



*Dacorum Borough Local Plan
1991 - 2011*

**SUPPLEMENTARY PLANNING
DOCUMENT**

WATER CONSERVATION



July 2005

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1. Introduction

- 1.1 Water is a vital resource and the planning system can help to manage this resource. Local authorities are required to plan to adapt to climate change through water efficiency. Planning policies must influence location and design of new buildings to minimise vulnerability to climate change. Efficient use of water can be achieved through water conservation measures and by encouraging sustainable forms of development which reduces the effect development can have on the natural water environment and water supply.
- 1.2 This guideline complements and amplifies Policy 124: Water Conservation and Sustainable Drainage Systems in the Dacorum Borough Local Plan 1991-2011.

2. Policy Background

Dacorum Borough Local Plan

- 2.1 Local Plan Policy 124 (Water Conservation and Sustainable Drainage Systems) requests applicants to demonstrate that they have incorporated water conservation and sustainable drainage practices into the design of their proposals.
- 2.2 Policy 1 requires applicants to submit a sustainability statement to show that a development satisfies the principles of sustainable development. This will be assessed against the sustainability checklist contained in Appendix 1. Appendix 1 requires developers to improve water quality, protect groundwater and minimise water consumption through the use of water meters, water efficient fixtures and rainwater storage units.
- 2.3 Consideration should also be made to Policy 104 (Nature Conservation in River Valleys) and Policies TWA1 and TWA2 in Part 4 of the Plan (Two Waters and Apsley Inset) which encourage initiatives to improve water quality and the water environment.

Supplementary Planning Guidance

- 2.4 Section 2 of the Environmental Guidelines (Flood Defence and the Water Environment) encourages the inclusion of water conservation measures such as permeable surfaces, swales, French drains and detention lakes or ponds which have the additional benefit of creation of wetland habitats. The provision of water butts in new developments helps reduce dependence on mains water for gardening/landscape maintenance purposes.

Government Guidance

- 2.5 Planning Policy Guidance Note 25: Development and Flood Risk identifies the problems associated with surface water run-off from built development and advocates the use of sustainable drainage systems (SUDS) to control this.

Regional Guidance

Regional Planning Guidance 9 (South East)

- 2.6 Policy INF 2 in RPG 9 states that:
“New development should be located and its implementation planned in such a way as to allow for sustainable provision of water services...”

Draft Regional Spatial Strategy

- 2.7 The East of England Regional Assembly are preparing the draft RSS 14 to replace RPG 9 and RPG 6 and provide guidance for the whole of the East of England Region
- 2.8 RSS 14 contains a specific policy relating to the need for water conservation and efficiency in new development. Amongst its aims Policy ENV 9 states:

“New development will be located, designed and implementation planned in such a way to allow for sustainable provision of water supply and enable timely investment in sewerage treatment and discharge to maintain the required standard of water quality. Local authorities will.... require the introduction of water conservation measures and sustainable drainage solutions. ”

The Environment Agency

- 2.9 The Environment Agency recognises the damage conventional drainage can cause and advocates an approach to managing rainfall on uncontaminated land that replicates natural systems; it is called sustainable drainage or SUDS.
- 2.10 The Environment Agency is placing increasing importance on assessing how new developments propose to deal with surface water. Successful application of sustainable drainage systems could help to reduce the potential of new development to cause flooding, reduce the concentration of pollutants entering water courses, increase the potential to recharge groundwater, and offer the opportunity for the creation of wildlife sites.

Other Guidance

- Agenda 21
- 2.11 The international blueprint for sustainable development identifies the need for an integrated approach to the management of land and water resources.

2.12 *'Water resources must be planned and managed in an integrated and holistic way to prevent shortage of water, or pollution of water resources, from impeding development.'*

- Hertfordshire Sustainable Development Guide: Draft (March 2003)

2.13 The draft Hertfordshire Sustainable Development Guide supports efforts to improve the sustainability of all new development including safeguarding water resources. Although currently only in draft form, it identifies water conservation as a key priority and provides guidance on the tangible environmental, planning and design matters. It also aims to *'promote the wise use of the county's water resources, and ensure that the water environment contributes to development quality'*. Final changes are being made to this document prior to its publication..

UK Sustainable Development Strategy 2005

2.14 This encourages the prudent use of natural resources such as water, which should be used in ways that do not endanger the resource or cause serious damage or pollution.

3. Purpose of the Guideline

- 3.1 To encourage water saving and conservation measures as part of all planning proposals to reduce the pressure of water supplies and to avoid ground water pollution, which is especially important due to the chalk aquifer which is a crucial water resource within Hertfordshire.
- 3.2 Water conservation needs to be addressed as a result of a number of factors: -
- i) **National factors:** Climate Change
- 3.3 World climate is changing. In Britain reducing levels of annual rainfall are expected as a result of climate change with summers becoming warmer and drier and winters milder and wetter. World climate change will increase the demand for water and it may therefore be difficult for the supply to match the demand. There will be an increase in flooding, but also low flows in rivers will be more frequent. Water quality will be affected and water cost may increase, as there will be increased pressures on drainage systems with more intense rainfall.
- 3.4 Issues of water conservation and water quality are likely to become increasingly important in the light of growing pressures upon existing supplies and the effects of climate change. There is a need to develop long term plans for meeting water needs, and the planning system has a critical role in preparing communities for further growth and development, taking proper account of potential changes in water supply.
- ii) **Local factors:** The South East
- 3.5 South East England (including Hertfordshire) is the driest area in the UK with the lowest available supply of water and the largest demand. The chalk aquifer is the main local resource and is already fully committed, to the extent that over abstraction is a major concern.
- 3.6 Dacorum is under increased pressures for development because as a Borough it is a successful economic performer, it is within the commuter belt of London and its high quality environment attracts people to live in the area. Development can have a detrimental impact on water supply and quality and land drainage. Development plans need to take account of the effects development has on the water environment. An increase in building development leads to an increase in demand and a decrease in supply.

3.7 A balance is needed between the amount of water taken from rivers and streams to meet local need whilst enabling the natural environment to continue functioning effectively. In Hertfordshire household water consumption levels over the last 10 years have increased from 150 litres/person/day to 175 litres/person/day. The current level is 25 litres above the national average. The demand for water is putting severe pressure on the county's water supply. This is having a significant detrimental impact upon the chalk aquifer and chalk stream habitats, the ecology of which are sensitive to low flows of water. In many instances this is considered to result from issues of over-abstraction.

iii) **Groundwater Protection**

3.8 Groundwater resources are susceptible to a wide range of threats that arise from land use, development and mineral extraction. These can affect future availability and quality of ground water by restricting recharge or diverting flows. Groundwater levels are crucial to achieving the optimal conditions for rivers and streams to function effectively. Particular attention should be paid to its protection and enhancement.

iv) **Conventional drainage systems**

3.9 Human development has affected and caused damage to the 'water environment' for centuries by using artificial methods of drainage. At present, rainwater from road, car parks and other hard surfaces is collected in gullies and pipes. This can cause:

- **flooding** - because rain is piped to watercourses all water arrives in streams and rivers at the same time before it has a chance to soak into the ground; and
- **pollution** - because silt, oils and other pollutants are often carried straight to streams and rivers before they can be trapped, removed and broken down naturally, the natural habitat of watercourses is damaged.

3.10 The continued use of conventional drainage systems in all future development can have an impact on water resources and it is a contributing factor that prevents groundwater to recharge fully. Conventional drainage systems are also expensive to install and maintain. A more sustainable method of drainage needs to be incorporated into all development proposals (ref. Section 5 below).

4. General Principles/Coverage:

- 4.1 Ensuring sustainable development is the key principle. In the context of the water environment and water conservation, the aims are to:
- reduce water consumption where possible,
 - ensure adequate water resources are available to meet consumers' needs by managing and meeting the demand for water from households, agriculture and industry,
 - sustain the aquatic environment,
 - manage the discharge of waste water and control pollution,
 - replenish the chalk aquifer, and
 - sustain the chalk stream habitat
- 4.2 Water is essential. Therefore the impact of new development on water resources should be considered at an early stage. Developers should consult with the local authorities, water companies and the Environment Agency to determine the potential effects of a development on water resources, and how these should be addressed.
- 4.3 The Council, as a local planning authority, has an important role to play in ensuring that developers take the above aims and issues into consideration when proposing new building development. This guideline seeks to highlight measures which can be incorporated into all development proposals, both large and small scale developments, to help conserve water.
- 4.4 The Council will expect applicants to demonstrate how their schemes take full account of water conservation and quality issues and incorporate appropriate consideration and mitigation measures. This may extend to other sites through the use of planning obligations.
- 4.5 The Council will consult the Environment Agency and Thames Water Utilities companies where appropriate to assess the impact of any proposal, which appears likely to have an effect on water quality and supply prior to planning permission.

5. Principles for Development

5.1 There are a number of water saving and preventative measures that can be taken and should be considered at the outset of development proposals. Where opportunities occur, water efficient appliances should be incorporated in all development proposals.

i) Preventative Measures: Source Control

5.2 Source control forms the start of water conservation. This is also encouraged by the Environment Agency. These measures can make a significant contribution to the minimisation of surface water run off. Preventative measures can be incorporated through:

- Minimising paved area - allowing surface water run off to drain naturally, through areas such as gardens, and areas of public open space.
- Use of porous surfaces where possible.
- Grass roofs
- Rainwater recycling/harvesting - capturing rainwater from the roofs of buildings in water butts. The capture of rainwater can be used for indoor needs such as flushing toilets, filtered and purified for use within the main water system, stored via water butts for use as grey water for activities such as car washing and general irrigation of gardens.
- Run off and planting - Vegetation and planting can slow run-off and is therefore important in assisting groundwater recharge and reducing local flood risk.

5.3 After exhausting the potential to conserve water through preventative measures, minimising the quantity of water discharged directly into a river should be taken into consideration; this can be achieved through sustainable drainage systems.

ii) Sustainable Drainage Systems

- 5.4 Sustainable drainage is the practice of controlling surface water runoff as close to its origin as possible. Sustainable Drainage Systems (SUDS) is a new approach to manage rainfall in development to replicate natural drainage. Runoff should be collected and stored to allow natural cleaning to occur prior to infiltration and controls release in to the watercourses. The objectives of SUDS include:
- reducing the flood risk from development within a river catchment;
 - minimising diffuse pollution arising from surface water runoff;
 - maintaining recharge to groundwater subject to minimising the risk of pollution to groundwater;
 - achieving environmental enhancements, including improvements to wildlife habitats, amenity and landscape quality
- 5.5 Wetland areas (which are part of SUDS) are attractive and therefore add value to developments, encourage wildlife, and are cheaper and simpler to install and maintain than conventional drainage systems.
- 5.6 Different SUDS techniques are appropriate at different scales as illustrated below:

Site Control

Infiltration devices, infiltration trenches and soakaways:

- these work by enhancing the natural capacity of the ground to store and drain water and enhance the natural flow of water through a development. Devices may be in the form of surface features such as swales and filter strips.

Permeable surfaces and filter drains:

- permeable surfaces offer alternatives to conventional hard surfaces. Use of materials such as porous paving, gravel, and grass allows water to permeate through the surface, rather than draining off it.

Grass swales:

- i.e. grassed areas adjacent to roads and pavements with a very shallow depression which allows water to infiltrate.

Local control

These systems can contribute to the flow and quality of run off. Systems include:

Filter strips and swales:

- i.e. vegetated landscape features with smooth surfaces and a gentle downhill gradient to drain water evenly off impermeable surfaces, mimicking natural drainage patterns.

Reed beds:

- singly or as a series of linked reed beds, in which water progressively becomes cleaner before reaching a licensed outfall to a watercourse.

Regional Control (collection of surface water in the local area)

Basins and ponds, detention basins, retention ponds, balancing ponds and wetlands:

- generally these are shallow features where surface water run off is stored until it infiltrates through the soil. They can also contribute to visual amenity and can accommodate variations in water levels (useful during storms) – plants and algae work to filter and degrade nutrients and pollutants, therefore cleaning the water, which will benefit wildlife.

iii) Other Water Conservation Measures (for all developments)

- 5.7 Many SUDS techniques will only be feasible in large scale developments. However measures can be incorporated into small scale developments through using permeable surfacing materials and soft planting, providing water butts and recycling 'greywater'.
- 5.8 The effective design of soft landscaping within a development can significantly curtail the consumption of water. Some new developments have addressed this issue through the use of drought tolerant turf and plants. Methods to incorporate practices for retaining and making the most of moisture in the soil include the use of mulch and compost. Consideration may also be given to terracing and grading of garden areas on sloping sites to direct and trap water in planting areas.
- 5.9 The use of 'grey water' can significantly reduce water consumption. Waste water from baths, washing machines and collection of rainwater from roofs is known as grey water and should be stored for flushing toilets, use in the garden and washing cars. All developers should be encouraged to incorporate storage units in all development proposals. Developments can include wastewater storage units to store used water for re-use.

- 5.10 Grey water can be treated using filters and ultra-violet techniques to turn it into 'green water'. This is safer to use and can be used in a wider range of applications including laundry and washing, industrial processes and heating/cooling.
- 5.11 The design of development proposals will be expected to include the provision of suitable water conservation measures. These can include:
- the installation of either a water reuse/recycling system, or rainwater collection system, and
 - the incorporation within the design of a building with a garden of a suitably allocated outdoor space for the location of a suitably sized 'rainwater butt'.
- 5.12 Table 1 provides a summary of water conservation measures and when they may be most effectively used.

Table 1 – Summary of Water Conservation Measures

TYPE OF DEVELOPMENT	
Large Scale Residential	
Sustainable Drainage Techniques	Benefits
<ul style="list-style-type: none"> • Swales and basins 	<p>They may be used to replace conventional roadside kerbs, saving construction and maintenance costs</p> <p>Swales can be integrated into the landscape.</p>
<ul style="list-style-type: none"> • Permeable surfaces 	Reduce the need for water drains and off-site sewers
<ul style="list-style-type: none"> • Ponds and wetlands 	Contribute to visual amenity and biodiversity
<ul style="list-style-type: none"> • Infiltration devices 	Reduced flows into the surface water sewer by enhancing the natural capacity of the groundwater to store and drain water.
Large and Small Scale Residential	
Other Water Conservation Measures	Benefits
<ul style="list-style-type: none"> • Water butts 	Water butts help reduce dependence on mains water for gardening/landscape maintenance purposes
<ul style="list-style-type: none"> • Dual flush toilets 	Reduces water usage
<ul style="list-style-type: none"> • Green roofs 	Improve water quality and reduces peak flow and total volume discharge from a roof
<ul style="list-style-type: none"> • Soft planting/ permeable surfaces 	Slows run-off so contributes to ground water recharge and reduced flood risk
<ul style="list-style-type: none"> • Drought tolerant turf and plant species 	Landscaping can be designed to minimise water consumption without detriment to the appearance of a scheme
<ul style="list-style-type: none"> • Water recycling 	Use of 'grey water' can significantly reduce water consumption
Large Scale Non-residential	
Sustainable Drainage Techniques	Benefits
<ul style="list-style-type: none"> • Permeable surfaces 	For use on roads and car parking areas- reduces flood risk and helps to promote groundwater recharge.
<ul style="list-style-type: none"> • Retention pond 	Contributes to visual amenity. Plants and algae filter and degrade nutrients and pollutants cleansing the water and benefiting wildlife.
<ul style="list-style-type: none"> • Infiltration devices 	Reduced flows into the surface water sewer by enhancing the natural capacity of the groundwater to store and drain

	water
<ul style="list-style-type: none"> • Swales 	<p>They may be used to replace conventional roadside kerbs, saving construction and maintenance costs.</p> <p>Swales can be integrated into the landscape</p>
Large and Small Scale Non-residential	
Other Water Conservation Measures	Benefits
<ul style="list-style-type: none"> • Dual flush toilets 	Reduces water usage
<ul style="list-style-type: none"> • Porous paving/ soft planting 	Slows run-off so contributes to ground water recharge and reduces flood risk.
<ul style="list-style-type: none"> • Drought tolerant turf and plant species 	Landscaping can be designed to minimise water consumption without detriment to the appearance of a scheme
<ul style="list-style-type: none"> • Green roofs 	Improve water quality and reduces peak flow and total volume discharge from a roof
Other Developments	
<ul style="list-style-type: none"> • Roads 	
Sustainable Drainage Techniques	Benefits
<ul style="list-style-type: none"> • Grass swales 	They may be used to replace conventional roadside kerbs, saving construction and maintenance costs. Swales can be integrated into the landscape.
<ul style="list-style-type: none"> • Filter drains 	Removal of pollutants by absorption, filtering and microbial decomposition in the surrounding soil.

Contaminated Land and Groundwater

- 5.13 Where land is contaminated SUDS should not be used unless additional measures to reduce the contamination are considered. This should be to an agreed level as recommended by the Environment Agency. This is due to the fact that an increased infiltration rate can cause mobilisation of residual contamination.

- 5.14 Certain methods of SUDS should also not be used in areas where groundwater is particularly sensitive to pollution such as an Inner Source Protection Zone because public abstraction cannot be put at risk from pollution associated with certain types of development, such as large car parks. Further advice regarding this should be obtained from the Environment Agency.

6. List of Further Contacts

The Environment Agency Thames Region

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Hatfield
Hertfordshire
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Three Valleys Water plc

PO BOX 48
Bishops Rise
Hatfield, Hertfordshire
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Tel: 0845 782 3333

Thames Water Utilities

Kew Business Centre
1 Kew Bridge Road
Middlesex
TW8 0EF
Tel: 0207 713 3877
Web: www.thames-water.com/waterwise

Useful Websites:

Water Regulatory Advisory Scheme – www.wras.co.uk
CIRIA – www.ciria.org.uk
Envirowise – www.envirowise.gov.uk
Sustainable Homes – www.sustainablehomes.co.uk
Rainwater Harvesting Association – www.ukrha.org
Enhanced Capital Allowances – www.eca-water.gov.uk

Other Documents:

Water Efficiency in Development (2004) – Sustainable Development Round Table for the East of England/Environment Agency
Water Conservation in Business – A Briefing Note for Construction Clients and Building Owners – Construction Industry Council
Hertfordshire Sustainable Development Guide (Draft 2003) – Hertfordshire County Council