Place, Clitheroe

SUDS Management Plan

680867-R1(00)-SUDS
February 2023

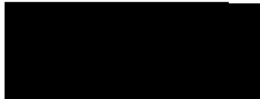


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RSK GENERAL NOTES

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK LDE Ltd.

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1 INTRODUCTION

This SuDS management strategy has been prepared by RSK Land and Development Engineering Ltd on behalf of Miller Homes, for the development at Land off Henthorn Road / Montague Place.

In line with the Adoptable Drainage Layout (882044 41-01 P8) the SUDS considered for the purposes of this statement, include the attenuation basin that will be employed to reduce and manage surface water runoff from the development to a design return period of 100 years plus climate change. This is required so that The Development will not increase the risk of flooding to the site and its environs.

In principle, the strategy contains the following features and criteria:

- Storage for the surface water is via 1no. surface water attenuation basins. The basins have been designed in line with the following parameters;
- Basin 1 (Pond Setting Out detail drawing 882044 41-01 P2)
 - 1:3 side slopes
 - Bed level 51.667mAOD
 - 100 year plus CC water level 53.176 mAOD
 - Permanent water level 52.167mAOD

This document outlines the long term maintenance of the basins and associated inlets / outlets will make reference to the following documents, some of which provide further detail on the maintenance operations required:

- CIRIA Report C753, 'The SUDS Manual', 2015; and
- CIRIA Report C625, 'Model Agreements for Sustainable Water Management Systems', 2004.

The management plan is intended to enable the management company to satisfactorily look after the site. The management plan should be reviewed every 5 years to ensure that the management being carried continues to be appropriate for the site.

2 SUDS MANAGEMENT & MAINTENANCE

The SuDS included at the site have been designed for easy maintenance to comprise:

- Regular care – litter collection, grass cutting and checking of inlets and outlets where water enters the SuDS features;
- Occasional tasks – managing basin vegetation and removing any silt that builds up in the SuDS features; and
- Remedial work – intermittent tasks required to repair any damage which may have occurred.

2.1 Attenuation Basin and Outlets / Inlets

The attenuation basins and inlets / outlets will be subject to a routine monitoring and maintenance schedule as part of the general site management. This will be carried out at monthly intervals between 1 April and 31 October and once between 1 November and 31 March unless otherwise detailed. A record of maintenance visits and remedial operations shall be maintained. The following guidelines are offered as an initial regime, but may be either increased or decreased by the management company depending on the local environment and any external contributing factors.

The key maintenance requirement for the attenuation basin and associated inlet / outlet and headwalls will be the maintenance of vegetation and mowing of grass within and on the banks/verges and the removal of accumulated sediments and collection of litter and debris.

Vegetation in and on the banks of the attenuation basins should be trimmed at least twice a year or as required to maintain a height of 75–150mm. Cuttings from any clearance work should be removed from the basins to avoid it causing blockages downstream.

During the inspections the general operation, and structural condition of the inlet / outlet headwalls and any erosion of banks or scour control features should be identified and rehabilitated as required.

Accumulated sediments should be removed from the bed of the attenuation basins as required (once deposits exceed 25 mm in depth). The frequency of this operation can vary depending on local conditions, however it is recommended that the level of silts should be monitored at least once a year and a maintenance regime implemented to suit.

Prior to desilting works commencing, a suitably qualified ecologist shall be appointed to undertake an assessment of the ecological interest within the basin and its margins.

Access to the attenuation basins can be achieved from Road 1 / Road 2 on the supplied drainage strategy.

The proposed maintenance regime for the above basins is as detailed below;

Table 1: Attenuation Basins

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly
	Cut grass – for access routes	Monthly (during growing season), as or required
	Cut grass – meadow 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 basin for signs of poor water quality	Monthly (May – October)
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect banksides and structures for evidence of physical damage	Monthly
	Inspect inlets and outlets for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), the annually or as required
	Tidy all dead growth before start of growing season	Annually
	Management of submerged or aquatic and bankside vegetation	Annually
Occasional Maintenance	Reseed areas of poor vegetation growth or visible areas of bare ground within or around the attenuation basin	As required
	Where there is a build up of silt in the basin at the inlets or on the base of basin, i.e. 25mm or more above the design level then remove when the ground is damp in autumn or early spring and turf to the original design levels. Spread excavated material on site above SuDS design profile.	Every 5 years, or as required following inspection (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseedling or re turfing	As required
	Repair/rehabilitation of inlets and outlets	As required
	Relevel uneven surfaces and reinstate design levels	As required

The recommended maintenance frequencies outlined in the above tables are subject to change once the systems are adopted by the relevant authorities as they will fall in line with their respective maintenance schedules.

2.2 Manholes and pipework

The surface water from the development will be conveyed by a series of surface water drainage pipes. The below ground surface water drainage network comprises;

- Gulleys,
- Surface water pipes,
- Manholes / flow control chambers

- Inspection chambers

The key maintenance requirement for the below ground drainage network will be checking for damage and the removal of debris ensuring water can freely flow through the system.

During the inspections the general operation and structural condition of the below ground drainage network should be recorded where appropriate.

The proposed maintenance regime for the below ground drainage network is as detailed below;

Table 2: Below ground drainage

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect manholes and in-coming / outgoing pipework. Remove cover and inspect ensuring water is flowing freely and that the exit route for water is unobstructed. Remove obstructions and silt as necessary. Check there is no physical damage.	Annually / Autumn time following leaf fall
	Inspect gulley's and remove debris, silt and any other blockages which may occur.	Annually / Autumn time following leaf fall
Remedial actions	Repair physical damage if necessary.	As required

The recommended maintenance frequencies outlined in **Table 2** are subject to change once the systems are taken forwards by a management company or adopted through a Section 104 by United Utilities as they will fall in line with their respective maintenance schedules.

APPENDIX A INSPECTION CHECKLIST

General information			
Site ID			
Site location and co-ordinates (GIS if appropriate)			
Elements forming the SuDS scheme		Approved drawing reference	
Inspection frequency		Approved specification reference	
Type of development		Specific purpose of any parts of the scheme (eg biodiversity, wildlife and visual aspects)	

Inspection Date	Details	Y/ N	Action required	Date completed	Details	Y/ N	Action required	Date completed
General inspection items								
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?								
Is there any evidence of accidental spillages, oils, poor water quality, odours or nuisance insects?								
Have any health and safety risks been identified to either the public or maintenance operatives?								
Silt/Sediment accumulation								
Is there any sediment accumulation at inlets? If yes, state depth (mm) and extent. Is removal required? If yes, state waste disposal requirements and confirm that all waste management requirements have been complied with (consult environmental regulator)								
Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?								

Inspection Date	Details	Y/ N	Action required	Date completed	Details	Y/ N	Action required	Date completed
Is there any evidence of any other clogging or blockage of outlets or drainage paths?								
Is the vegetation condition satisfactory (density, weed growth, coverage etc)? (check against approved planting regime)								
Does any part of the system require weeding, pruning or mowing? (check against maintenance frequency state in approved design).								
Is there any evidence of invasive species becoming established? If yes, state action required								
Is there any evidence of any accidental damage to the system (eg wheel ruts?)								
Is there any evidence of cross connections or other unauthorised inflows?								
Is there any evidence of tampering with the flow control?								
Are there any other matters that could affect the performance of the system in relation to the design objectives for hydraulic, water quality, biodiversity and visual aspects?								

Inspection Date	Details	Y/ N	Action required	Date completed	Details	Y/ N	Action required	Date completed
Other observations								
Information appended (eg photos)								
Continue as current Increase maintenance Decrease maintenance								
Proposed date for next inspection								