

Please refer to the following EDGE Consulting Engineers drawings:

Drawing No. 221092-EDGE-XX-XX-DR-C-2001 P1

Drawing No. 221092-EDGE-XX-XX-DR-C-3201 P01

DEFRA's non statutory technical standards for SUDs S3 states that peak flow control "For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event."

The area in question is 550m² and so achieving the greenfield rate being less than 0.5 l/s is not reasonably practicable. Therefore, a betterment on the existing brownfield runoff rate is proposed as detailed in the attached drainage layout. To avoid the risk of flooding due to infrastructure blockage the flow controls orifice size is a minimum of 100mm and runoff rate of 5 l/s has been proposed.

A 35% betterment against the QBAR runoff rate is achieved with further betterment achieved at 30 year and 100 year +40% climate change return periods.

The runoff from the site will be restricted using a hydrobrake optimum flow control unit which will limit the discharge rate to a maximum of 5 l/s for all return periods and storm events. Attenuation storage is provided upstream in a below ground geo-cellular "crate" system. Surface water will pass through an oil separator to prevent pollution.

The timescale for implementation of the sustainable drainage system will be in conjunction with site works at the time of demolition, proposed in April/May 2023.

Maintenance plan for the infrastructure provided below:

Maintenance requirements for drainage infrastructure and SUDs systems. Preventative maintenance protects the investment of the drainage infrastructure. Furthermore, frequent and thorough maintenance will prevent long term problems, costly repairs and ensure efficient and optimum working order of the drainage infrastructure and SUDs systems.

Each component of the storm water network should be inspected and cleaned dependent upon its maintenance needs. The cleaning and inspection program should include sewer cleaning, CCTV inspection of pipes, visual inspection of the manhole structure and flow channels and an evaluation of the manhole and pipe condition.

This maintenance program will help identify any required repairs and the assessments may help judge the future frequency of cleaning and inspections. Effective maintenance can have a significant impact on extending the effective life of the system.

Cleaning includes water jetting to remove silt build-up and other debris within the pipes. CCTV surveys of the sewers and manhole inspections will be required to ensure the infrastructure is performing efficiently.

CCTV surveillance of the sewers will be focused on indicating leaking pipe joints, obstructions or any excessive deposits as well as other pipe defects.

Hydrobrake– Flow control device maintenance. Normally, little maintenance is required as there are no moving parts within the flow control. Experience has shown that if blockages occur, they do so at the intake, and the cause on such occasions has been due to a lack of attention to

engineering detail such as approach velocities being too low, inadequate benching, or the use of units below the minimum recommended size.

The flow control is fitted with a pivoting bypass door, which allows the manhole chamber to be drained down should blockages occur.

Following installation of the flow control it is vitally important that any extraneous material i.e. building materials are removed from the unit and the chamber. After the system is made live, and assuming that the chamber design is satisfactory, it is recommended that the unit is inspected monthly for three months and thereafter at six monthly intervals with hose down if required.

If problems are experienced, contact Hydro International. All flow controls are typically manufactured from grade 304 stainless steel which has an estimated life span in excess of the design life of the drainage system.

Stormbloc - cellular storage system maintenance. The inspection / maintenance tunnels within each Stormbloc module allows almost the entire volume of the unit to be inspected via CCTV and flushed through. A catch pit chamber immediately upstream of the system is recommended as this will reduce the amount of silt entering the installation.

The collection sump should not be allowed to overfill as this will lead to silt carry-over into the Stormbloc modules. As all schemes are different, the frequency at which the catch pit should be emptied will need to be determined on site.

It is recommended that any system be inspected no less frequently than at monthly intervals for the first 3 months and thereafter at 6 monthly intervals.

In addition, it is suggested that the installation is inspected immediately following the first storm event, whenever this should occur post installation. The maintenance schedule below should be updated/ amended using the information obtained from the initial inspections.

It should also be noted that more regular inspections may be required should the catch pit fill more frequently and/or if the initial inspections reveal that maintenance / cleaning will be required more regularly than at six-month intervals.

Flushing of the system can be achieved using a jetting system with a 150-bar pump pressure (i.e. approximately 80 bar at the nozzle) at a discharge flow of 300 l/min. The jet nozzle should be introduced to the system via the Stormbloc Inspect / manhole and the integral inspection / maintenance tunnel. The silt should be flushed to the Stormbloc Inspect or catch pit manhole and removed from there.

The newly constructed drainage infrastructure will be fully inspected/ surveyed prior to hand over to the management company to ensure there are no construction defects and they have been installed in accordance with the approved plans and specifications.

The inspections should ideally be carried out monthly (and no less than 3 monthly), at the same time as other routine maintenance activities.

Component	Maintenance Requirement	Frequency
Stormwater manholes.	Visual inspection to verify condition of manhole structure and flow channels. Jetting/ cleaning of flow channels.	Yearly Yearly
Storm water pipes.	CCTV survey of pipes. Jetting/ cleaning of pipes.	Yearly Yearly
Flow control chamber Hydrobrake	Visual inspection to verify condition of manhole structure and flow channels. Jetting/ cleaning of flow channels. Check for blockages within the unit Hose down the hydrobrake unit	Yearly Yearly Monthly for the first 3 months then every 6 months thereafter Monthly for the first 3 months then every 6 months thereafter
Stormbloc storage system	CCTV survey of unit. Jetting/ cleaning of unit, clear silts.	Monthly for the first 3 months then every 6 months thereafter Monthly for the first 3 months then every 6 months thereafter
Sump	Visual inspection to verify condition. Jetting/ cleaning and emptying sump.	Monthly for the first 3 months then every 6 months thereafter Monthly for the first 3 months then every 6 months thereafter

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