

Tudor Drive, Penley

SuDS Management and Maintenance Plan

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FAIRHURST

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1 INTRODUCTION

This document has been produced as a guide to the implementation, management and maintenance of the drainage system proposed for the residential development north of Tudor Drive, Penley.

The document will outline how the drainage scheme will be constructed as well as defining the principles of good practice operation and maintenance which will maintain the effectiveness of the system over the lifespan of the development.

2 IMPLEMENTATION

The construction of the drainage system elements will be undertaken by a competent Civil Engineering Contractor in accordance with their method statements.

A timetable for the implementation of the drainage system will be determined primarily by the build programme of the overall scheme. There are various elements of the construction works which will need to be integrated with the installation of the drainage network, namely the foundations and floor slab of the proposed residential dwellings. For example, some of the foul drainage serving the dwellings will need to be installed prior to the construction of the foundations and floor slab, even if the external connecting pipework is yet to be completed.

The drainage design has been developed such that the detention basin to the west of the site and the connecting inlets and outfalls can be constructed to serve the proposed dwellings as and when they are completed. This will allow the site to be developed in phases and allow parts of the scheme to be positively drained upon completion even if this were to occur at different times.

There are a number of enabling works to be completed prior to the construction of the drainage network on site. This is largely concerned with the legal agreements required for a foul connection with the Welsh Water adopted sewers. It is suggested that a minimum period of 3 months is allowed for the legal process to be complete.

It is anticipated that the detention basin complete with outlet vortex flow control and connection to the watercourse will be the first element of the drainage scheme to be complete so that any surface water network can be connected with it when required. This will also ensure that agreed discharge rates to the watercourse are maintained throughout the construction period and upon completion.

By undertaking the works as detailed above, it will ensure that flood risk is minimised and will improve and protect water quality, even during the construction phase.

3 GENERAL MAINTENANCE REQUIREMENTS

3.1 Maintenance Frequency

Regular visits to the site by the site owner or their appointed Contractor should be made as often as is necessary to fulfil the required standard of maintenance. Responsibility for undertaking maintenance will initially be with Almar Construction Limited until such time that a Management Company has been established who will then be responsible for the ongoing SuDS operation and maintenance.

The necessary frequency can be divided in to:

1. Regular maintenance: basic tasks done on a frequent and predictable schedule,
2. Occasional maintenance: tasks that are likely to be required only periodically and much less frequently

3.2 Owner's Manual

Owners, or those who will be responsible for the maintenance of sites which have SUDS should be provided with a 'User Manual' so that they are aware of the differences in function and maintenance requirements when compared with a conventional system.

The manual should include:

- location of all SUDS features within the site
- detailed specification of the vortex control
- layout of the pipe network and maintenance required
- a summary of how the network works and its purpose
- maintenance requirements, with maintenance plan, and a maintenance record
- explanation of the consequences of not carrying out the maintenance that is specified

3.3 Regular Maintenance

3.3.1 Inspection

Inspections of the SUDS features should be conducted on a monthly basis and could be integrated with the Landscape Management activities, like grass cutting, which may also be undertaken at similar intervals.

It is recommended that the frequency of inspections should be increased during the first year of operation so that inspections are also conducted after every significant storm event to ensure that it is functioning correctly and if necessary implement improvement works to optimise performance.

Elements which should be inspected include:

- Inlets and outlets – ensure that trash screens are clear and that flows in/out are not impeded. Any obstruction or build-up of material must be removed as soon as possible.
- Structure – a visual inspection of the SUDS structure and pipe network to check for any weepages or leaks. This inspection should also include structural damage to any 'hard' features like headwalls, outlets or manhole chambers. Any defects should be remediated as soon as possible.
- Sediment build-up – a visual inspection of the SUDS feature and vortex control to determine whether there is evidence of silt build up. Any evidence of silt build up should be reported and inspected further by an appropriate engineer to determine whether silt removal should be initiated (see below).
- Erosion – a visual inspection of the system to identify any occurrences of erosion, notably around any inlet, outlet or conveyance structure (i.e. ditch), which may have an impact on the general integrity of the system. Areas affected by erosion should be inspected further by an appropriate engineer to determine whether remediation is necessary.

3.3.2 Litter and Debris Removal

The amount of debris and litter within all elements of the drainage system, but primarily the detention basin and vortex control, should be observed during the visual inspection. If necessary litter and debris should be removed at regular intervals in order to prevent blockages within any inlets or outlets and retain amenity value. The frequency at which removal will be required may vary depending on the season and amount discarded by the public. Removal can be tailored to suit these variances.

3.3.3 Grass Cutting

The embankments of features which may not be permanently wet, like detention basins or swales, should be trimmed regularly enough to maintain a grass height of approximately 150mm. This will maintain a clear channel which will not impede the flow of water.

3.3.4 Seasonal Maintenance

The drainage network serving the site will require regular maintenance all year round to avoid issues which could lead to the network needing replaced. During the winter months any snow fall should be removed from the roads and gullies within the development to allow surface water to drain into the gullies and the wider network. Similarly in spring the clearing of the gullies from leaves is important so gullies do not become blocked or pass the material into the system which could result in blockages within the system.

3.3.5 Desilting

To maintain the capacity within the drainage network the desilting of pipes may be required. Desilting pipes can also reduce the risk of odour problems occurring. The frequency of this maintenance aspect will depend on the size of the pipe, the gradient and flow conditions although it should not be required at regular intervals as the drainage system is designed to be self cleansing. A common method for pipe cleaning is water jetting; this method is effective at clearing minor blockages.

These checks and associated operations should be detailed within a detailed maintenance log retained on site.

3.4 Occasional Maintenance

3.4.1 Sediment Management

To ensure the long term effectiveness of the SUDS scheme, accumulated sediment should be periodically removed. The frequency at which this is done will vary over the lifetime of the scheme. Accumulation will be most acute during the construction period i.e. until such time as all landscaping within the catchment is well established and all developments are built. At this point, the amount of sediment entering the SuDS scheme will be reduced.

Until vegetation is well established and all development complete, careful consideration should be given to sediment build up during the regular inspections outlined above. Following development completion, the frequency at which sediment removal will be required could be between 15 to 25 years. This could be extended if an appropriate maintenance regime is undertaken on the adopted network upstream of the detention basin.

Sediment removal should be undertaken in such a way as to prevent damage to the SuDS features, minimise the impact on ecological systems and maintain aesthetic appearance. The particular method of removal will depend upon the SUDS feature, access, wildlife concerns and sediment depth.

As the vortex control will have no moving parts therefore the maintenance requirements are minimal. The main threat to a vortex control is the risk of the orifice becoming blocked. By carrying out inspections of the orifice and removing any sediment this will reduce the risk of there being a blockage. Hydro International Operation and Maintenance Manual states that,

‘The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatable accumulation.’

3.4.2 Cleaning

The vortex control on the outlet of the SuDS basin which controls the flow into the watercourse will require cleaning. The device will be installed so that there are features within the control that allow access for cleaning. The cleaning process can be carried out in conjunction with sediment removal and are typically carried out once a year during any season.

It is important that the vortex control is cleaned out as soon as possible should a spill occur in the contributing drainage area. All cleaning carried out on the vortex device should be explain in detail in the maintenance log retained onsite.

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