5. Water Demand Management

5.1 Background to this Strategy

The Phase 1 Outline Water Cycle Study for King's Lynn and West Norfolk Borough Council (KLWNBC, 2009) reviewed the status of water resources in the Borough. It looked at the capacity of existing water supplies in the study area in relation to forecast housing and other development, and the likely increase in demand for water in the period to 2025. The report concluded that there was sufficient supply available to meet the growth in demand over this period, even with higher than expected growth in housing and low water efficiency scenarios. Availability of water resources will not therefore constrain the planned level of growth.

However the level of water demand from new and existing housing and other properties will have a direct impact on the water balance in the environment, and on the carbon footprint of water supply and wastewater treatment. The study area and indeed the whole of Anglian Water's supply area is classified as being under serious water stress (Environment Agency, 2007) and consequently requires the highest levels of water efficiency activity. Regional plans identify that approximately 11,000 new homes will be built in the Borough between 2008 and 2026. The interaction of development planning and water resource management is therefore a key issue for the region, and it is important that development should not be committed without secure water supplies in place.

It is therefore appropriate that the Council should adopt and implement a Water Demand Management Strategy to promote water efficiency and manage demand, in new and existing homes, in non household properties, and in other activities throughout the Borough. In managing water demand the environmental impact of water supply, including the carbon footprint, should also be considered.

Government guidance and legislation, both national and regional, and proposals in the Council's Core Strategy set targets and aspirations for water use now and in the future. This includes for example Defra's Future Water Strategy, the Code for Sustainable Homes, and the East of England Plan[7]. Anglian Water Services (AWS) supply water to the area, and are therefore a key stakeholder in development and implementation of this Strategy.

5.2 Purpose of this Strategy

This proposed Strategy briefly discusses the drivers for water efficiency in the study area, then sets out a number of objectives for managing water demand, and actions for the Council to take to meet those objectives. The Strategy includes measures for new and existing properties, for household, commercial and council owned buildings.

The Strategy is intended for use by Planners, the Environment Department, Housing and other relevant teams at King's Lynn and West Norfolk Borough Council. It is a living document which should be reviewed and updated as

[7] The Government now plans to discontinue the East of England Plan, however it was informed by the report "East of England Capacity Delivery Strategy", December 2006 which identified the availability of water resources in the study area, for the duration of the current proposed Local Development Framework.

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legislation and government guidance on water efficiency changes, and in liaison with other key stakeholders including primarily Anglian Water Services.

The Strategy is described in Section 5.3, and drivers for the strategy and other relevant information is provided in section 5.4.

5.3 Water Demand Management Strategy

5.3.1 Policies for New Housing

1. The Council will require all new private sector housing to be built to Code for Sustainable Homes Level 4 with respect to water consumption from April 2012, and will encourage designs that meet the highest CSH Level 6 water consumption targets.

2. The Council will need to introduce a policy into the Development Framework to require this water use target.

Comment: this is a more ambitious target than the current Building Regulations (which require all houses to be built to CSH Level 2), but a lower target than that set for new social housing which the Homes and Communities Agency will require to meet CSH Level 6 from April 2015.

This CSH Level 3/4 water consumption target of 105 l/person/day is approximately equivalent to the policy set by the Mayor of London (Mayor of London, 2008) for all new residential development of 110 l/person/day including outside use.

CSH Level 3/4 water consumption can be achieved in the design of all houses with the installation of water efficient appliances such as spray and aerated taps and showerheads, smaller baths, and low flush and/or dual flush toilets. To achieve Level 5/6 of the CSH some form of water re use e.g. rainwater harvesting or greywater re use, will be required. Rainwater and greywater re use contribute to sustainable urban drainage strategies which are required by PPS25 for all new developments over 1ha, and by the Council's Core Strategy for smaller sites.

The Environment Agency confirmed that they support all initiatives aimed at reducing water use, and would wish to see low flush toilets, low flow showerheads, water butts for gardens and other water efficient appliances installed in all new homes.

1. The Council will encourage developers to include rainwater harvesting or greywater re use in their designs. Where a design is submitted without either, the developer will need to explain and justify what technological or other constraints prevent this. The balance between demand management and carbon footprint will need to be considered in relation to greywater and rainwater re use.

2. The Council will review the water consumption targets in conjunction with changes to CSH and Building Regulations, and will consider introducing the highest CSH target of 80 l/person/day by 2015.

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3. The Council will alert developers at an early stage in the planning process, to the need to include water efficiency, including rainwater harvesting and grey water re use, in design. They will advise developers where to find guidance on water efficient and sustainable design of new homes. For homes to be CSH certified they must be assessed at the Planning Application stage and post-completion, by trained assessors. The CSH scheme is operated by the Building Research Establishment, BRE.

4. Anglian Water Services (AWS) have a policy for metering new housing, and the council support this. The Environment Agency confirmed that they will expect to see all new houses metered in the AWS supply area.

For example the Environment Agency produces a large amount of information on water efficient building design and references to other information sources. Their Guide for Developers (EA, 2006) includes a checklist and case studies for water efficient design. Their web site includes further advice for the construction industry on water efficiency and other environment issues. The Council may wish to provide its own guidance to developers on water efficiency, and a suggested document is included at Appendix A. This will need to be reviewed at intervals to ensure it reflects current regulations, technology and the Council's Water Demand Management Strategy.

The Water Efficient buildings Website (http://www.water-efficient-buildings.org.uk/) provides a large amount of information on water efficient appliances, the planning process and building regulations, schemes for assessing water efficiency (CSH, BREEAM), and a worked example of the Water Calculator. This site is funded by the Environment Agency, Anglian Water Services and Cambridge Water, amongst others.

The Water Wise website (www.waterwise.org.uk) contains a large amount of information on water saving devices for the home, including specific products.

5.3.2 Policies for Existing Housing

1. AWS do not plan to implement a policy of compulsory metering of existing housing stock although legislation allows for this in an area of serious water stress. The Council will discuss this policy with AWS and keep it under review. They will work with AWS to promote their optant metering programme, in order that 80% of existing households are metered through this scheme by 2015.

2. The Council will work with AWS to ensure an effective household water audit scheme is implemented, perhaps in partnership with energy providers, since the use of energy to heat water (not including central heating) is a significant component of total energy use in domestic setting.

3. Where houses are refurbished or converted from another use, the Council will require the same water consumption targets as for new homes (see point 1) to be included in the design and fit out.

4. The Council will work with AWS to implement an effective scheme for retrofitting existing housing stock with water efficient appliances, including flush moderators or dual flush adaptors, tap aerators and low flow showerheads.

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5.3.3 Policies for Non Domestic Properties

New Non Domestic Developments

1. The Council will require all new non residential buildings to be BREEAM assessed, and to achieve maximum credits in water consumption and water metering. This will require greywater re use or rainwater harvesting to be installed. Where maximum water credits are not included in the design, developers will need to justify why not on technical grounds.

Existing Non Domestic Properties

1. The Council will work with Anglian Water Services and energy providers where appropriate to carry out water (and energy) use audits and advice at all commercial and industrial premises. Follow up visits will be made to determine whether savings have been made.

5.3.4 Policies for Council Buildings

1. New and refurbished Council buildings will be to be designed and built to achieve maximum water credits (WAT1 and WAT2) under the appropriate BRE Assessment Method. This will include installing greywater or rainwater harvesting systems as appropriate, as well as water efficient appliances.

2. A strategy for efficient management of water use in parks and other green spaces will be implemented. This will include for example use of drought tolerant plants, efficient watering schemes, etc.

3. Water audits will be carried out at all Council buildings with AWS, and actions that are identified to improved water efficiency will be implemented.

4. Water consumption in all Council owned buildings will be measured and monitored against the relevant BREEAM targets; results will be published annually internally and on the Council website and displayed at other appropriate places (e.g. libraries).

5. A water efficient procurement strategy will be implemented to ensure all water using appliances in all Council buildings are the best available technology in terms of water consumption (and energy use) by 2020, and thereafter.

6. Publicity material will be displayed and circulated in Council buildings and to council employees to encourage efficient water use in an ongoing and routine manner.

5.3.5 Over Arching Policies

1. The Borough Council of King's Lynn and West Norfolk will initiate with AWS, the EA, Natural England, Waterwise, RSPB and other stakeholders as appropriate, an annual (or bi annual) Water Fair which will promote the use of water for recreation and health, biodiversity and the environment, and for fun, and at the

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same time encourage water efficiency. Businesses and the local community should be engaged in the Water Fair.

Note: Hampshire County hold an annual Water Festival located at different venues each year. See their web site at http://www.hampshirewaterfestival.co.uk

Figure 5.1 Excerpt from Hampshire County Water Festival Website

The Water Festival will feature:

- Over 50 exhibitors of Water related organisations
- Local Food producers, Garden nurseries
- A programme of Live entertainment
- Family activities including pond dipping, face painting
- Talks on organic gardening and drught resistant plants
- Grow Your Own
- Ponds and aquatic plants
- Interactive work shops
- Picnic areas
- Refreshments and Food vendors

2. The Council will work with AWS to implement an ongoing publicity campaign across the Borough to promote water efficiency in the home and garden. An example poster promoting efficient water use in kitchens (from Scottish Water) is shown at Figure 5.2. An example of regional government advice to gardeners in Perth, Australia is available here http://www.dpi.wa.gov.au/mediafiles/ls_wateringyourgarden.pdf.

3. The Council will, with AWS and other stakeholders in the Borough, promote water efficient products including those awarded the Water Marque in the scheme run by Water Wise. These awards are made to products which have been tested and proved to use water efficiently. The Water Marque is advertised on the products and packaging, at point of sale, product catalogues etc, and on the Water Wise website (www.waterwise.org.uk). 59 Marques have been awarded so far across a broad spectrum of products including dishwashers, showerheads, water storing gels for the garden, toilets and urinals, drought resistant turf, domestic water recycling products, water butts, a waterless carwash, tap flow restrictors, shower timers and devices to reduce the amount of water used when flushing your toilet, amongst others. The Council will encourage businesses to apply for Water Marque accreditation of their water efficient products. They will encourage businesses to purchase water efficient products from the ETA list and benefit from tax rebates.

The Water Efficient Product Labelling Scheme is run by the Bathroom Manufacturers Association (BMA) and labels water efficient products for retail (www.water-efficiencylabel.org.uk/).

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Figure 5.2 Example Water Efficiency Poster (from Scottish Water)

site at http://www.hampshirewaterfestival.co.uk.

5.4 Drivers for the Strategy

5.4.1 National Strategy: Future Water

The Government's Future Water Strategy for England (Defra, 2008) sets a target to reduce per capita consumption of water to 130 litres per person per day (l/p/day) by 2030, or even 120 l/p/day if technological development and innovation allow this.

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This compares with per capita consumption rates forecast by Anglian Water Services in their draft Water Resource Management Plan of average 135.8 l/p/day in 2010/11 falling to 132.0 l/p/day by 2030/31, slightly above the Future Water target. However, this average figure is calculated based on higher consumption in unmetered households (151.5 l/p/day rising to 202.6 l/p/day) and lower water use in metered homes (of 124.4 l/p/day falling to 117.8 l/p/day) over the same period. This would suggest a differential consumption between metered and unmetered households of 28 l/p/day rising to 85 l/p/day by 2030 and underlines the importance of metering in managing domestic water demand. Water consumption studies generally have found that installing standard meters achieves a reduction of 10% in domestic demand.

5.4.2 Anglian Water Services (AWS) Metering Strategy

AWS have adopted an optant metering policy whereby it will install free water meters to customers who request one. It has not implemented a compulsory metering scheme despite the designation of serious water stress in the company area which would allow this option. The Final WRMP forecast is for 80% of non new households to be metered through the optant scheme by 2015.

All new homes in the AWS supply area have meters installed.

5.4.3 Regional Strategy: East of England Plan

The East of England Plan (GOEE, 2008) states that the Government will work with the EA, water companies, Ofwat and regional stakeholders to ensure that development is matched with improvements in water efficiency delivered through a progressive, year on year reduction in per capita consumption rates. Savings will be monitored against the per capita per day consumption target set out in the Regional Assembly's Monitoring Framework. Whilst the Government now plans to discontinue the East of England Plan, it should be noted that the Plan was originally informed by the report "East of England Capacity Delivery Strategy", December 2006 which identified the availability of water resources in the study area, for the duration of the current proposed Local Development Framework. The aims to improve water efficiency in the Borough are therefore considered to be still relevant, as the availability of water resources is still an issue for both existing and future development.

The Monitoring Framework states (Indicator E11) that a per capita per day target is to be defined to achieve savings of at least 25% in water use from 2006 to 2021 in new development, and at least 8% in existing development. The Indicator also states that for consistency with national standards savings will be monitored against a domestic consumption target of 105 l/p/day

5.4.4 Local Strategy: Core Strategy for King's Lynn and West Norfolk

The Council's Core Strategy (KLWNBC, for adoption in November 2010) in Policy CS08 - Sustainable Development, states that all new development will be required to achieve high standards of sustainable design. Measures should include integration of water saving devices, and the Council will encourage designs that exceed the present standards set by Building Regulations and achieve higher levels of the Code for Sustainable Homes.

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5.4.5 Code for Sustainable Homes

The Government's Code for Sustainable Homes was published in December 2006 and established 6 target levels of water consumption and CO_2 emissions, amongst other factors, for sustainable building design. From May 2008 all new homes (as well as refurbished homes and properties converted to residential use) must be assessed against the Code, although no targets are mandatory for private sector development.

The Homes and Communities Agency requires that all new homes built with public money meet at least Code Level 3 from May 2008, Level 4 from 2012 and Level 6 from 2015. Level 3 is equivalent to Level 4 in water consumption terms, as are Levels 1 and 2, and Levels 5 and 6. Design per capita consumption targets are shown in Table 5.1.

Table 5.1 Design Per Capita Consumption Targets

Code for Sustainable Homes	Water Use (l/p/day)
Level 1 or 2	120
Level 3 or 4	105
Level 5 or 6	80

5.4.6 Building Regulations

The Building Regulations 2000 were amended on 6 April 2010 and now require new homes to be designed for a whole building per capita consumption of not more than 125 l/p/day, as calculated using the Water Efficiency Calculator for New Dwellings, (DCLG, 2009). This is approximately equivalent to the lowest CSH Level 1/2 of 120 l/p/day of internal household use. It is anticipated that progressively more ambitious targets for water consumption may be set in future amendments to the Regulations.

Local Planning Authorities can require higher Levels of CSH compliance provided this is stated in a policy of the Development Plan Documents, and not Supplementary Planning Documents.

5.4.7 BREEAM

The Building Research Establishment (BRE) operates an Environmental Assessment Methodology (BREEAM) for assessing new non housing buildings at the design stage and completion, awarding a rating on a scale of 1 (Poor) to 5 (Outstanding).

Credits are awarded where efficient water using appliances are included in the design, including rainwater harvesting and greywater re use. Further credits are awarded for pulsed output water meters, leak detection systems and sanitary supply shut off features. Schemes are in place for courts, healthcare, industrial, multi

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residential, prisons, offices, retail and education buildings. An accredited assessor must assess the building at the planning stage and when fitting out is complete.

Note that to achieve an Outstanding BREEAM rating greywater or rainwater harvesting systems must be included in the design. In offices maximum water consumption credits are achieved when potable water consumption is not more than 1.5m^3/person/year.

Table 5.2 BREEAM Assessment Criteria (relevant to Canning Town Development)

Commercial	Requirements to Meet Maximum BREEAM Points
Standard Spec	6 litre flush toilets, urinals with no controls, showers that use 12 to 15 litres per minute, standard taps with no flow restrictors
Office and industry	Where the water fittings are all low water AND rainwater or greywater fittings have been specified.
	Where a water meter with a pulsed output will be installed on the mains supply to each building.
	Where a leak detection system is specified or installed.
	Where proximity detection shut off is provided to water supply for all urinals and WC's.
Retail (dependent on size and type of unit)	Where all WCs have a dual flush cistern with four litre main flushing capacity and reduced flushing capacity of two litres. Or where all WC's have a vacuum flush system or they are waterless. Plus instructions on the appropriate operation of the flushing device.
	All taps are timed turn off push taps, electronic sensor taps, spray taps, or aerating taps. All showers have a nominal flow rate the same as or less than 9 litres per minute at 1.5 bar pressure. All urinals are either: infra-red proximity detection with controls on each individual urinal (so the urinal only flushes after its use) or waterless.
	Where a water meter with a pulsed output will be installed on the mains supply to each building.
	Where a leak detection system is specified or installed.
	Where there are systems that collect, store, and where necessary, treat rainwater or greywater for WC and urinal flushing purposes.
	Where evidence provided demonstrates that proximity detection shut off is provided to the water supply to all urinals and WC's.

5.4.8 Enhanced Capital Allowances (ECA) for Water Efficient Technologies

Defra in conjunction with HM Revenue and Customs has implemented an Enhanced Capital Allowance (ECA) scheme which enables businesses to claim 100% first year capital allowances on investments in technologies and products that encourage sustainable water use. The scheme is detailed on the ECA website at http://www.businesslink.gov.uk/, which includes a list of all ECA registered products and information on how to claim the ECA.

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