D10 LAND DRAINAGE, WATER CONSERVATION, FOUL DRAINAGE AND SEWAGE DISPOSAL

OBJECTIVES

D10/a To ensure that the development would not be at risk of flooding either from itself or surrounding watercourses, for up to the 1 in 100 year event including the forecast effects of climate change;

D10/b To not increase the flood risk to surrounding properties and communities;

D10/c To maintain where possible, practicable and sustainable the natural catchment areas;

D10/d To ensure that landforms and engineering works in any drainage scheme do not compromise the character of the surrounding area by considering the landscape options available for the site;

D10/e To suggest an appropriate foul water drainage system and disposal method for the site;

D10/f To develop appropriate strategies for the management and maintenance of all water bodies and watercourses;

D10/g To determine the scope for water minimisation, conservation and recycling within the development, through layout and building design.

LAND DRAINAGE, WATER CONSERVATION, FOUL DRAINAGE AND SEWAGE DISPOSAL

POLICY CSF/19 Land Drainage, Water Conservation, Foul Drainage And Sewage Disposal

Surface Water Drainage

a) Surface water drainage will be controlled by means of a sustainable drainage system to drain Trumpington West. This will comprise a series of underground cells and pipes and surface water channels. These could form a variety of design features through the urban quarter, feeding to water holding features.

Foul Drainage and Sewage Disposal

b) The foul drainage and sewage disposal system for Trumpington West will be designed and funded as a planning obligation to ensure that:

(i) Sufficient sewage treatment capacity exists or is planned to be provided before the occupation of any phase of development;
(ii) Any receiving sewage treatment works has sufficient capacity to ensure that untreated sewage is not discharged into any new or existing land drains, rivers or other water courses; and
(iii) Treated water leaving any sewage treatment works will not at any time exacerbate flood risk in any receiving water course.

Management and Maintenance of Watercourses

c) All water bodies and water courses will be maintained and managed by a single organisation which will be publicly accountable to ensure that:

(i) Water quality in Hobson's Brook and Nine Wells is improved as a result of development;
(ii) Flooding does not occur within the site of Trumpington West;
(iii) No additional discharge is made into surrounding water courses or onto surrounding land than that naturally discharging from the site in its current form;
(iv) Water quality and levels are maintained within Trumpington West's surface water drainage systems sufficient to support and encourage natural habitats;
(v) The managing organisation will be funded in perpetuity at the cost of the development.

d) No development shall be occupied until the written agreement of the local planning authority has been secured that a body with sufficient funding, resources and expertise to maintain and manage surface water drainage systems has legally committed to maintain and manage the surface water drainage systems for Trumpington West in perpetuity.

Water Conservation

h) All development in Trumpington West will incorporate water conservation measures including water saving devices, rainwater harvesting and greywater recycling. No dwelling shall be

occupied until the local planning authority has agreed a strategy which will secure at least a 25% reduction in the use of piped water compared to the average water consumption for development which does not have water conservation measures whilst managing the recycling of water to ensure no adverse impact on the water environment and biodiversity.

D10.1 In Cambridgeshire, with its low lying land, the treatment of surface water run-off is of critical importance in order to avoid flood risk of either any new development or land nearby or downstream. The Cambridge Southern Fringe is immediately upstream of Cambridge and development will drain into the River Cam and Hobson's Brook which have the potential to exacerbate flooding conditions in the city. Taking land out of agricultural use provides and opportunity to improve water quality at Nine Wells and Hobson's Brook which has diminished in recent years resulting in Nine Wells loosing its status as a Site of Special Scientific Interest for its aquatic species.

Surface Water Drainage

D10.2 To the south of the City the land rises towards the chalk hills culminating in the Gog Magogs. This is an open landscape of chalkland slopes interspersed with blocks of woodland, predominantly beech hangers. Balancing ponds and lakes should not be located in this wider landscape as they would form an alien feature on the chalkland slopes. Any balancing ponds required for the development and any associated infrastructure should therefore be retained within or adjoining the development areas, and used to form additional landscape and recreational features.

D10.3 Any drainage proposals to serve development at Trumpington West will need to have regard to the protection of the River Cam corridor landscape. The use of carefully designed balancing ponds could complement the river corridor and enhance the biodiversity in this area. These would need to be designed to ensure there would be no detrimental impact to the current river valley landscape features and ecological balance. Dependent on land levels there could be a wetland area of reed beds as a Sustainable Drainage System.

D10.4 The watercourses downstream of the Cambridge Southern Fringe are all at full capacity at peak flows. Storm water run-off will increase as a result of the development which will create impermeable areas and full attenuation measures will be required for 100 year storms.

D10.5 Storm water drainage for the site will be designed as far as possible in line with sustainable drainage systems (SuDS) principles. Water storage areas will be designed and integrated into the development as multi-functional features with drainage, recreation, biodiversity and amenity value. Where new water bodies are proposed they will also have the dual function of providing permanent water features and also provision for excess water in

times of storm conditions. These features will also be designed to enhance biodiversity by providing wetland habitat and reed beds that will also help to improve the water quality from surface water run-off.

D10.6 The development will require the preparation of a flood risk assessment. This will address any potential flood risk, and will identify the types of SuDS drainage facilities proposed and options for future adoption and maintenance arrangements. The site lies some way from the Indicative Floodplains defined by the Environment Agency. A range of sustainable solutions for handling storm water drainage on the site will include:

- Pervious surfacing of minor roads & parking areas;
- Underground reservoirs (for example beneath urban squares) upstream of the main open water features, which can store water and release it at a controlled rate into the permanent water features;
- Two stage open drains in green corridors, which would serve as public amenity and a balancing function during storms;
- A series of linked wetland features in the public open space part of the site, with adjacent land serving as washland for temporary storage of flood run-off.

D10.7 The management of the water systems will be important if they are to be permanent water features able to fulfil an amenity and recreation role as well as a drainage function. It will be important that any underground storage reservoirs in the urban area do not prejudice high quality landscaping of these important urban squares, including trees. Any implications of the surface water drainage treatment proposed for development in the Cambridge Southern Fringe for water quality, water table and watercourses elsewhere will need to be considered and addressed.

Foul Drainage and Sewage Disposal

D10.8 The foul water produced at the site will be directed to Cambridge Sewage Treatment Works (STW) at Milton to take advantage of consolidating existing facilities. Anglian Water is currently considering relocating the STW in connection with potential redevelopment at Cambridge Northern Fringe East. If relocated, it is still anticipated that the foul water from Cambridge East will be directed to the new STW.

Management and Maintenance of Watercourses

D10.9 It will be important to ensure that surface water drainage will be suitably managed and maintained in perpetuity, beyond the lifetime of construction. The options for this are for maintenance and management to be the responsibility of one of the following:

- The City and / or District Councils;

- A water company such as Anglian Water;
- A publicly accountable trust.

D10.10 It is important to ensure that the body made responsible has adequate expertise and is financially stable in perpetuity. It will be the responsibility of the developer to secure and fund a suitable management and maintenance body (see also Phasing and Implementation).

Water Conservation

D10.11 East Anglia is the United Kingdom's driest but fastest growing region and the Cambridge Sub-Region will be the fastest growing part. Even allowing for the impact of climate change, careful husbandry of water resources will be crucial if the economic potential of the sub-region is to continue to be realised. The development of the new urban extension provides an opportunity to design water conservation measures into the infrastructure and buildings in order to reduce the overall demand for water.

D10.12 Domestic water consumption alone offers significant opportunities for water conservation and an overall target of 25% reduction as compared to development for which there are no water conservation measures should be capable of being achieved. (Water metering alone can save up to 20% of domestic water use and water efficiency measures including greywater recycling and rainwater harvesting will make a target of 25% achievable, for example, average domestic water consumption: WC=30%, bath=24%, kitchen sink=12%, kitchen appliances=22%, hand basin=12%. Source: Building Research Establishment, March 2001).

D10.13 Not all rainwater can be harvested from development otherwise the natural environment will suffer drought conditions and therefore it is necessary to strike an appropriate balance between water conservation and supporting the biodiversity at Trumpington West. A strategy will be prepared and agreed by the local planning authority which will demonstrate how the dual objectives of water conservation and encouraging biodiversity at Trumpington West will be met.