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AMENDED PHASE II DEVELOPMENT AND OPERATION OF A SUSTAINABLE WASTE RESOURCE RECOVERY AND ENERGY PRODUCTION PARK
ENVIROPARKS, FIFTH AVENUE, HIRWAUN INDUSTRIAL ESTATE, HIRWAUN, ABERDARE

DRAFT DETAILS OF THE SUSTAINABLE URBAN DRAINAGE SYSTEM (SUDS)

Background

The Enviroparks site is located at Fifth Avenue, Hirwaun Industrial Estate, Hirwaun, Aberdare. The boundary between two local planning authorities – Brecon Beacons National Park Authority (BBNPA) and Rhondda Cynon Taf County Borough Council (RCT) – crosses the site.

In 2008 Enviroparks (Wales) Limited (EWL) submitted planning applications to BBNPA and RCT for planning permission for development of a sustainable waste resource recovery and energy production park. Planning permission was granted by both authorities on 21 December 2010.

In February 2017, EWL submitted planning applications to BBNPA and RCT for an amended Phase II development and operation of a sustainable waste resource recovery energy production park. The authorities are currently considering the applications which are registered with the following reference numbers:

- BBNPA Ref: 17/14587/FUL
- RCT Ref: 17/0249/10

The purpose of this technical note is to provide sufficient information in respect of the proposed SUDS arrangement at the site for Phase II of the proposed development.

Introduction

This technical note presents the implementation, management and maintenance strategy for the proposed SUDS within the Enviroparks development in Hirwaun. The SUDS system proposed within the surface water drainage system includes a series of linked online swales and ponds towards the southern boundary of the site.

The main piped drainage system has been constructed as part of the Phase 1 works and is shown on the attached Waterman drawing CIV14979/SA/90/0500/E13 (Proposed Drainage Layout). As part of Phase I a temporary swale facility was constructed. The proposed Phase II works will reconfigure the temporary swale into the permanent landscape and attenuation feature.

The objectives of this technical note are to discuss how the SUDS features function and identify the associated maintenance requirements to ensure they operate as intended through the design life of the proposed Enviroparks facility.

It is intended that the information contained in this technical note can be approved by the local planning authorities.

Timetable for Implementation

The SUDS system incorporates an online swale comprising an open channel. The southern side is an earthworks slope of gradients varying between 1:4 to 1:2. The northern side is a gabion retaining structure. A maximum water depth of 1.6m is anticipated. The swales are interconnected by a 300mm diameter pipe. The outlet and inlet structures are concrete precast headwalls.

A phased approach has been undertaken for the surface water network. The surface water drainage network shown in the drainage layout allows for the storage of the 1 in 100 year storm event plus 30% climate change for phases 1 and 2. The attenuation has been sized on the basis of a greenfield discharge restriction of 17.8 l/s/ha as agreed with Natural Resources Wales (NRW) and in accordance with best practice. NRW confirmed the greenfield discharge restriction in their letter dated 31 October 2012 to Pell Frischmann. The restriction will be implemented by a hydrobrake flow control chamber in the south western corner of the site.

Within Phase II of the development the Dŵr Cymru Welsh Water (DCWW) foul water sewer running within the site adjacent the swales will be diverted to run outside of the site along Fifth Avenue.

The surface water drainage works will be incorporated within the front end of the construction programme to enable surface water run-off from the site to be managed appropriately so there are no adverse effects in terms of the rate of run-off from the development or water quality issues during the construction stage of the development.

Appropriate measures are recommended below in order to establish the SUDS facility, including the proposed vegetation.

Maintenance and Management Plan for the SUDS System

The SUDS system will be maintained by a Private Management company in perpetuity. DCWW do not adopt 'soft' features or structures that store greater than the 1 in 30 year storm event. With appreciation to the SUDS setting, within a fenced private facility, adoption by the Local Authority is not an option in this instance.

The maintenance regime will require the following activities to be carried out:

Construction Considerations:	*Issue*	*Recommendation*
	Silt build up during construction	Manage construction run-off Desilt pond/swales and jet pipework immediately following construction
	Erosion during construction before planting established	Reuse topsoil without weedkiller application to allow quick establishment of existing vegetation. Ensure Tensar Mat is installed in accordance with manufacturer's recommendations in order to stabilise the banks of the swale

Regular Maintenance	*Required Action*	*Frequency*
	Litter / trash / debris removal – particularly at headwalls	Monthly
	Grass Cutting	Monthly (During Growing Season)
	Remove nuisance plants	Monthly
Remedial Action	*Required Action*	*Frequency*
	Repair of Channel erosion	As required
	Re-level uneven surfaces and reinstate design levels	As required
	Repair / rehabilitation of inlets, outlets	As required
	Supplement plants to maintain at least 50% of planned surface area coverage if vegetation is not established after the second growing season	One off event
Monitoring	*Required Action*	Frequency
	Inspect silt accumulation rates and establish appropriate removal frequencies	Six Monthly
	Inspect Inlet/Outlet Structures for evidence of poor operation	Monthly after large storms
	Inspect Banksides, structures, pipework, etc. for evidence of physical damages	Monthly after large storms
	Inspection of sediment for possible hazardous materials	Six Monthly

Design Considerations

The proposed drainage system has been designed in accordance with the appropriate design guidance and standards, Including CIRIA report C697 'The SUDS Manual' and Sewers for Adoption 7th edition. As a result appropriate access facilities have been provided within the piped system.

Maintenance access to the swale system can be provided via the service road to the south of the fuel storage hall and the proposed access off Fifth Avenue.

The swales have been designed with relatively slack long falls in order to reduce velocities and potential erosion within the conveyance channel.

All service yard areas upstream of the swale network drain through a full retention bypass separator. The separator will remove silt and fuel oil from the system, including in the very unlikely event of an emergency situation such as a fuel spillage. This will reduce the silt build up in the swale and improve water quality.

Further design mitigation to ease the maintenance liability with the swale system is the inclusion of a litter fence along the southern boundary of the service yard of the Fuel Preparation facility. This will prevent debris entering and blocking up the swale inlet/outlet structures.

Operation

A maintenance record and schedule will be incorporated within the operational and maintenance manual for the facility. This manual would include as built information and describe how the facility is designed to function. The maintenance schedule would include the items listed in this technical note.