MIDDLE QUINTON ECO TOWN

Water Management Strategy (Including Foul Drainage)

Project No: 473000

DRAFT

Capita Symonds
Sundial House
63 Cheap Street
Newbury
Berkshire
RG14 5DH
Tel: 01635 524700
Fax: 01635 529222
Newbury@capita.co.uk

July 2008

This information is provided on a confidential basis only and you are required to take all reasonable steps to ensure that the information is kept confidential. You must promptly inform Barton Willmore of any request(s) received from third parties for disclosure of the information and must not disclose or release the information to such third parties without first consulting with and obtaining the consent of Barton Willmore on behalf of St Modwen and the Bird Group.

A fully co ordinated approach will be undertaken to the management of water within the Eco Town. This will be undertaken in liaison with appropriate stakeholders including Environment Agency, Water Authority and Local Planning Authorities.

The key elements which will be included in the strategy will be as follows:

Flood Risk Management
Sustainable Drainage
Water Efficiency
Water Quality
Water Services Infrastructure Planning

Flood Risk Management

Three watercourses run through the site in a northerly direction, two of which are named, Gran Brook and Quinton Brook. The River Avon is approximately 4.0 Km north of the site.

Fluvial flood map data obtained from the Environment Agency shows that the site is at low risk from flooding. A small area along the northern boundary, adjacent to one of the watercourses is shown to be affected in extreme flood conditions.

This is confirmed in the mapping recently obtained from the Stratford Borough Council which will form part of their Strategic Flood Risk Assessment due to be released shortly.

Under current guidance as published in Planning Policy Statement 25 (PPS25) the majority of the site falls into Flood Zone 1. This is classified as having less than a 1 in 1000 chance of flooding in any one year, ie an annual probability of flooding in any year of less than 0.1%.

Within Flood Zone 1 there is no restriction to the type of development permitted and development within these areas does not pose any risk to surrounding areas.

DRAFT

The area adjacent to the watercourse on the northern boundary of the site falls partly within Flood Zone 2 and partly in Flood Zone 3A. This represents less than 2% of the total area of the Eco Town.

Flood Zone 2 is land with between 1 in 100 and 1in 1000 annual probability of flooding and Flood Zone 3A is land with greater than a 1 in 100 annual probability of flooding.

PPS25 permits certain types of development within these flood zones subject to certain mitigation measures being put in place. In the case of this development it is not proposed to have any built development within flood zones greater than Flood Zone 1, ie all development will be above the 1 in 1000 year flood level.

The Strategic Flood Risk Assessment mapping includes an allowance for climate change, currently up to a maximum of 30% increase in rainfall by 2115, as set out in PPS25. Therefore the built development areas of the Eco Town will not be influenced by climate change.

Sustainable Drainage

Sustainable drainage systems will be used across the development providing a flexible approach to disposal of surface water drainage. This will include some or all of the following depending on the layout of specific aspects of the town, rainwater harvesting, green roofs, swales, permeable pavements, ponds, wetlands, reed beds natural watercourse corridors and other infiltration techniques.

The existing site has a substantial number of large buildings and areas of hardstanding. These currently drain unrestricted to the existing watercourses. Using this run off as a baseline run off parameters will be agreed with the Environment Agency and surface water from the development will be designed to ensure that total run off is restricted to these agreed rates.

This run off will be controlled as close to its source as possible using appropriate SUDS techniques as noted above.

DRAFT

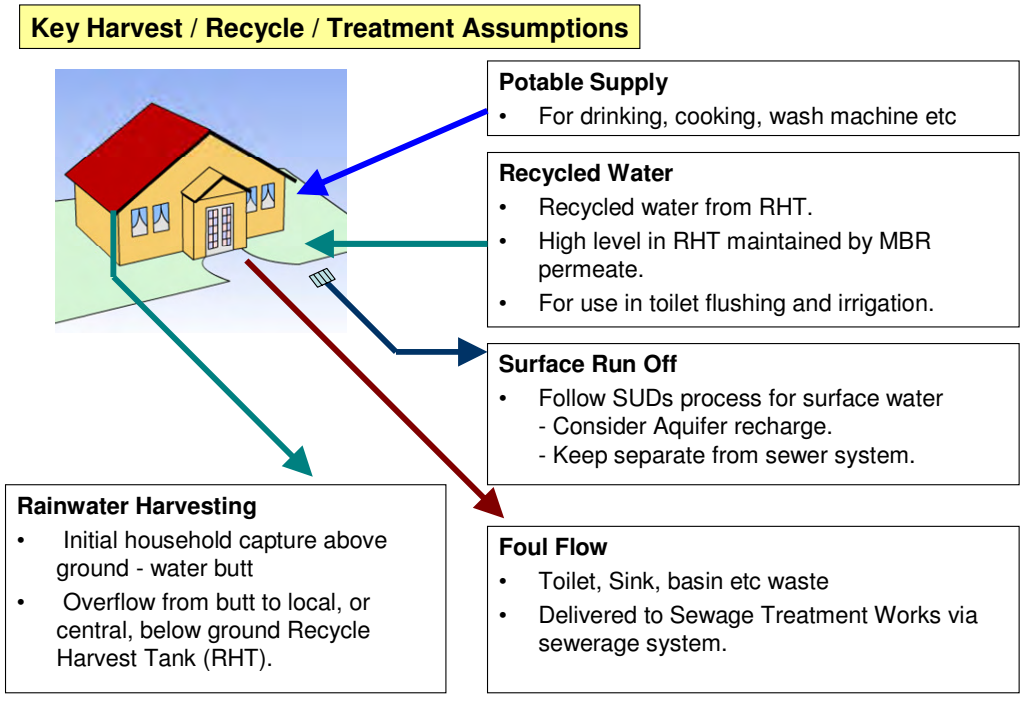
It is expected that using these techniques, including rainwater harvesting, will significantly reduce the amount of run off currently discharging from the site into the off site watercourses thus reducing the risk of flooding down stream of the development.

Long term maintenance of these facilities will be undertaken by a Town Management Company which will be established to manage and operate the Town's infrastructure.

Water Efficiency

Efficient use of water is a key component of the development of the Eco Town. The energy and waste strategies being developed for the town will incorporate the water conservation hierarchy of reduce-re-use-recycle. Options to reduce water will be designed into the development to help reduce the water supply requirements. Alternative sources of water supply such as rainwater harvesting and grey water will be considered as part of these strategies. The diagram below shows the interaction between the various components of the water cycle:

DRAFT



In line with the Town and Country Planning Association's worksheet on water resources the development will meet the Code for Sustainable Homes level 4 standard on water resources (per capita water use of 105 litres per day) and aspire to meet level 6 when possible, this equates to water demand per capita of and 80 litres per day.

Water Quality

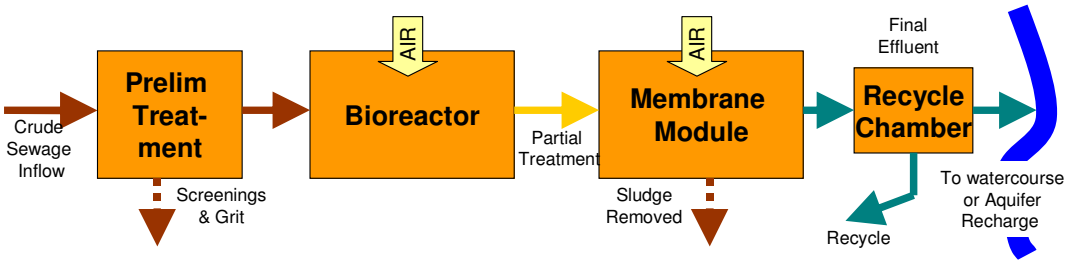
An important tenet of the Eco Town will be to ensure that it will not create adverse pressures on the water environment that could compromise the ability to meet the Water Framework Directive's objectives.

As an exemplar of sustainability the development will include innovative approaches to enhancement of water quality. These will include a new waste water treatment plant within the Energy Centre within the site. Discussions are ongoing with Severn Trent Water in respect of provision of such a plant to deliver high quality treatment. The scheme currently favoured is a Membrane Bio Reactor (MBR) system.

The MBR utilises the well proven activated sludge process, but replaces conventional final settlement with an ultrafine membrane which effectively filters the final effluent. This produces a very high quality effluent which can if required be recycled for grey water use within dwellings. This is an option under consideration for the Eco Town. The diagram below shows how this arrangement works:

DRAFT

Sewage Treatment High Tech/High FE Quality Solution (MBR)



+ Small footprint (25% of conventional process). + Produces high quality Final Effluent for wider recycle uses.

DRAFT

Water Services Infrastructure Planning

In order to provide comprehensive infrastructure capacity a water cycle study will be undertaken which will assess the environmental and capacity impacts of the supply and disposal of water to and from the Eco Town.

This study will be undertaken in collaboration with the relevant stakeholders including Environment Agency, Local Planning Authorites and Water Company. The study will then provide a timely and proportionate way to plan the infrastructure needs of the Eco Town and will also help in developing a plan for improving surface water management.

The water service infrastructure provided for the development will be owned, maintained and operated by the Community Interest Company which will be set up to delivery services to the Eco Town.

DRAFT