

SUSTAINABLE DRAINAGE STATEMENT – CHEADLE ROAD, UPPER TEAN

The purpose of this document is to provide a clear understanding of how sustainable drainage has been used within the scheme, and to provide evidence and reason behind the discharge rates and design.

1.0 An introduction to sustainable drainage systems or SuDS

SuDS are an environmentally friendly approach to managing rainfall that uses landscape features to deal with surface water. SuDS aim to:

- Control the flow, volume and frequency of water leaving a development area
- Prevent pollution by intercepting silt and cleaning runoff from hard surfaces
- Provide attractive surroundings for the community
- Create opportunities for wildlife

2.0 SuDS at Cheadle Road, Upper Tean.

The SuDS are designed to prevent flooding of the development and control the flow of water from the site drainage system.

- The SuDS basin (on the Western part of the site) along with a private geocellular storage tank are taking flows from the 52 out of the 67 dwellings of the proposed development while the other 15 dwellings discharge a controlled flow to the watercourse via a piped system that also allows for a private geocellular storage tank.
- Included in the basin are SuDS features such as; a low flow channel for dry weather conditions, a 500mm deep permanent pond for an additional level of treatment, and a forebay area to allow easy maintenance in the future.
- Included within the drainage design is a 400mm freeboard to safeguard the storage, as well as bring it up to adoptable standards.
- The basin is to be landscaped , unfettered access for maintenance purposes.
- In the event of extreme storm events the basin will flood in a controlled manner and leave the site via 2 controlled outfalls located along the existing watercourse (West side of development). All 100yr+40%cc storm water to be contained within site, either within the designated attenuation features, or within the highway/POS area, and is to only leave the site at a max of 11.7 l/s (total flow from 2 outfalls).
- The proposed SUDS will be offered for adoption by the water company under S104 of the Water Industry Act. Should this not be accepted by the water company, their long term maintenance will be secured through the resident Management Company created to manage the shared facilities and open spaces.

3.0 Discharge Rates

In accordance with submitted RPS Flood Risk Assessment HLEF81065 dated May 2022, we will be using a discharge rate of 11.7l/s. The outfall locations of this discharge will be on the Western side of the site and towards the existing watercourse.

4.0 Managing the SuDS

The SuDS at Cheadle Rd, Upper Tean have been designed for easy maintenance to comprise:

- **Regular day to day care** - litter collection, grass cutting and checking the inlets and outlets where water enters or leaves the SuDS features
- **Occasional tasks** - managing pond vegetation, removal of weeds, and removing any silt that builds up in the SuDS features
- **Remedial work** - repairing damage where necessary.

5.0 Maintenance Regime Summary

	Drainage Mechanism	Minimum Frequency of Maintenance
REGULAR MAINTENANCE	Litter Management	Monthly visits to collect all litter or other debris and remove from site at each site visit.
	Grass Maintenance	Monthly visits to mow grass access paths and verges surrounding basins and wetlands areas at 35mm-50mm min. and 75mm max. or as specified to provide a cared for appearance and allow pedestrian access. Mow rough grass areas for occasional access or habitat reasons at 100mm and maximum 150mm with cuttings removed to wildlife piles, as required 4-6 times annually Grass areas not required for access may be managed for wildlife interest and to reduce costs. Annually or as required 2 cuts in July and September or 1 cut annually in September or October as specified and cuttings removed to wildlife piles.
	Inlet and Outlet Headwalls	Inspected monthly or after intense storms. Strim vegetation 1m min. surround to structures and keep hard aprons free from silt and debris.
	Removed Debris From the Catchment Surface (where it may cause risks to performance)	Monthly
OCCASIONAL	Pond Vegetation	Annually cut (strim) at 100mm with cuttings removed to wildlife piles September - October or Maintain as a mosaic to be cut 25-30% in any one year at 100mm in September or October with cuttings removed to wildlife pile.

		Annually, or after prolonged periods of extreme events, embankments around the ponds should be checked for erosion and other issues that may stop them from functioning as required. If this is the case maintenance should then be carried out immediately, i.e. reseeding or re-turfing, to ensure these areas of embankment are working as expected and do not increase the risk to any adjacent properties.
	Silt Management	Annually or every 3 years as required. Where silt accumulates on apron or area in front of inlet or outlet then remove and land apply within design profile of SuDS. Where silt accumulates more than 150mm in base of permanent pond undertake a phased removal of silt subject to Client approval. Remove silt as instructed but not more than 30% of pond or wetland area at any one time and to an agreed depth but not subsoil layer. Retain as much representative existing vegetation as possible to ensure rapid re-colonisation of open areas. Stack excavated material adjacent to wetland to allow de-watering of silt. Undertake silt removal during September-October to minimise damage to protected wildlife and ensure re-growth of aquatic vegetation before winter. Spread excavated material on site above SUDS design profile, e.g. top of banks, in accordance with E.A. Waste Exemption Guidance.
REMEDIAL WORK	Pond	Repair erosion or other damage as required. Replant, where necessary – as required. Aerate pond when signs of eutrophication are detected – as required. Realign rip-rap or repair other damage – as required. Repair/rehabilitate inlets, outlets and overflows – as required.

BODY RESPONSIBLE FOR MANAGEMENT AND MAINTENANCE

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GEOTECHNICAL ASSESSMENT – SOAKAWAYS

Soakaway testing in trial pits by GRM is broadly carried out in accordance with BRE DG 365 (2016). The testing comprises the excavation of a test pit to a suitable depth, and the placement of water into the pit. The level of water present is then monitored over time. For borehole installations, the permeability testing (falling head/rising head) is undertaken in accordance with BS5930.

SOAKAWAY DRAINAGE

The site is unlikely to be suitable for soakaway drainage due to the presence of shallow groundwater and an alternative drainage system should be considered for the disposal of surface water.

Appendix I – Drainage Design

Please refer to Travis Baker drawings:
22032 001D Engineering Appraisal - Sheet 1 of 2,
22032 002E Engineering Appraisal - Sheet 2 of 2.

Redundant Mill Race Survey information - shown within above drawings.

Appendix II – Flow Results

Please refer to Travis Baker Hydraulic calculations:
22032 Network-1,
22032 Network-2.