



**BEDFORD**  
BOROUGH COUNCIL

Working with

**business**

love every drop  
**anglianwater**

# Water Strategy

2014/15 - 2016/17





## Foreword from the Mayor of Bedford

Water scarcity and the increasing need to conserve water resources as our climate changes, is a key national and local priority. In England, the average person uses about 150 litres of water a day. This is water that has been cleaned, treated and pumped from reservoirs, rivers and aquifers.

The Council recognises and acknowledges the impact it has, and that of the services it delivers, and commits to manage and improve water efficiency across all areas of its operation. The Council want to demonstrate leadership in the area of water management to “get its own house in order”, whilst also encouraging partners and residents of Bedford Borough to assess and reduce their own water use.

Working in partnership with Anglian Water Business, Bedford Borough Council was one of the first local authorities in the UK to sign a Water Promise, pledging to cut water and waste water use by 20% by 2015 / 16. Wanting to lead by example, the Council believes this Water Strategy is one of the first to be created by a local authority in the UK; outlining how we intend to help secure future water resources whilst also reducing spend and carbon emissions across our estate.

We are proud to sponsor this Water Strategy. It provides an action plan towards achieving our aspirational 20% water reduction target and a long term framework through which to monitor, manage and reduce water resources.



**Dave Hodgson**  
Mayor of Bedford



**Philip Simpkins**  
Chief Executive

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# 1. Introduction

## 1.1 National Drivers

Water resources within the UK are increasingly under stress. Striking a balance between water availability and the demand for water is becoming increasingly hard, owing to a growing population and the threat of climate change.

Currently there are 64.1 million people in the UK, with Britain's population increasing by more than 400,600 people in the previous year alone.<sup>1</sup> Water usage has been growing at more than twice<sup>2</sup> the rate of population growth in the last century, with each person in the UK currently consuming 150 litres of water per day.<sup>3</sup> As our population continues to grow, water resources are becoming increasingly stretched. On a global scale, the UN has warned that global water demand will outstrip current accessible supplies by 40% by 2030.<sup>4</sup> On a national scale, by the 2050's, the number of people in the UK living in areas affected by water supply-demand deficits could be between 27 million and 59 million.<sup>5</sup>

UK climate change medium emission projections suggest that summer mean temperatures could increase by as much as 8°C by 2080 (Figure 1), with summer rainfall decreasing by as much as 45% (Figure 3). This will result in less water in the environment to abstract, at a time when 25% of rivers are already at risk due to over abstraction.<sup>6</sup> Winter rainfall may increase by 40-50%, resulting in an increasing risk of sewer flooding and water supply contamination (Figure 2).<sup>7</sup>

The drought in South East England in 2004-06 and at the end of 2011, and the floods of 2007 and 2013/14 brought into focus the challenges that we know climate change will bring.

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1. Office for National Statistics mid-2012 to mid-2013 comparison

[www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/2013/index.html](http://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/2013/index.html)

2. United Nations [www.un.org/waterforlifedecade/scarcity.shtml](http://www.un.org/waterforlifedecade/scarcity.shtml)

3. Future Water: The Government's water strategy for England [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69346/pb13562-future-water-080204.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69346/pb13562-future-water-080204.pdf)

4. United Nations [www.un.org/waterforlifedecade/pdf/01\\_2014\\_water\\_energy\\_efficiency.pdf](http://www.un.org/waterforlifedecade/pdf/01_2014_water_energy_efficiency.pdf)

5. The National Adaptation Programme: Making the country resilient to a changing climate:

[www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/209866/pb13942-nap-20130701.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209866/pb13942-nap-20130701.pdf)

6. ESPO Water Market 2017 meeting presentation provided by Anglian Water

7. Graphs taken from <http://ukclimateprojections.metoffice.gov.uk/22104>

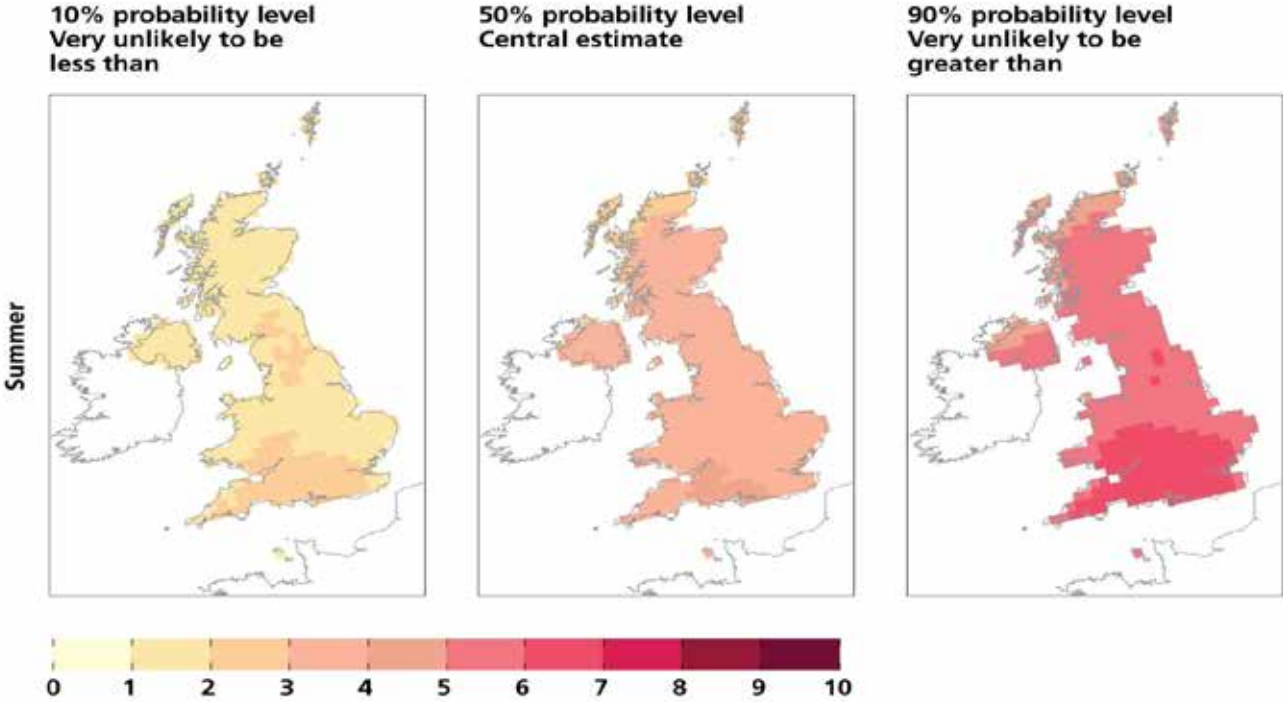


Figure 1: Change in summer mean temperature (°C) for the 2080s, Medium emissions scenario

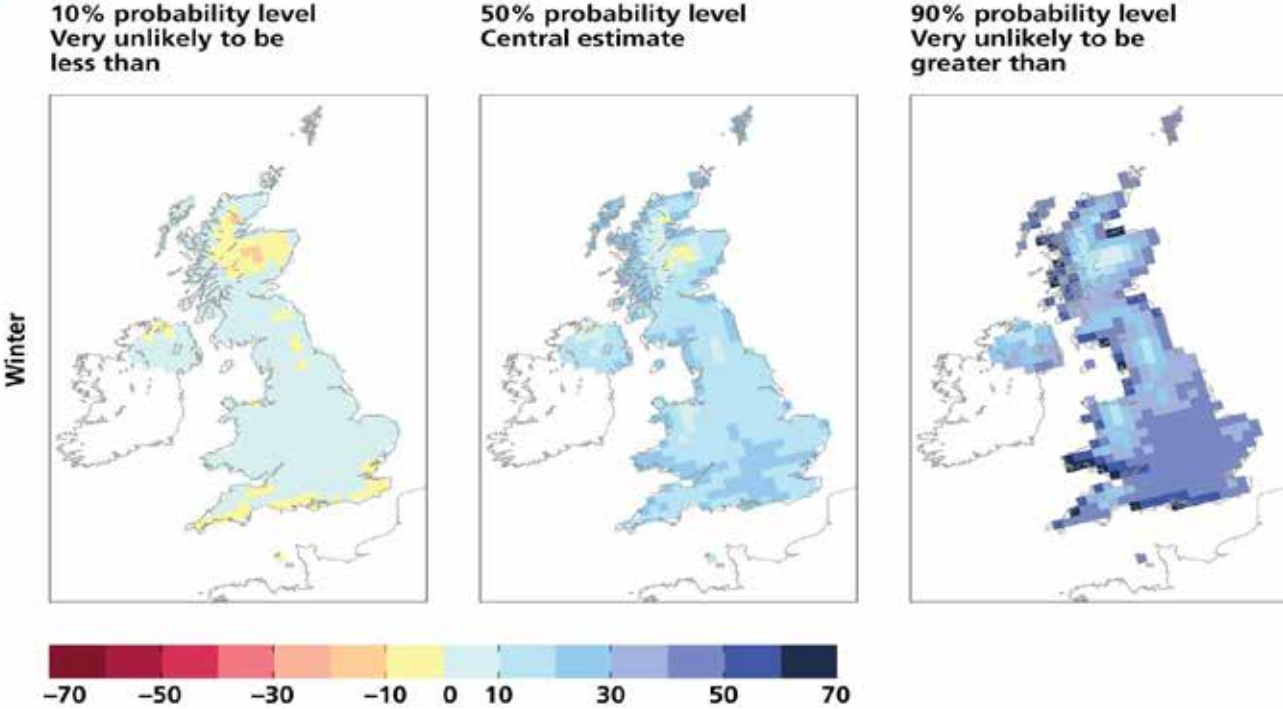


Figure 2: Change in winter mean precipitation (%) for the 2080s, Medium emissions scenario

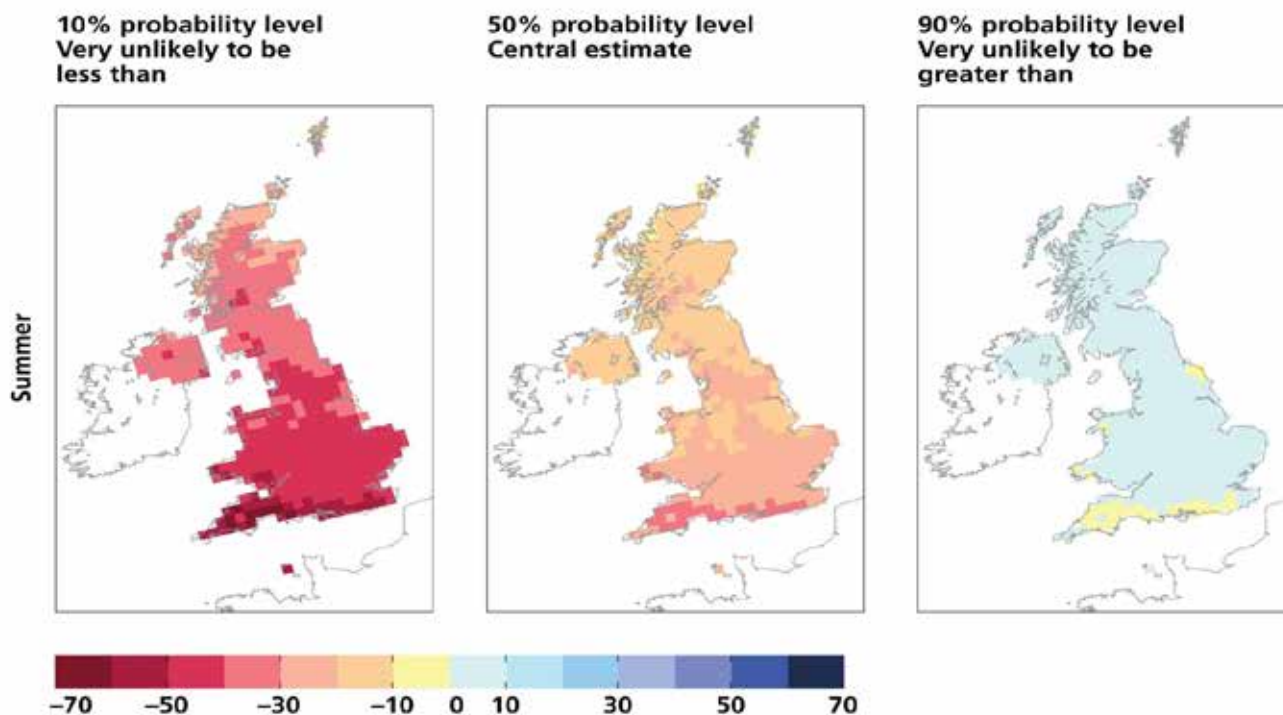


Figure 3: Change in summer mean precipitation (%) for the 2080s, Medium emissions scenario

Acknowledging these challenges and the importance of increasing resilience against them, in 2008 Defra published ‘Future Water’, the Government’s water strategy for England. This document sets out the Government’s plans for water and outlines a series of steps to get there, including a target to reduce per capita water use to 130 litres per day.<sup>3</sup> By implementing this strategy, water should be used more wisely, whilst at the same time, the carbon impact of water services will also be reduced. Abstracting, pumping, treating and heating water and treating and pumping wastewater consumes energy and releases greenhouse gas emissions. According to Anglian Water Business, for every 1000m<sup>3</sup> water saved, it is estimated that 1.15 tonnes of carbon dioxide equivalent will be avoided.<sup>6</sup>

Water efficiency and water resource management feature highly in the National Adaptation Programme; a result of the extreme weather events experienced in the UK in the past few years. More investment is being directed towards these areas to build resilience to adapt to climate change e.g. Defra has contributed funding towards the Energy Saving Trust and Waterwise Green Deal guidance (2012). Reducing demand for water is a key priority for water companies and features significantly in Water Resource Management Plans.<sup>5</sup>

Water suppliers have a statutory duty to promote the efficient use of water by customers.<sup>8</sup> The additional funding and support from the government encourages water companies and Green Deal providers to work in partnership on joint energy and water efficiency projects. This has resulted in water companies providing a range of activities such as tips for saving water, retrofit programmes, school education programmes and the offer of subsidised water butts. Bedford Borough’s water supplier, Anglian Water Business has its own national campaign to raise awareness about the value of water and encourage users to change how they consume water. The ‘Love Every Drop’ campaign was launched in 2010 and was followed more recently by its ‘Drop 20’ campaign. This encourages consumers to save 20 litres of water a day.

8. Section 93A of the Water Industry Act 1991



## 1.2 Local Drivers

In Southern and Eastern regions of England, rainfall is relatively low, however per capita water consumption tends to be higher than elsewhere. In some areas abstraction is above its sustainable level. Combined with projections for rainfall and demand, this has led to the classification of all south-eastern areas as seriously water stressed. Figure 4, produced by the Environment Agency, shows relative water stress of water company areas.<sup>9</sup>

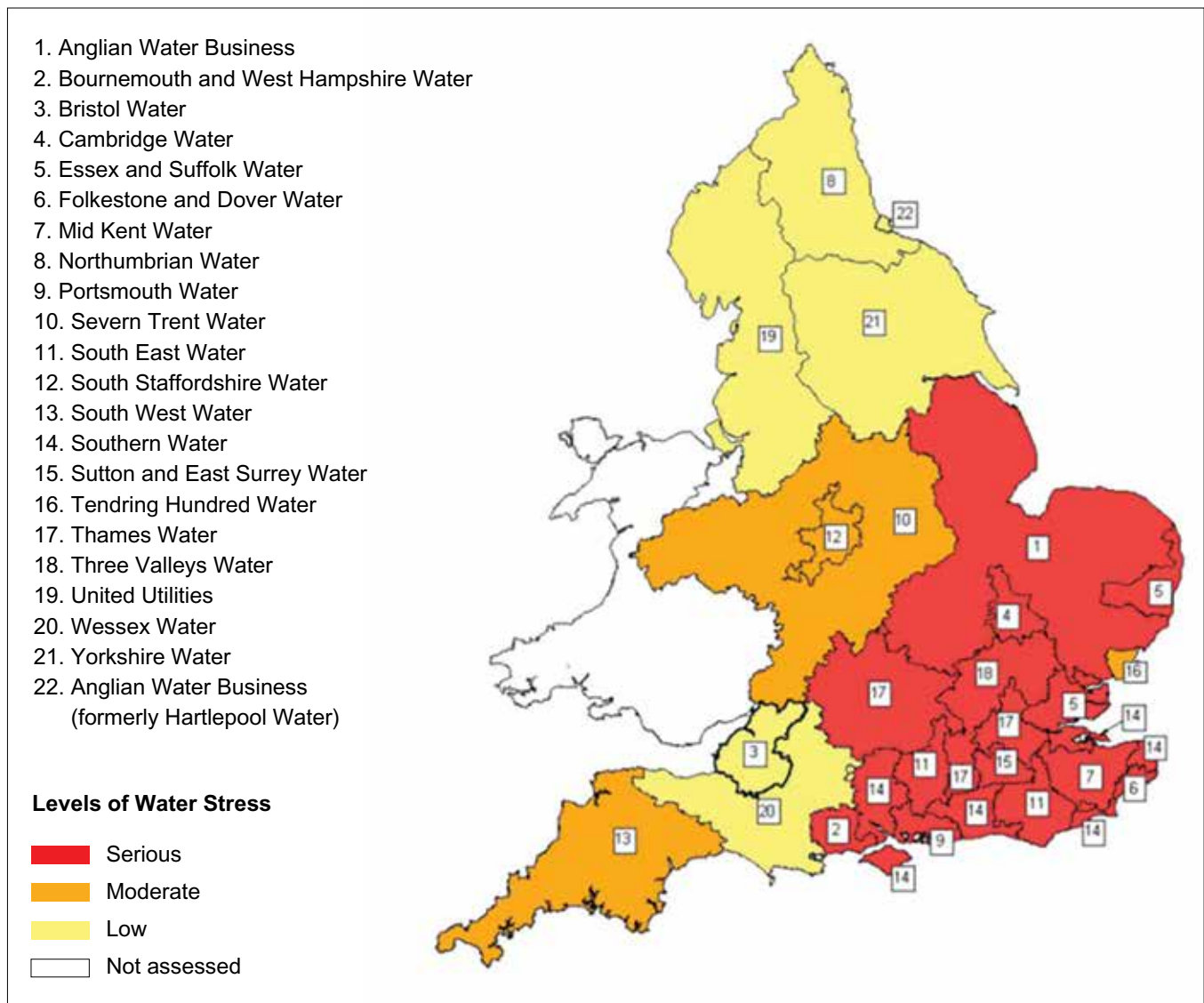


Figure 4: Map of areas of relative water stress produced by the Environment Agency

9. Environment Agency – Areas of water stress: final classification 2007 - [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69346/pb13562-future-water-080204.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69346/pb13562-future-water-080204.pdf)

Bedford Borough Council is a local authority based in Bedford, Bedfordshire with a population of approximately 157,800 people.<sup>10</sup> The Council delivers a wide range of services, many of which result in large amounts of water being consumed, including leisure sites, swimming pools, parks, a golf course, community centres, day centres, care homes, libraries, offices, depots and allotments.

Bedford Borough Council is situated in one of the driest regions of the UK. It is currently supplied by Anglian Water Business whose area is classified as seriously water stressed. The region receives a third less rainfall than the national average and when further reductions are experienced, the impacts are considerable. In April 2012, following the regions driest 18 months in a century, a hosepipe ban was enforced by Anglian Water Business. Figure 5 shows Bedford's rainfall for the period. As you will note, Bedford's annual rainfall for 2012 was 762.10 mm compared to 2011 which was only 379.52 mm.<sup>11</sup>

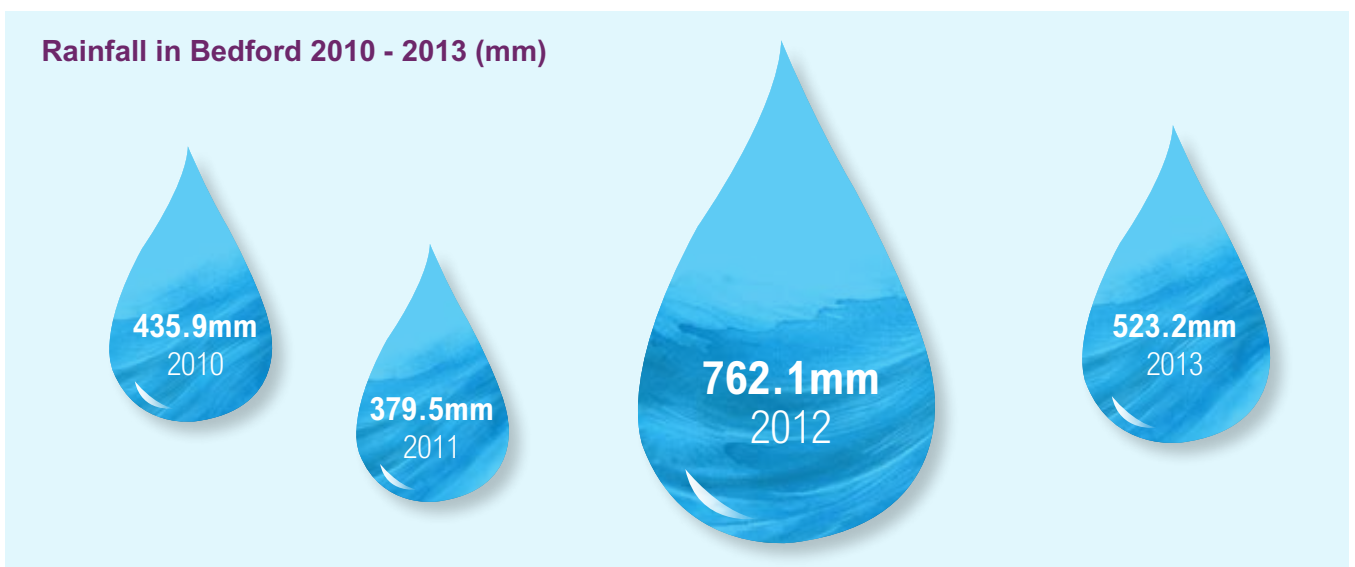


Figure 5: Illustration of average annual rainfall in Bedford from 2010-2013

All public authorities have a duty to conserve water supplied or to be supplied to premises.<sup>12</sup> Acknowledging the severity of water stress in the region, the need to adapt to a changing climate and also the wider environmental impacts of the water industry (i.e. contributing to national greenhouse gas emissions), the Council is committed to reducing the impact it has and that of the services it delivers in the Borough; as outlined in the following:

### Bedford Borough Sustainable Community Strategy 2009-2021

**Theme 2:** A Greener Borough: Environment and Climate Change

**Aim 5:** Protect and enhance our natural resources including air, soil and water to minimise the impacts of flooding, climate change and pollution.

10. Population figures taken mid 2012 source taken from Waste Data Flow - [www.voa.gov.uk/corporate/statisticalReleases/140424\\_CTValuationListSummary.htm](http://www.voa.gov.uk/corporate/statisticalReleases/140424_CTValuationListSummary.htm)

11. Source taken from: [www.tutiempo.net/en/Climate/BEDFORD/2012/35600.htm](http://www.tutiempo.net/en/Climate/BEDFORD/2012/35600.htm)

12. Water Act 2003, section 83 [www.legislation.gov.uk/ukpga/2003/37/section/83](http://www.legislation.gov.uk/ukpga/2003/37/section/83)

## Corporate Plan 2012-2016

**Theme 2:** Protecting and Preserving the Local Environment

**Aim 2B:** Climate Change and Environmental Sustainability. Objective: 'To ensure that the Borough reduces its carbon footprint, including managing our waste more effectively'.

## Climate Change Strategy 2015/16

**Priority One:** Tackling Climate Change

**Energy Efficiency:**

- Reduce the carbon emissions from the Council's buildings (including schools)
- Support the communities and businesses of Bedford Borough to reduce energy consumption and mitigate climate change.

**Adapting to Climate Change:**

- Prepare and adapt the Council's services to the possible impacts of climate change.
- Support the residents and businesses of the Borough to prepare and increase their resilience to the possible impacts of climate change.

**Priority Two:** Using Resources Efficiently

**Water:**

- Reduce water usage and conserve water where possible within the Council and encourage residents and businesses to be water efficient.

## Carbon Management Plan 2010/11-2014/15

The Council adopted a Carbon Management Plan in March 2011. The plan sets out a programme of action for the Council to achieve its 40% aspirational carbon reduction target from 2009/10 levels.

**Council's Commitment:** Aspirational 40% carbon reduction (from 09/10 baseline) by 2015.

## Climate Local Commitments and Actions document

The Climate Local Commitments and Actions document sets out locally owned and determined targets to mitigate and adapt to the effects of climate change.

**Theme 1:** Mitigation: Low Carbon Pathways

**Commitment:** We will aim to reduce the Council's carbon emissions by the aspirational target of 40% by 2015 (from the 2009/10 baseline)

**Commitment:** We will aim to reduce the water usage across all Council buildings by 20% by 2015/16.

**Theme 2:** Adaptation: Climate Resilience

**Commitment:** We will develop our understanding of the Council's vulnerability to the changing climate.

**Commitment:** We will raise awareness and help communities of the Borough to improve their resilience to the impacts of a changing climate.

**Commitment:** Ensure our estate, including parks and recreation facilities, are well-adapted to the changing climate.

**Commitment:** Build Resilience into the Local Plan by establishing policies to reduce water use in new and existing buildings (Allocations and Designations plan adopted in 2013) and ongoing enforcement of Building Regulations water consumption standards.

## 1.3 Our Vision

**Bedford Borough Council will work towards sustainable water use to protect the environment and secure water resources for future generations.**

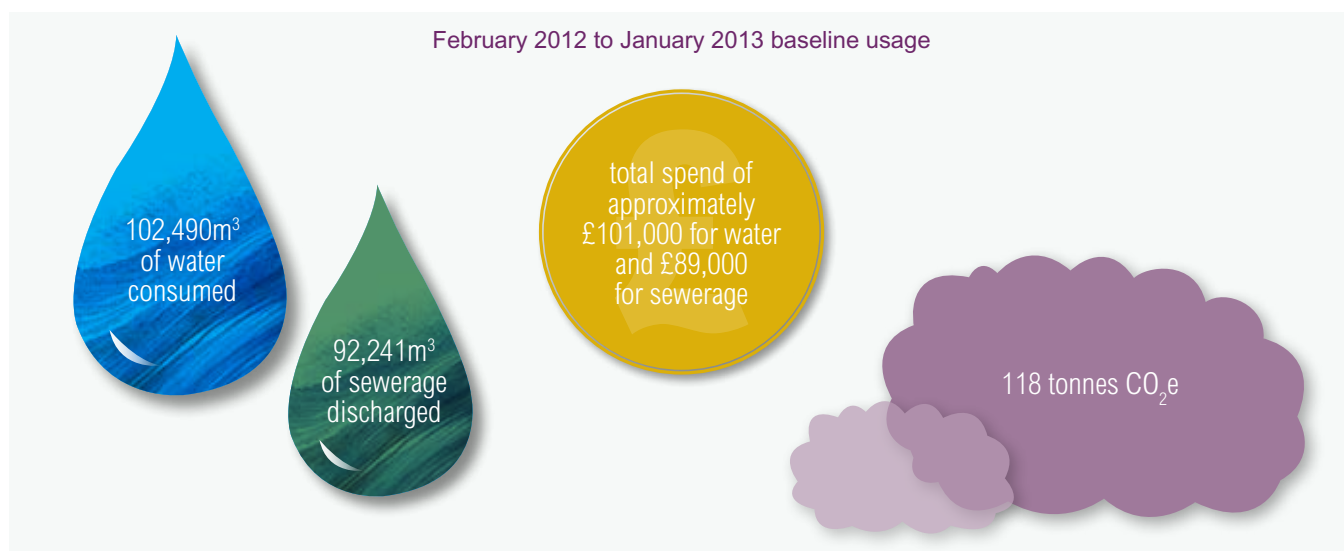
**The Council is committed to manage and improve water efficiency across all areas of activity. The Council will provide local leadership to encourage partners and residents of Bedford to reduce water consumption.**

## 1.4 Our Baseline

February 2012 to January 2013 was selected as the baseline year for the Council's Water Strategy.

Working in partnership with Anglian Water Business, data relating to 134 Council sites was analysed.

- It was found that 102,490m<sup>3</sup> of water was consumed and 92,241m<sup>3</sup> of sewerage was discharged during this period.
- This equated to a total spend of approximately £101,000 for water and £89,000 for sewerage<sup>13</sup>, whilst resulting in 117.86 tonnes CO<sub>2</sub>e<sup>14</sup>
- Assuming that 20% of the water used during the period is used for hot water, the Council spent £46,651.06 of its energy bill on heating water in the baseline period.<sup>15</sup>
- Annually, the Council uses enough water to fill 41 Olympic swimming pools<sup>16</sup>



13. Calculated on a 90% abatement from water use

14. Anglian Water conversion factors 0.452kg CO<sub>2</sub>e/m<sup>3</sup> water and 0.781kg CO<sub>2</sub>e/m<sup>3</sup> sewerage (based on regional factors derived from Defra conversion factors by Anglian Water) [www.anglianwater.co.uk/environment/why-we-care/carbon-management.aspx](http://www.anglianwater.co.uk/environment/why-we-care/carbon-management.aspx) and Water efficiency self-assessment guide

15. Based on Anglian Water Business calculations that; 102,490m<sup>3</sup>/year at 20% = 20,498m<sup>3</sup>. Gas cost at £2.27/ m<sup>3</sup> assuming a 90% efficient boiler = £46,651 heating water from 10 degrees to 60 degrees centigrade

16. Based on Olympic swimming pool volume of 2,500m<sup>3</sup>

### 1.4.1 High Consuming Sites

The Council prioritised those sites consuming the most water. A list of the top 15 highest consuming sites can be found in Table 1.

Site Name	Site Yearly Consumption (m <sup>3</sup> ) (Feb 2012-13)	Percentage of total yearly consumption (Feb 2012-13)
Oasis Beach Pool*	19,673	19.2%
Borough Hall	9,684	9.5%
Robinson Swimming Pool*	7,064	6.9%
Kempston Swimming Pool*	6,409	6.3%
Vehicle Repair Depot	6,215	6.1%
Bunyan Centre*	4,756	4.6%
Mowsbury Golf Course*	3,729	3.6%
Allhallows MSCP PC	3,597	3.5%
Mays Yard PC	2,413	2.4%
Bedford I-lab	1,961	1.9%
George Beal House	1,441	1.4%
The Higgins Bedford	1,421	1.4%
Hillgrounds Changing Room	1,286	1.3%
Bedford International Athletics Stadium*	1,090	1.1%
Barkers Lane offices	1,012	1%

\* Fusion Lifestyle is now responsible for the water costs and consumption

Table 1: Bedford Borough Council's 15 highest consuming sites

As of 1<sup>st</sup> February 2014, Fusion Lifestyle took over the operation of the Council's leisure sites which account for 42% of baseline water use. Fusion Lifestyle is now responsible for water costs and consumption at the leisure sites. Built into the contract with the Council is a requirement for Fusion Lifestyle to closely monitor water usage and make efforts to reduce water consumption. The Council will regularly monitor progress through Fusion Lifestyle's Environmental and Energy Management Plan.

After removing those sites operated by Fusion Lifestyle, the Council identified its own priority list of 10 high consuming sites (Table 2).

Site Name	Site Yearly Consumption (m <sup>3</sup> ) (Feb 2012-13)	Percentage of total yearly consumption (Feb 2012-13)
Borough Hall	9,684	9.5%
Vehicle Repair Depot	6,215	6.1%
Allhallows MSCP PC	3,597	3.5%
Mays Yard PC	2,413	2.4%
Bedford I-Lab*	1,961	1.9%
George Beal House	1,441	1.4%
The Higgins Bedford	1,421	1.4%
Hillgrounds Changing Room	1,286	1.3%
Lurke Street MCP PC	1,196	1.2%
CSD Offices, Barkers Lane	1,012	1%
Corn Exchange	969	1%

\*The Council is not directly responsible for the utility bills at Bedford I-lab. Water costs are recharged to the tenants on site through their tenancy agreement.

Table 2: Bedford Borough Council's top 10 priority list (excluding Bedford I-Lab)

### 1.4.2 Benchmarking

Benchmarking was undertaken as part of the baseline study completed in partnership with Anglian Water Business. Sites were categorised as follows: office buildings, leisure sites/pools, parks and public buildings. An 'other' category was also introduced for those sites that did not accord with the classifications. Figure 6 shows the percentage split for 119 sites analysed (15 of the 134 accounts were unsuitable for this exercise).

As predicted, leisure sites made up the majority of the Council's water usage (48%), with offices being the second largest consumer. As previously explained the Council is no longer directly responsible for any water consumption or cost relating to leisure sites/pools; however it will monitor progress made on site to improve water efficiency through Fusion Lifestyle's Environmental and Energy Management Plan.

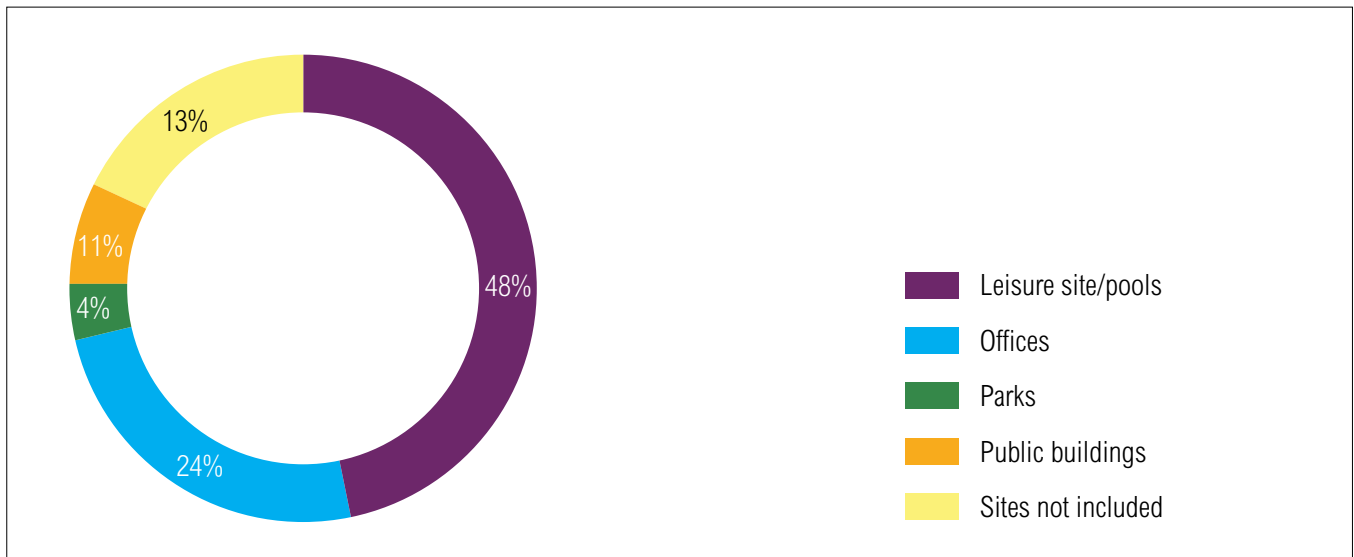


Figure 6: Benchmarked Council buildings (taken from Anglian Water Business Baseline Report)

Utilising the specified categories, Anglian Water Business benchmarked each building based on m<sup>2</sup> of the building and their consumption. 0:00 is the optimum line; anything above that line is considered inefficient, anything below is considered to be efficient.

### 1.4.2.1 Office Buildings

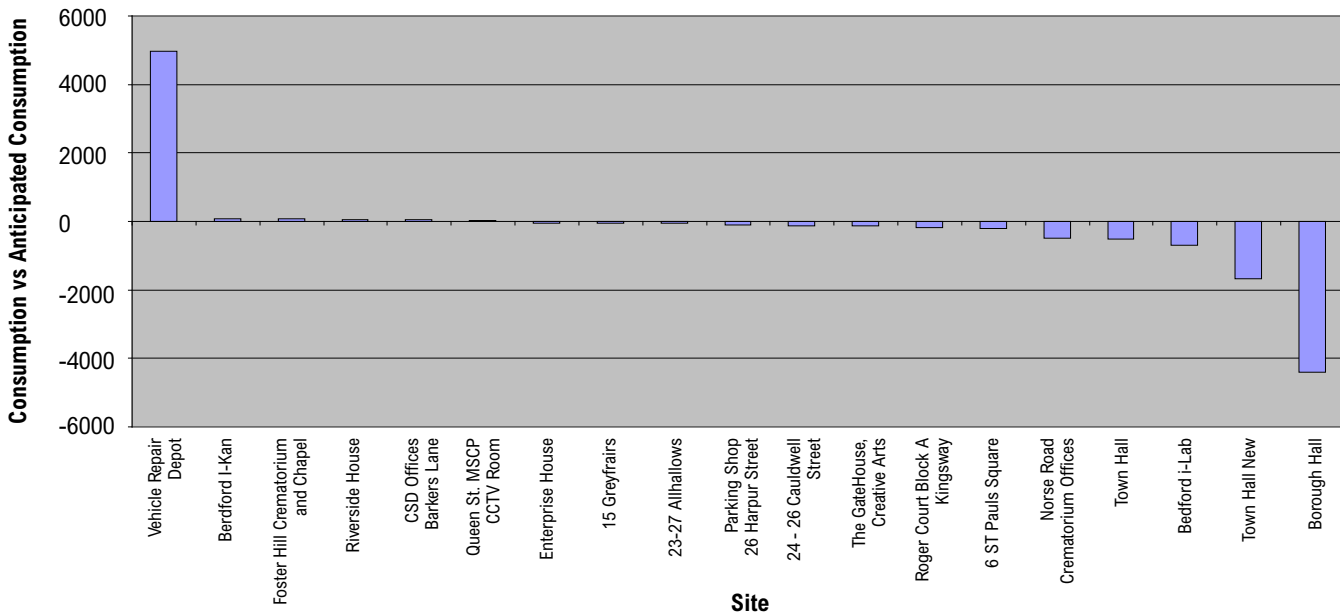


Figure 7: Comparison of office buildings against anticipated consumption

When comparing office buildings (Figure 7), results were skewed owing to the Vehicle Repair Depot being wrongly included in this category. The Depot was well above the optimum line, whilst Borough Hall (the Council’s headquarters building) was well below. This does not correlate with Table 2 which shows Borough Hall as a priority site. Despite the obvious classification error, the graph does demonstrate the huge amount of water being consumed at the Vehicle Repair Depot and highlights the huge potential for water saving and reduction.

### 1.4.2.2 Leisure Facilities

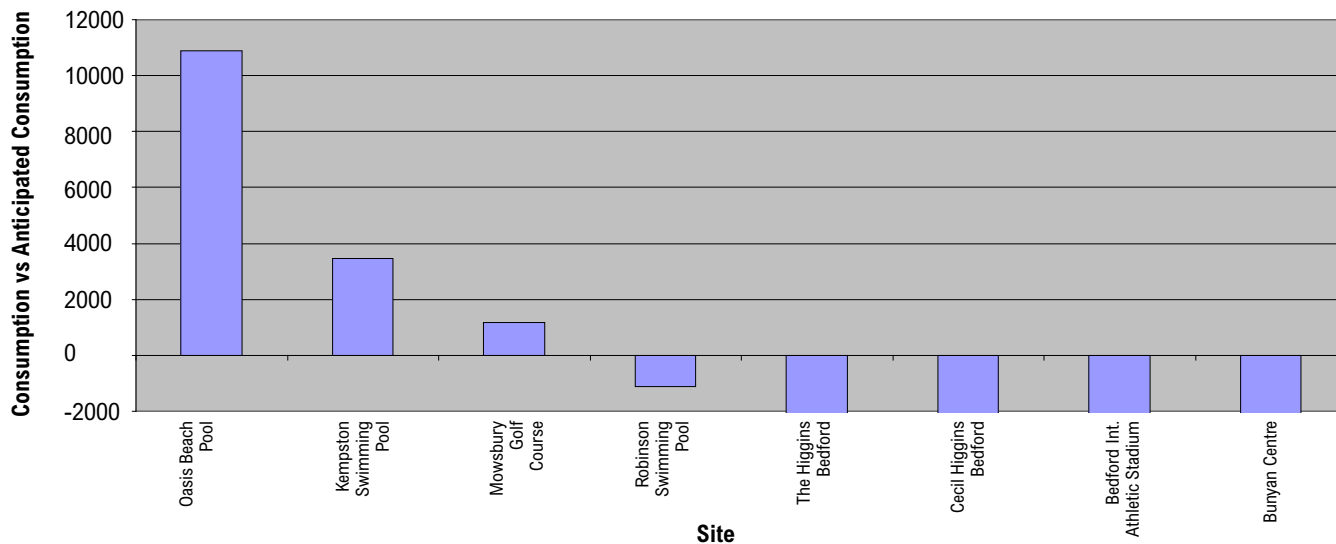


Figure 8: Comparison of leisure facilities against anticipated consumption

Eight leisure sites were analysed (Figure 8), including those now operated by Fusion Lifestyle (all but The Art Gallery and Museum). Surprisingly Mowsbury Golf Course was revealed as less efficient than Robinson Pool, a high consuming site with high footfall. A half open bypass valve, which resulted in large quantities of water bypassing the meter, is likely to have caused this discrepancy as water use was under reported. Oasis Beach Pool was clearly highlighted as the biggest user of water, however the data was somewhat skewed owing to a substantial leak identified during the baseline period. Kempston Pool was identified as the second highest consuming site when benchmarked on an m<sup>2</sup> basis, despite using less water than Robinson Pool.

### 1.4.2.3 Parks

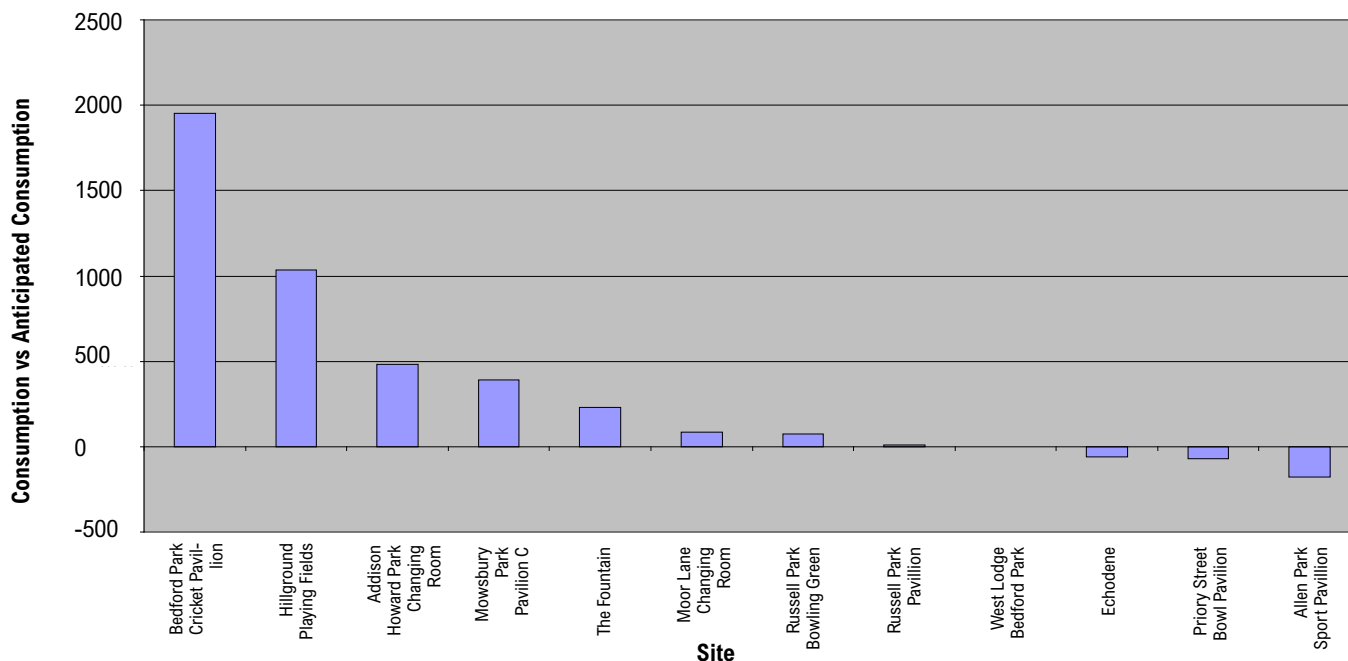


Figure 9: Comparison of park buildings against anticipated consumption



Analysis of park sites (Figure 9) revealed 8 under-performing sites. Two have since identified and rectified leaks; Bedford Park Cricket Pavilion had ongoing pipework leaks up until the automatic public convenience (APC) was removed in 2013 and Hillgrounds Changing Room also had internal leakage problems up until 2014. The most efficient sites may perhaps be down to their footfall or because of the amount of water-using amenities in each, e.g. water at Bedford Park Pavilion supplied the pavilion and an APC whereas Echodene is simply a Club House for golf members.

#### 1.4.2.4 Public Buildings

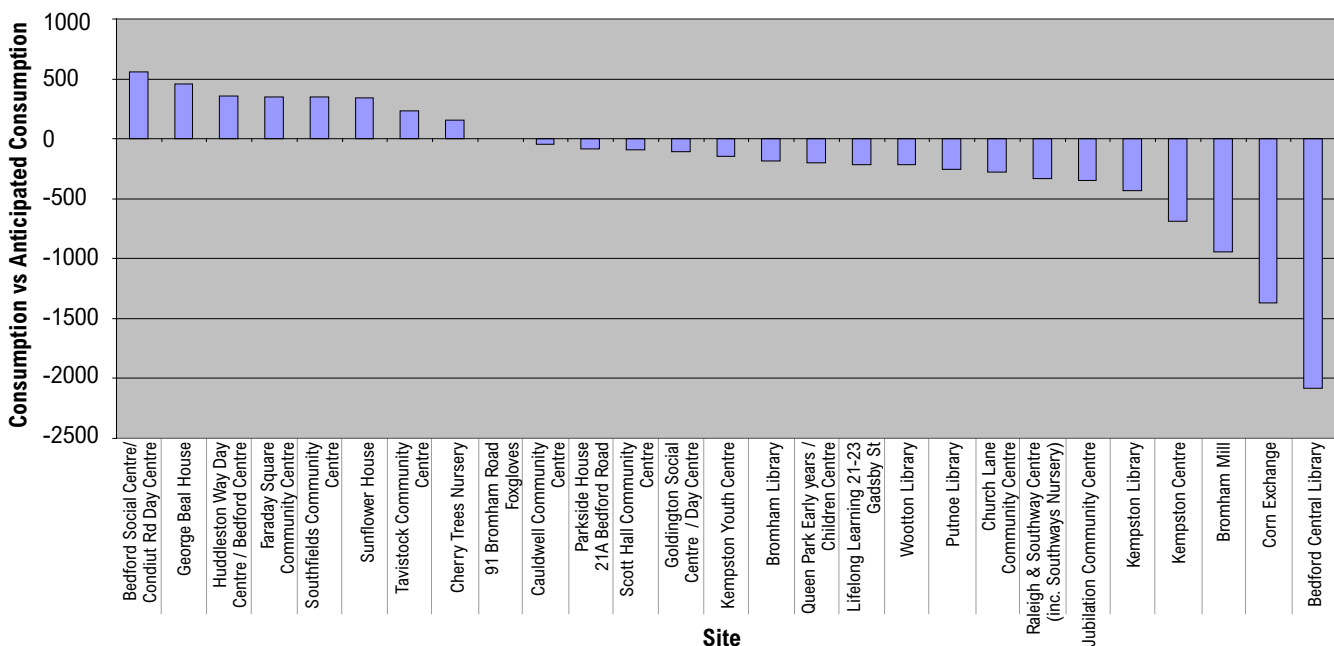
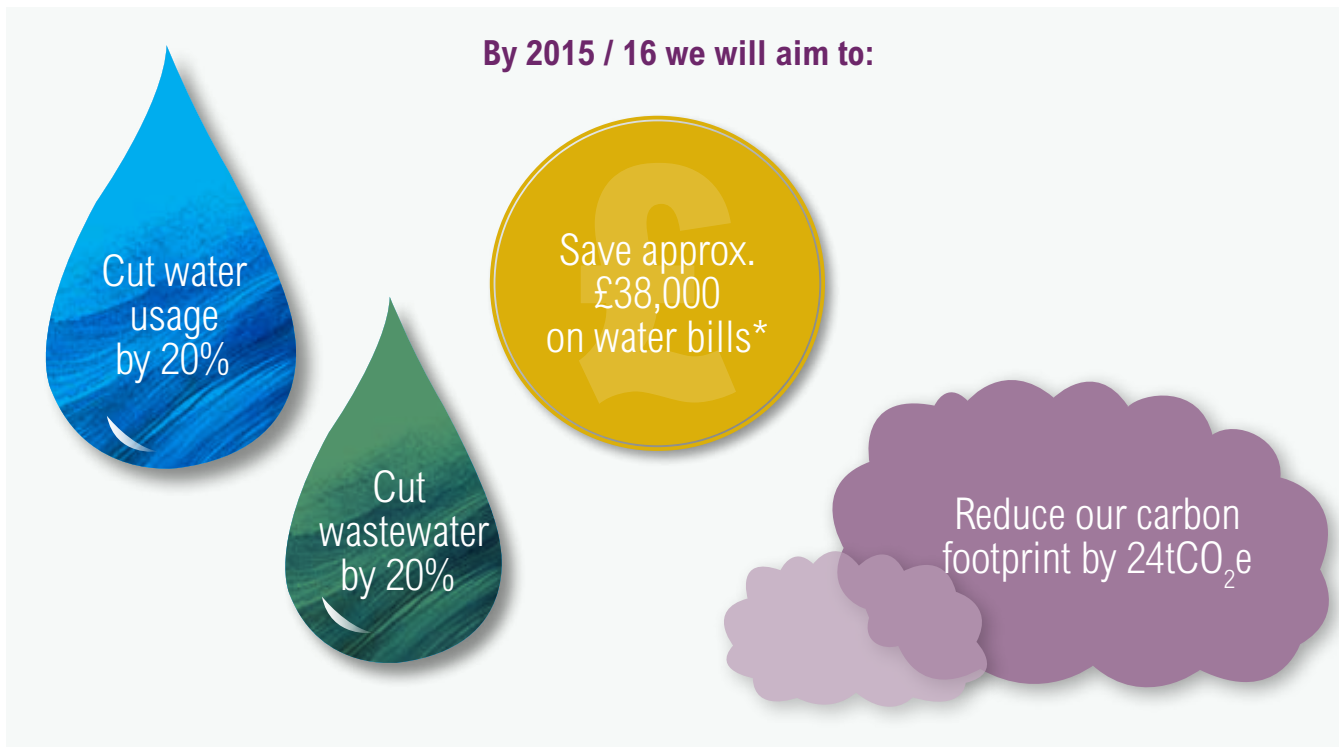


Figure 10: Comparison of public buildings against anticipated consumption

The final category applied was public buildings comprising of 19 buildings. Three of the least efficient buildings include Bedford Social Centre, George Beal House (residential care home) and Huddleston Way Day Centre. Two of the best performing sites are Bedford Central Library and Corn Exchange.

## 1.5 Our Target



\* any associated energy savings will be in addition to this



Figure 11: Bedford Borough Council Mayor Dave Hodgson and Director of Anglian Water Business Bob Wilson signing the Water Promise

## 2. Water Efficiency Opportunities

### 2.1 Measures Implemented Prior to the Baseline Period

#### 2.1.1 Priory Country Park Visitors Centre: Rainwater Harvesting System

In 2011 a rain water harvesting system was fitted as part of a refurbishment and eco-technology demonstration project. A 660 litre slim-line Wall Tank System was installed which is connected to the public toilets enabling them to be flushed by rainwater collected from the Visitor Centre's roof.

The energy and water saving measures that have been put in place at the Visitor Centre can be easily accessed and viewed by visitors, who can see the technology in action. To complement the demonstrations, a range of interpretative material, including display boards and leaflets have also been produced to help raise awareness of energy and water efficient technology.



#### 2.1.2 Water Efficiency Audits of Council Sites

Over 23 Water Efficiency Audits (WEA's) were completed by Anglian Water Business prior to the baseline period. Sites audited in 2012 included leisure centres, libraries, the crematorium and the cemetery. The day centres and the Council's headquarters building were completed in 2010.

The WEA's highlighted areas where the sites could make water savings. Measures included:

- Installing water saving devices
- Decreasing the flow rate of taps
- Installing automatic flushing devices to urinals
- Conducting soundness tests to check for leaks
- Ensuring taps, hoses and similar devices were not left running when in use

A full list of sites and recommendations are included in Appendix A. Actions not already completed have been included in Table 9.

Leaks were found at George Beal House and Goldington day centre but were resolved in 2012. Water efficiency devices were installed at the majority of the sites at the time of the audits.

### 2.1.3 Robinson Pool: Metering and Leakage

At Robinson Pool it was recently (2013) discovered that one of the bypass valves on site had been left half open. This resulted in a continuous flow of water through the valve and consequently the meter under recorded water usage. This has since been resolved. In late 2012 a leak on site, caused by the pool grouting being worn away, was identified. This was repaired in March 2013. In 2014 Robinson Pool was fitted with a smart meter to enable real-time monitoring of water usage. Site managers can interrogate the data on the online system to identify any peaks in usage and other areas of wastage. Fusion Lifestyle has since been provided with these details so they can monitor usage going forward. Figure 12 shows a snapshot of the weekly consumption at Robinson Pool.

**Summary for period:**

Max Consumption:	Average Consumption	Min Consumption	Total Consumption
3.480 Water Flow m <sup>3</sup> / 15min	0.392 Water Flow m <sup>3</sup> / 15min	0.010 Water Flow m <sup>3</sup> / 15min	263.750m <sup>3</sup>

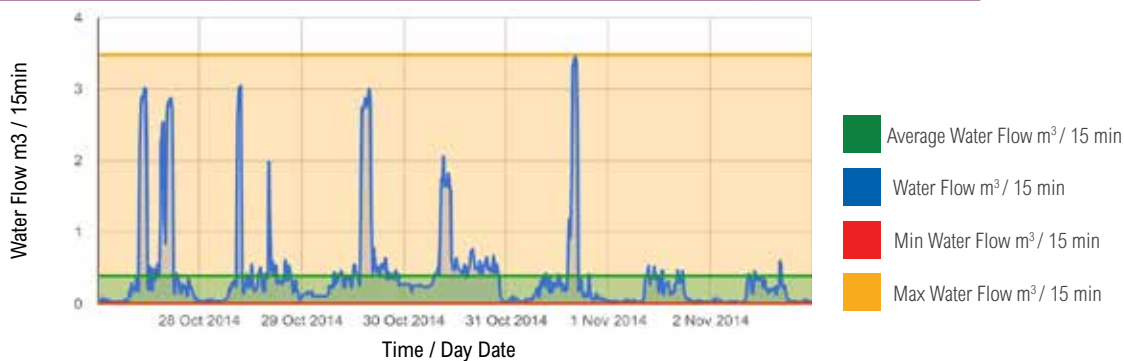


Figure 12: Robinson Pool Water consumption graph

### 2.1.4 Oasis Pool: Metering and Leakage

A smart meter was installed at Oasis Pool in January 2013. Having analysed the consumption data on the online system, the manager identified that peaks in usage were a result of backwashing the swimming pool. Due to the tariff Oasis Pool is on, they are charged for their maximum demand (high quantity of water used at peak times); if they exceed this level of maximum demand then they are charged excess fees. Figure 13 shows a snapshot of the weekly consumption at Oasis Pool taken from the online tool.

**Summary for period:**

Max Consumption:	Average Consumption	Min Consumption	Total Consumption
1.480 Water Flow m <sup>3</sup> / 15min	0.391 Water Flow m <sup>3</sup> / 15min	0.000 Water Flow m <sup>3</sup> / 15min	262.560m <sup>3</sup>

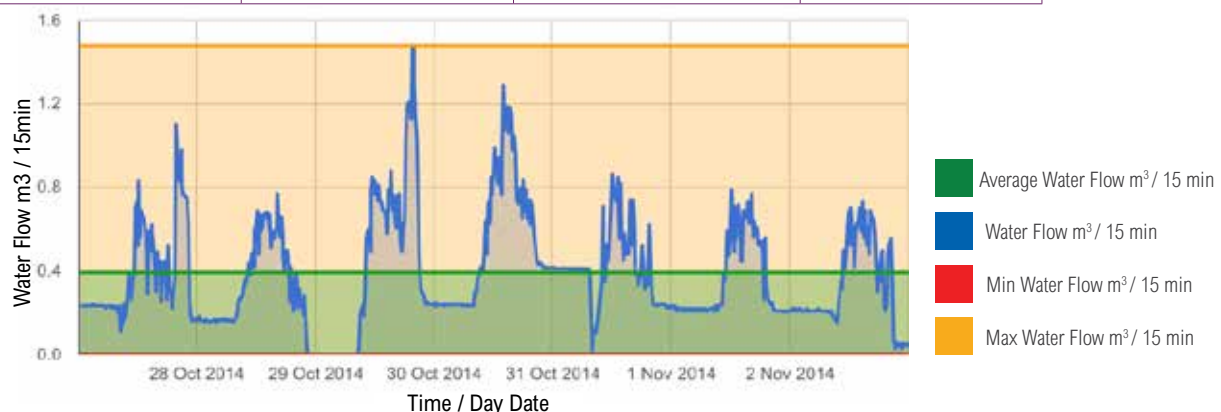


Figure 13: Oasis Pool water consumption graph

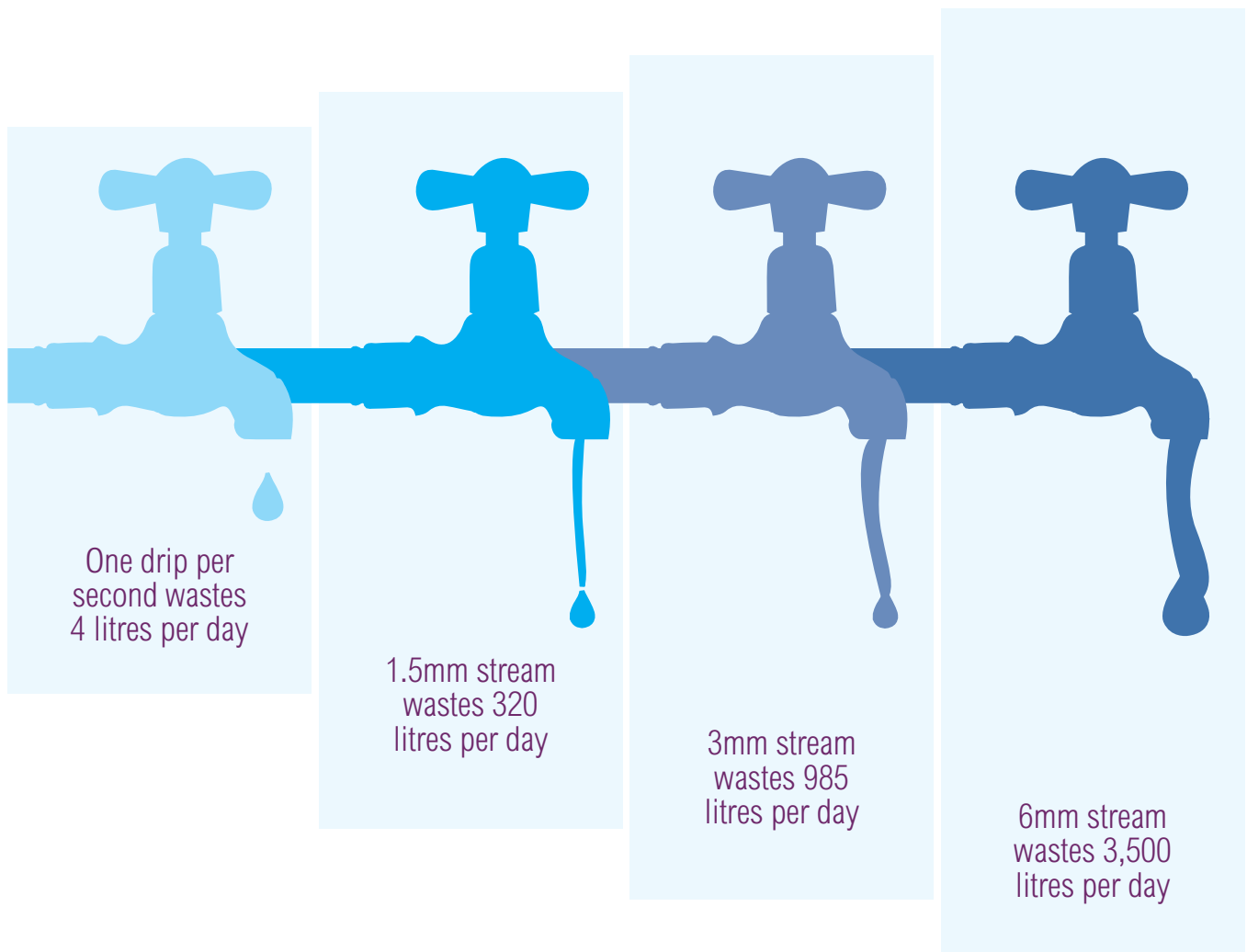
### 2.1.5 Borough Hall: Toilet Refurbishment

As part of the toilet refurbishments in 2008/2009, percussion/push taps were fitted in the majority of toilets to increase water efficiency and prevent taps being left on. These taps are now fitted as standard in any new Council buildings or during refurbishment programmes. An example of the taps currently installed is shown below.



A tap left running can waste over 100 litres an hour. Even a small 5mm stream from a single tap will waste 60 litres an hour or 526,000 litres a year at a cost of £1,300.<sup>17</sup>

In 2010/2011 the Council also removed all kettles (around 350 in total) and replaced these with hot water heaters in the kitchen areas.



17. Anglian Water Business - Water Efficiency Self- Assessment Guide [http://www.anglianwater.co.uk/\\_assets/media/Water-Efficiency-Self-Assessment.pdf](http://www.anglianwater.co.uk/_assets/media/Water-Efficiency-Self-Assessment.pdf)

## 2.2 Measures Implemented Since the Baseline Period

### 2.2.1 Allhallows Multi-Storey Car Park Public Conveniences Refurbishment

The public conveniences were refurbished in 2013/14 and all taps and toilets were fitted with electronic sensors (with a separate button to override this if necessary).

The urinals were also fitted with motion sensors, with a 12 hour automatic flush for hygiene purposes. The hot water is fed from low content water heaters; thereby eliminating the need for large storage heaters.

A safety system was installed which shuts off valves overnight, preventing any occurrences of leaks. There are also foam soap dispensers; another potential water saver.



### 2.2.2 Lurke Street Public Conveniences Refurbishment

The toilets were closed from 2012 to 2014 and have now been refurbished and re-opened to the public.

Following refurbishment, the toilets are split into one disabled toilet and one unisex toilet. Due to the nature of these toilets, push taps and WC flushing sensors were unable to be fitted. Instead, the toilets are fitted with quarter-turn lever taps and dual flush WC's.



### 2.2.3 Tariff Optimisation

Anglian Water Business completed a tariff review of 134 Council sites in 2013, identifying sites which were on the wrong tariff as well as sites which could save money by switching to a more cost effective tariff.

Site Name	Current Tariff	Site Consumption (m <sup>3</sup> )	Proposed Tariff	Potential Saving Total
Bunyan Centre*	Green	4,756	Orange	£715.58
Mowsbury Golf Course*	Blue	3,729	Orange	£201.00
George Beal House	Green	1,441	Orange	£158.26
The Higgins Bedford	Green	1,421	Orange	£154.90
Bedford Park Cricket Pavilion	Green	2,010	Orange	£152.44
91 Bromham Road - Foxgloves	Domestic	751	Orange	£151.68
Mill Meadows	Domestic	832	Orange	£146.15
Hillgrounds Changing Rooms	Green	1,283	Orange	£131.70
CSD Offices, Barkers Lane	Green	1,012	Orange	£86.14
56 Singer Way	Orange	0	Green	£84.00

\*Sites now run by Fusion Lifestyle

Table 3: Tariff optimisation top 10 sites

There were 19 sites which could save more than £30 per year just by switching tariffs (please refer to Appendix B). The top ten highest saving sites are shown in Table 3.

By switching tariffs for the 19 sites, the Council has saved approximately £2,500 per year on its water bills.

### 2.2.4 Water Efficiency Audits (WEA) of Borough Hall and The Higgins Bedford

In April 2014, Water Efficiency Audits were completed at Borough Hall and The Higgins Bedford by Anglian Water Business. Despite Borough Hall already being visited in 2010, the building has undergone a number of changes and the consumption has increased over the years; therefore another audit was deemed beneficial. The recommendations made for each respective site were as follows:

#### 2.2.4.1 Borough Hall Water Efficiency Audit

Anglian Water Business found there to be 4 leaking urinals and 3 leaking toilet cisterns which could save £1,692.50 a year when fixed. Reparation works were completed in July 2014. The WEA also recommended reducing the flow rate of the taps to 7.5 litres/minute which would save up to £872.10 /year. Table 4 outlines the actions to be taken.

The majority of the taps in Borough Hall are push taps which are considered water efficient. However, there are a number of taps in the building which were not included in the refurbishment programme; improvements to these will be looked into. If all of the recommendations were put in place, Borough Hall could save up to 8% of its annual consumption.

Recommendation	Potential Savings	Implemented?	Actions
Reduce flow of cold taps to 7.5 litres/minute	302.4m <sup>3</sup> / year	Not currently	To review the benefits of reducing the flow rate of taps against fitting aerators
	0.24 tonnes CO <sub>2</sub> / year		
	£667.60 / year (water + wastewater)		
Reduce flow of hot taps to 7.5 litres/ minute	45.4m <sup>3</sup> / year	Not currently	To review the benefits of reducing the flow rate of taps against fitting aerators
	3528 kWh / year (power saving to heat hot water)		
	0.69 tonnes CO <sub>2</sub> / year		
	£204.50 (water + wastewater)		
Repair 4 leaking urinals	338m <sup>3</sup> / year	Identified and fixed July 2014	N/A- All completed
	0.26 tonnes CO <sub>2</sub> / year		
	£744.90 / year (water + wastewater)		
Repair 3 leaking toilet cisterns	430m <sup>3</sup> / year	Identified and fixed July 2014	N/A- All completed
	0.34 tonnes CO <sub>2</sub> / year		
	£947.60 / year		

Table 4: WEA recommendations for Borough Hall

Figure 14 shows the historical water consumption based on actual meter readings at Borough Hall. The increase in usage is likely to be due to staff moving into the building and the presence of the leaking urinals and cisterns.



Figure 14: Long term water consumption trends for Borough Hall



### 2.2.4.2 The Higgins Bedford Water Efficiency Audit

The WEA at The Higgins Bedford made recommendations to reduce water consumption by 29% and costs by up to £629 / year (Table 5). Additional recommendations were made for installing percussion taps in public areas when replacement is required. Upon receipt of the report an order was raised to repair the leaking cistern, investigate the hot and cold water tap flow and install the water saving devices. All projects have now been implemented.

Recommendation	Potential Savings	Implemented?	Actions
Reduce the flow of cold taps to 7.5 litres /minute	117.6m <sup>3</sup> / year	Works completed July 2014	N/A- All completed
	0.09 tonnes CO <sub>2</sub> / year		
	£302.70 / year		
Reduce the flow of hot taps to 7.5 litres /minute	12.6m <sup>3</sup> / year	Works completed July 2014	N/A- All completed
	980 kWh / year (power saving to heat hot water)		
	0.19 tonnes CO <sub>2</sub> / year £61.40 / year		
Install save-a-flush devices in WC cisterns	72m <sup>3</sup> / year	Works completed July 2014	N/A- All completed
	0.06 tonnes CO <sub>2</sub> / year		
	£185.30 / year		
Repair leaking toilet cistern	31m <sup>3</sup> / year	Works completed July 2014	N/A- All completed
	0.02 tonnes CO <sub>2</sub> / year		
	£79.80 / year		

Table 5: WEA recommendations for The Higgins

Figure 5 shows the water consumption at The Higgins Bedford. There are three meters on site; the purple line shows the consumption of the main meter. The increase in usage is thought to be due to the full site refurbishment undertaken over the past few years.



Figure 15: Long term water consumption trends for The Higgins Bedford

### 2.2.5 Hillgrounds Changing Room: Leakage

Having reviewed the results of the benchmarking activity completed by Anglian Water Business and analysed recent bills, Hillgrounds changing room was investigated to determine why water consumption was so high. Investigations found this was a result of an overflowing toilet cistern and one of the hot water cylinders regularly purging large quantities of water. This was resolved and the consumption on site has since dropped from 740m<sup>3</sup> (July 2013 – January 2014) to 157m<sup>3</sup> (January – July 2014).

Issues such as these highlight the importance of regularly monitoring usage on site as well as checking internal fixtures for problems.

### 2.2.6 Modernisation Programme: Toilet Closures

As part of the Council's modernisation programme to review all services across its operations, in 2013 the Council closed some toilets that were in poor condition and those with low usage. This has enabled it to focus its resources on the remaining sites to provide Clean, Safe and Accessible facilities to cater for all users (young, old, disabled, nursing parents) which Bedford can be proud of. One of these removed sites was Bedford Park Cricket Pavilion where the water also supplied Bedford Park West APC. This site had suffered with leaks and very high usage which was thought to be caused by the original old lead supply pipe fracturing in numerous places when the APC was periodically high pressure washed. The APC was removed in April 2013 but the supply remains for the Pavilion.

### 2.2.7 The Higgins Bedford Refurbishment: Rainwater Harvesting

The Higgins Bedford was refurbished during 2012/13. As part of the works, a rain water harvesting system was installed supplying the main public toilets. The system comprises of a 2,500 litre tank that is used to top up the mains water which flushes the public toilets in the gallery.

### 2.2.8 Consolidated Billing

In 2014, the Council moved to consolidated billing. Prior to this, bills were sent directly to individual sites and there was limited monitoring of the Council's water and sewerage. Having worked with Anglian Water Business to set up the new billing system, data relating to all of the Council's water accounts was collated in a spreadsheet showing all the bills with respective costs and consumption information. This is now sent to both the Councils Energy Management Unit (EMU) within the Environmental Services department and to Accounts on a monthly basis. The bills are now paid centrally and monitored by the Energy Management Unit through TEAM Sigma. Using Team Sigma, the Energy Management Unit can quickly determine if a bill is too high, it can be compared to previous bills, the consumption can be monitored and the sites can also be compared and benchmarked against one another. The Energy Management Unit have already identified potential cost savings, for example a site that has been wrongly paying VAT since 2008 (it should be zero-rated); Anglian Water Business has since credited £1,184.50 back to the Council.

### 2.2.9 Installation of a Smart Meter at Borough Hall

Due to increased usage on site over the past few years, a Smart Meter was installed at Borough Hall at the beginning of 2014. The meter provides the Energy Management Unit and the facilities manager with access to real-time data online and the ability to monitor and target usage.

The Energy Management Unit noted that water was being used out of hours as the base-load was not 0 (see red line in Figure 16). Further investigations by the facilities manager revealed that this was due to un-repaired leaks on the cisterns (identified in the WEA) and out of hours working including weekend meetings.

Figure 17 shows data after the leaks were repaired. The base-load (as per the red line - minimum water flow) has since reduced.

**Summary for period:**

Max Consumption:	Average Consumption	Min Consumption	Total Consumption
1.380 Water Flow m <sup>3</sup> / 15min	0.395 Water Flow m <sup>3</sup> / 15min	0.060 Water Flow m <sup>3</sup> / 15min	262.187m <sup>3</sup>

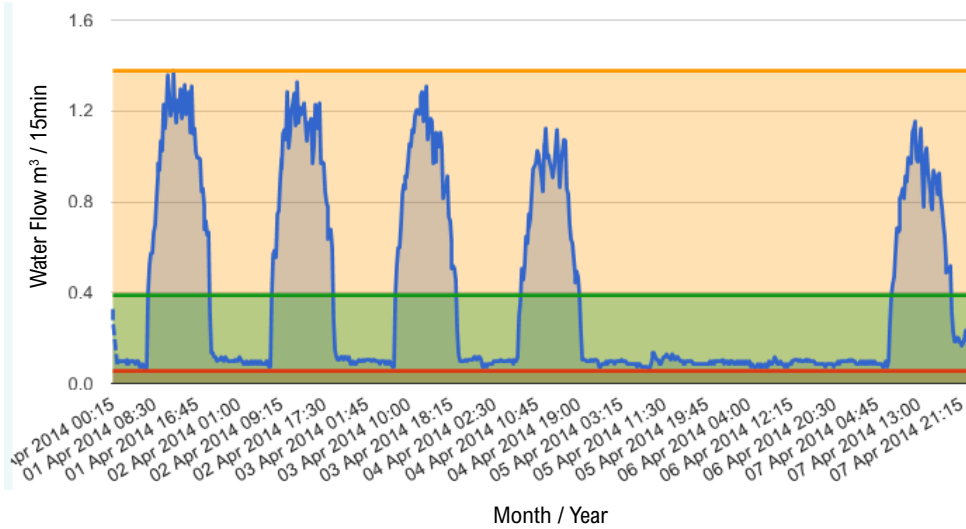


Figure 16: Graph of Borough Hall consumption April 2014

**Summary for period:**

Max Consumption:	Average Consumption	Min Consumption	Total Consumption
1.050 Water Flow m <sup>3</sup> / 15min	0.262 Water Flow m <sup>3</sup> / 15min	0.010 Water Flow m <sup>3</sup> / 15min	175.980m <sup>3</sup>

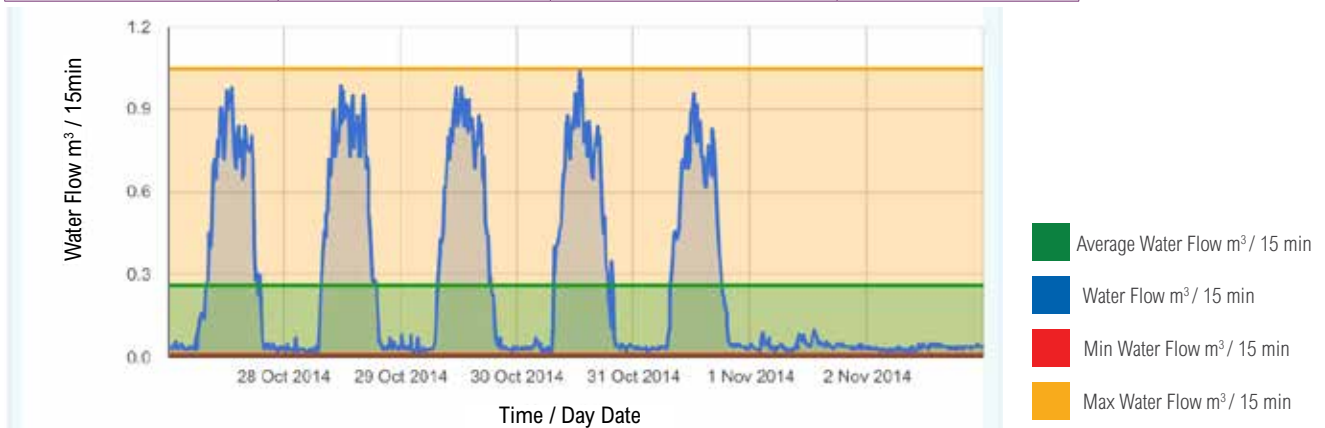


Figure 17: Graph of Borough Hall consumption October 2014

## 3. Future Water Saving Opportunities

### 3.1 No or Low Cost Measures

#### 3.1.1 Building Manager's Handbook

It is expected that water management will be the responsibility of every employee in Bedford Borough Council. This is essential if the aspirational 20% reduction target is to be realised. To increase awareness, a best practice guide in the form of a handbook will be created specifically for building managers. This will cover and include the following:

- How to read water meters and record regular reads; a worksheet will be provided to building managers (linked to 3.1.3)
- How to check pipes and fixtures regularly to ensure there are no leaks and that they are properly insulated against frost
- How to report leakage
- How to calculate flow rates on taps and urinals
- How to analyse water consumption data
- How to identify responsibility of supply pipework
- A list of water saving opportunities
- A list of useful contacts and resources

Supporting the building manager's handbook will be a number of resources including:

- Site checklist to enable building managers to identify and record assets and meter locations
- Awareness raising campaign material, such as posters. These will include messages such as:
  - Only fill kettles with the amount of water required (where applicable)
  - Wash up large amounts using a bowl
  - Turn off taps after use
  - Notices on how to turn off taps (where applicable)
  - Reminder to limit shower use
  - Reminder of stop tap locations

Action	Lead	Completed by
Produce a building managers handbook to demonstrate best practice in water management, efficiency and reduction	Energy Management Unit in partnership with Anglian Water Business	February 2015
Create posters to encourage water efficiency and water saving tips (to be distributed to building managers)	Energy Management Unit in partnership with Anglian Water Business	February 2015
Create site audit checklist to enable building managers to review current assets and metering arrangements	Energy Management Unit in partnership with Anglian Water Business	February 2015
Launch the building managers handbook and supporting resources	Energy Management Unit in partnership with Anglian Water Business	March 2015

#### 3.1.2 Site Checklist

As part of the building managers' handbook, a site checklist will be included. In order to identify further opportunities within Council buildings, building managers will be asked to complete an on-site audit, identifying the number and type of water fixtures within their site. From this, the Energy Management Unit will work with building managers to propose measures that can improve efficiency. As part of this audit, building managers will be asked to identify the locations of meters on site. Any issues arising from this will be addressed.

Action	Lead	Completed by
Produce and distribute a site checklist for water fixtures and metering (this will form part of the building managers handbook)	Energy Management Unit	March 2015
Complete the site checklist and return to the Energy Management Unit	Building Managers	March 2015
Collate information from the site checklist. Review opportunities and seek to implement any appropriate measures	Energy Management Unit and Building managers	April 2015
If a meter on site cannot be located, the Energy Management Unit will work with Anglian Water Business to conduct site surveys	Energy Management Unit, Building Managers and Anglian Water Business	April 2015
Plot meter locations on GIS, drawing upon information already held and information learned from the site checklist	Energy Management Unit, GIS Team	April 2015
Explore opportunities to incorporate a site checklist within existing processes e.g. workplace inspections	Energy Management Unit	Ongoing

### 3.1.3 Regular Meter Reads

It is usually a requirement that commercial sites are metered; Anglian Water Business typically read meters every 6-12 months. For the rest of the year sites are usually billed to estimated reads. This can be very inaccurate with the read being either too high or too low; directly impacting on the bill received. If the estimates are continuously lower than the actual read, when Anglian Water Business gains a higher actual read the bill will reflect the difference and will often be a lot higher than expected. This can adversely affect the Councils ability to forecast budgets.



To minimise these issues, building managers will be asked to take monthly meter readings. This will ensure the Council is being billed correctly and also enable building managers to check for leaks (i.e. if water consumption suddenly increases without explanation then there could be a leak). Currently analysis of meter reads is the only method (for sites without automatic meter readers) to monitor usage and therefore monitor savings when measures are installed.

Action	Lead	Completed by
Complete and record meter readings on a monthly basis	Site managers / appointed staff	Ongoing action- monthly
Submit monthly meter readings to Anglian Water Business and the Energy Management Unit	Site managers / appointed staff	Ongoing action- monthly
Input meter readings into Team Sigma	Energy Management Unit	Ongoing action- monthly
Energy Team to work with Team Energy to develop a method of uploading water data into Team Sigma; making recording and monitoring water usage quicker and easier	Energy Management Unit	2015

### 3.1.4 Training

In order to increase understanding and awareness, initial training will be provided to building managers at the launch of the building manager’s handbook. Should further information be required by building managers, further talks and training sessions will be arranged. Anglian Water Business is able to attend and assess sites to resolve any queries or provide advice on water saving. Should guidance be required, the Energy Management Unit will liaise with Anglian Water Business to arrange site visits.

The Energy Management Unit will investigate the possibility of incorporating training sessions on the Councils e-learning system to raise awareness of water management issues. Information will also be included on the Council’s intranet pages with regards to water saving.

Action	Lead	Completed by
Complete initial training for building managers at the launch event for the building manager’s handbook	Energy Management Unit in partnership with Anglian Water Business	March 2015
Arrange and carry out talks or training sessions on water efficiency as required	Energy Management Unit	Ongoing action- as required
Look into the possibility of an e-learning course on My View (intranet) for staff to complete to raise water awareness and update intranet pages	Energy Management Unit / ICT	May 2015

### 3.1.5 Water Efficiency Audits

Water Efficiency Audits were completed at a number of Council sites between 2010 and 2012, yet only a select few sites were assessed.

The Council will review those sites which have not yet been assessed, to determine if further audits would be beneficial. The Council will work in conjunction with Anglian Water Business to complete any audits which are deemed appropriate.

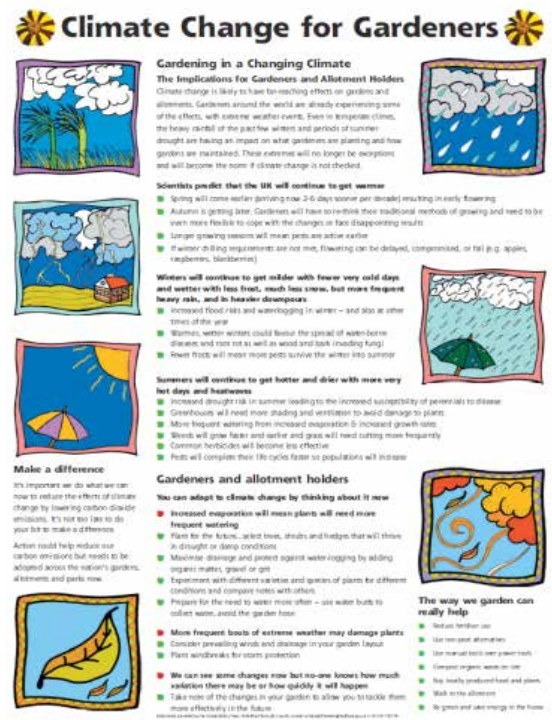
Action	Lead	Completed by
Identify sites which have yet to have a WEA completed, or those that should be revisited	Energy Management Unit	January 2015
Commission WEAs where appropriate	Energy Management Unit /Anglian Water Business	February 2015
Assess recommendations from completed WEAs and seek to implement opportunities	Energy Management Unit	March 2015

### 3.1.6 Allotments and Parks

Written into the Climate Local Commitments and Action document is an ongoing action for the Council’s Parks department to investigate the potential of rain water harvesting and other water conservation measures. The Energy Management Unit will work with the Parks Unit to investigate opportunities by firstly better understanding how water is currently used, secondly identifying any measures that have already been implemented to date and finally investigating any potential measures which could be implemented.

In 2010 a Climate Change for Gardeners poster was developed by the Sustainability Team. This is displayed at allotment sites. The poster encourages gardeners to consider drought resistant plants, drainage, the use of water butts and avoiding the use of the garden hose.

The Council will review its own planting regime to see where improvements can be made. Opting for drought tolerant varieties and including mushroom compost and water retaining gel granules etc. in planting approaches may result in a reduced watering requirement, as well as a reduction in the amount of resource (and cost) required.



Action	Lead	Completed by
Identify the needs of parks and allotments, how the water is currently used and if any measures have already been implemented to date	Energy Management Unit / Parks, Allotments	March 2015
Investigate potential measures to implement at parks and/or allotments, including changes to the current planting regime rain water harvesting and improved watering practises	Energy Management Unit / Parks, Allotments	March/April 2015
Implement proposed measures	Energy Management Unit /Parks/ Allotments	May 2015

## 3.2 Medium Cost Measures

### 3.2.1 Borough Hall Taps

A number of taps in Borough Hall were not converted to push taps when the toilets were refurbished in 2008/2009. A review of these taps will be undertaken and a proposal put in place to increase their efficiency. Three options are available (flow restrictors, tap aerators and percussion taps), as detailed in Table 6, with subsequent benefits and disadvantages.

<b>Benefits of flow restrictors</b>		<b>Disadvantages</b>
Water savings up to 10 litres / min		Orifice may block up with lime-scale build up
Retrofit available		Does not regulate pressure
Cheap and easy to install		
<b>Benefits of tap aerators</b>		<b>Disadvantages</b>
Water savings up to 10 litres / min		Not effective at pressure < 1 bar
Retrofit available		Standard do not regulate pressure (unless pressure compensating aerators)
Flow rate reduced to 2.5 - 8 litres/min		
No splashing		
<b>Benefits of percussion taps</b>		<b>Disadvantages</b>
Retrofit available		Self-closing timing needs to be set up correctly
Automatically closes after use		Can sometimes jam
Savings can vary		Payback period can be 2-3 years

Table 6: Benefits and Disadvantages of tap proposals

<b>Action</b>	<b>Lead</b>	<b>Completed by</b>
Investigate the number of turn taps in Borough Hall and conduct a flow test on the taps. Complete a desktop assessment to determine the best solution	Energy Management Unit / Facilities manager	January 2015
Implement project to upgrade current push taps in Borough Hall	Energy Management Unit / Facilities manager	February 2015



### 3.2.2 Foam Soap

Evidence suggests that by changing from liquid soap to foam soap, organisations can save water and cost. It is also claimed to be better for the environment.

Independent research commissioned by the Deb group in 2009 found that of 150 people washing their hands, around 16 – 45%<sup>18</sup> less water was used when they used foam soap compared to liquid soap. Envirowise predict up to 50%<sup>19</sup> of water can be saved. For every 100 people employed, this equates to a potential annual reduction of 56,000 litres of water. The study also demonstrated other benefits of foam soap, such as it being more environmentally friendly (more biodegradable) and reductions in energy costs and carbon emissions (as warm water is usually used for hand washing).<sup>20</sup> Table 7 summarises the conclusions of the study.

Benefits of foam soap	Disadvantages of foam soap
If 100 people wash their hands three times a day, using foam soap compared to lotion soap this could save 254 kg CO <sub>2</sub> a year	Purchase of new dispensers
Equivalent efficacy from foam is delivered using 36% less product per hand wash	Purchase of foam soap
100 people would have roughly 69,000 hand washing events each year with the lotion soap they would use 76 one litre cartridges per year, but with the foam soap this would drop to just 46 cartridges.	
Foam soap uses 26% less packaging than lotion soaps; just 11mg of packaging per wash compared to 15mg with lotion hand wash.	
On a per hand wash basis, foam soap has less than half the Chemical Oxygen Demand (COD) (150mg per hand wash) of lotion soap (332mg per wash), which means that foam soap will biodegrade more easily.	
When testing the lotion soap, 150 participants used an average of 1,758ml water with the tap on for 21.8 seconds. For foam soap, this reduced to 1,475ml water with the tap on for 19.7 seconds. This amounted to a 16% water saving	

Table 7: The benefits and disadvantages of foam soap

Foam soap is already used in some of the Council's public conveniences. The Council will investigate other opportunities for utilising foam soap.

Action	Lead	Completed by
Complete a desktop assessment to ascertain the current costs associated with liquid soap and the potential savings associated with utilising foam soap. Develop a business case (if appropriate) and agree proposals	Energy Management Unit /Facility Managers	February 2015
Implement foam soap at Council sites (if appropriate)	Energy Management Unit	April 2015

<sup>18</sup> [www.debgroup.com/sg/about-us/press-media/2012/washroom-solution-saves-water-time-and-money](http://www.debgroup.com/sg/about-us/press-media/2012/washroom-solution-saves-water-time-and-money)

<sup>19</sup> Envirowise Water Management Leaflet [www.envirowise.gov.uk/water](http://www.envirowise.gov.uk/water)

<sup>20</sup> [www.nationalpurity.com/foaming-hand-soap-really-work/](http://www.nationalpurity.com/foaming-hand-soap-really-work/)

### 3.2.3 Waterless Urinals

To further reduce the Council’s water use in public conveniences and Council buildings, waterless urinals will be investigated. Evidence suggests that waterless urinals can have a number of benefits, including:

- Reductions in annual water bills (A urinal that flushes 9 litres of water, every 15 minutes, 24 hours a day, 365 days of the year, will use 315,000 litres a year<sup>21</sup>)
- Elimination of lime-scale build up
- More fragrant washroom
- Reduction in the likelihood of blockages and floods
- Reductions in costs associated with maintenance etc.

Action	Lead	Completed by
Installation of a sub meter at Allhallows Multi Storey Car Park Toilets to monitor water consumed by the urinals	Design Services	January 2015
Complete a trial of a waterless urinal system at Allhallows Multi Storey Car Park Toilets and analyse results	Energy Management Unit	March/April 2015
Complete a business case to roll out waterless urinals to other Bedford Borough Council sites (if appropriate)	Energy Management Unit	April 2015
Implement waterless urinals (if/where appropriate)	Energy Management Unit	June 2015

<sup>21</sup> Anglian Water Business: Water Efficiency Self- Assessment Guide [www.anglianwater.co.uk/\\_assets/media/Water-Efficiency-Self-Assessment.pdf](http://www.anglianwater.co.uk/_assets/media/Water-Efficiency-Self-Assessment.pdf)

### 3.2.4 Improvements to Borough Hall Canteen

The canteen in Borough Hall contains a large Hobart dishwasher which is at least over 6 years old. The Council will investigate if there are any new, more efficient, cost effective devices available. Any replacement will have to meet the requirements of the kitchen staff.

All of the taps in the canteen are lever or turn taps; flow regulators and aerators will be investigated. There is also a high pressure rinsing device (this rinses off food at high pressure before the plates etc. are put into the dishwasher) which will be reviewed to determine if this is being used efficiently and if there are any alternative, more efficient devices available.



Action	Lead	Completed by
Investigate the feasibility of changing the dishwasher in Borough Hall canteen to a newer, more efficient model	Energy Management Unit	January 2015
Conduct a flow test on the taps in Borough Hall canteen and complete a desktop assessment to investigate the benefits of fitting flow regulators or tap aerators to the kitchen taps	Property Services	December 2014
Investigate if the rinsing device in Borough Hall canteen is being used efficiently and/or could be upgraded to a more efficient model	Energy Management Unit	January 2015
Implement any appropriate projects in Borough Hall canteen	Property Services	April 2015

## 3.3 High Cost Measures

### 3.3.1 Vehicle Repair Depot: Grey Water Recycling and Rainwater Harvesting

Both grey water recycling and rain water harvesting provide an opportunity to re-use wasted water and draw less water from the mains.

The Council's Vehicle Repair Depot is currently one of the highest performing sites in terms of water usage (Tables 1 and 2). The site currently consumes thousands of litres of water a day, the majority of which is believed to be used to wash down vehicles and to fill up sweepers.

The Council is investigating the site to determine if more efficient ways of managing water use can be found. Initially it will seek to understand the water mass balance of the site; where inputs and losses currently are, by installing sub meters. It will then look to identify no/low cost measures to implement initially.

Having a holistic view of the site, the Council will then explore the possibility of installing water recycling and water harvesting technologies. It will look into the possibility of utilising a wash water reclamation system for Council vehicles and it will review the current gravity fed main water system, used to fill road sweeping vehicles, to determine if a rain water harvesting facility would be feasible.

Action	Lead	Completed by
Install 2 sub-meters at the Vehicle Repair Depot (one on the existing vehicle wash down area and one on the vehicle fill area) and complete a water mass balance study	Site Manager / Property Services / Energy Management Unit / Anglian Water Business	January / February 2015
Identify and implement no/low cost measures at the Vehicle Repair Depot	Energy Management Unit / Site manager / Anglian Water Business / Property Services Managers	February 2015
Investigate the feasibility of grey water recycling and rain watering harvesting at the Vehicle Repair Depot and build and present a business case for approval (if appropriate)	Site Manager / Energy Management Unit / Anglian Water Business	April 2015
Implement water recycling project(s) at the Vehicle Repair Depot (if appropriate)	Site Manager / Energy Management Unit	June 2015

## 4. Water Strategy Financing

Local government funding and the delivery of local government services continues to be the subject of significant scrutiny, with demands for the achievement of increased efficiencies and cost effectiveness in the delivering of critical public services. There is continued emphasis towards fundamentally changing the way that the public sector operates with the overall aim to achieve greater public choice, local decision making and greater efficiencies within an overall reduction in real spend.

One of the proposals under 'Innovation and Entrepreneurship' is the pursuance of 'invest to save' opportunities with a financial return on the investment in transforming activities over an acceptable payback period. Where projects are investigated and found to be financially feasible, as well as providing other significant benefits (e.g. reduced carbon emissions), a business case will be produced and presented for approval initially to the relevant Head of Service/ Assistant Director for the business area and then onto the finance team for consideration/ approval .

Projects of a smaller and medium nature may well have to be funded and justified under the relevant annual revenue business budget.

The Council will continue to identify any other external funding opportunities, including grants which some areas of the Council may benefit from.



## 5. Data Management

To monitor and manage the Council's water and wastewater usage, data is currently taken from the consolidated billing file (an Excel spreadsheet) received from Anglian Water Business and is manually inputted into the Council's energy management software: Team Sigma.

Using this data, the Energy Management Unit interrogates the data and produces cost and consumption reports to analyse trends (see Figure 18 for an example of a simple cost report produced for Borough Hall)

Any meter readings received by building managers are also manually entered into the Team Sigma software.

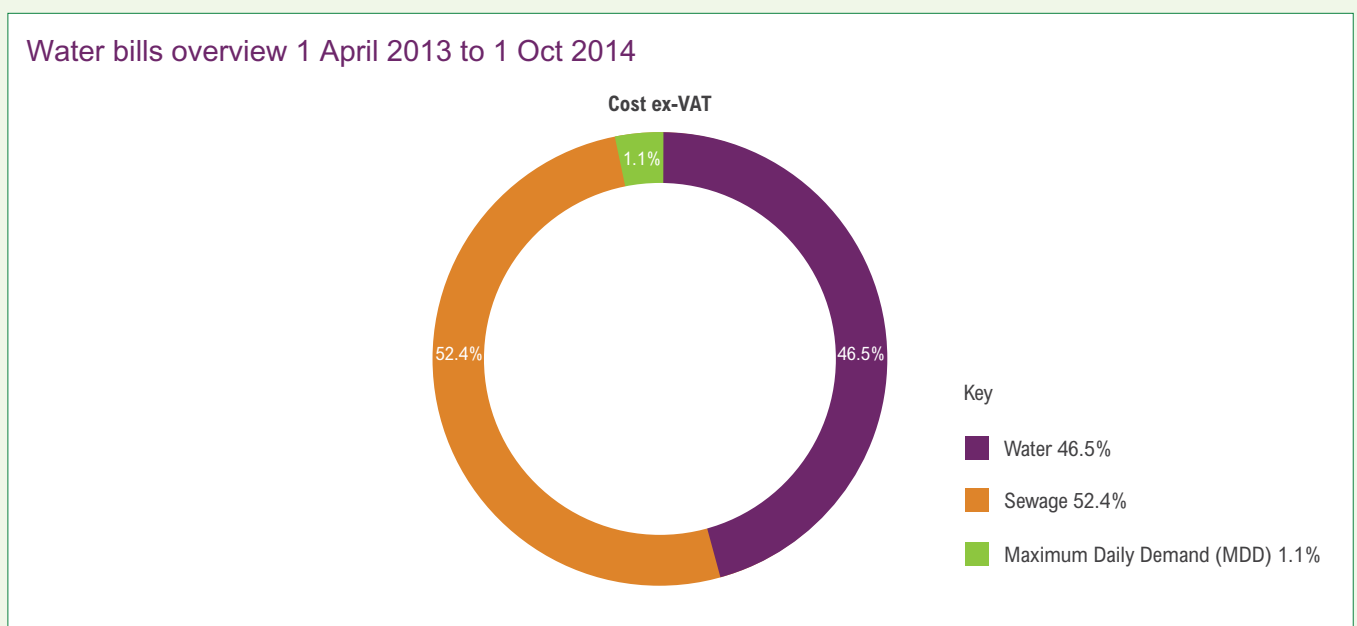


Figure 18: Water bill overview report for Borough Hall from TEAM Sigma

The Energy Management Unit will seek to streamline this process by working with its water supplier and Team Energy to develop electronic billing files compatible with the Team Sigma software. In line with processes already established for electricity and gas consumption data, these files will then enable water data to be electronically uploaded straight into TEAM Sigma.

In order to embed water management throughout the organisation and to make water and wastewater consumption more visible to staff, the Energy Management Unit will seek to roll out a new, free, module within the Team Sigma software: the Energy Viewer. This will allow building managers to log in and easily access their bills and water data, giving them more control over their data and thus usage. This will also enable them to input their meter reads.

The Energy Management Unit will work in partnership with its water supplier to produce a cost and consumption report on an annual basis to monitor progress in achieving its aspirational target, against the baseline period.

## 6. Programme Management

Strategic ownership and oversight of the Water Strategy will be provided by the Council's Sustainability Committee. Proposals will be presented to the Committee for approval and Committee members will champion and provide leadership on water management.

Where larger projects require capital investment, an 'invest to save' business case will be submitted to both the relevant Head of Service/ Assistant Director and the Finance Team for consideration/ approval.

The Energy Management Unit will work with individual building managers, property services, Anglian Water Business, other Council departments and external companies (where appropriate) to deliver water management projects. Bedford Borough Council staff will be kept updated on work undertaken via existing communication channels, such as 'Connect' (internal staff newsletter), 'My View' (the Council's intranet pages) and the Energy Champions scheme.

Progress achieved against the Councils water reduction target and the implementation of this Water Strategy will be reported in the following ways:

- Through the Councils performance management framework: "Delivery of the Water Strategy" (a key performance indicator) and the water saving which results will be reported on an annual basis
- An annual report which details trends in water consumption against the baseline period and provides an overview of projects completed in the respective year will be produced using available billing data (See Data Management)
- Ongoing updates on progress made against the baseline will be reported back to the Sustainability Committee on a regular basis (as appropriate)

## 7. Leadership and Partnership

Whilst the Council is dedicated to reducing its own water consumption, it also strives to lead by example by working with the community and schools in a number of ways to promote water efficiency.

### 7.1 Policy

To embed water efficiency across the organisation, policy documents will be reviewed to ensure they reflect this priority. The Council will specifically seek to develop a policy document (or update an existing policy) to stipulate the use of water efficient fixtures (in new and existing buildings) that meet and/or exceed Building Regulation Standards; ensuring that the most water efficient option is sought. Where extra investment is required to reduce longer term costs, a business case will need to be presented for approval.

### 7.2 Web Pages

The Council currently has a page on its website specifically promoting water conservation. The Council's water butt kit special offer is outlined and details on free home water efficiency audits offered by Anglian Water Business, as well as tips on water savings at home, are provided.<sup>22</sup>

A section of the Council's website is dedicated to raising awareness of sustainability issues amongst schools in the Borough. The Council will create a page dedicated to water saving for schools and include useful links and advice. A secure area on the website also exists for schools and this too will be updated.

### 7.3 Promoting Water Butts to Residents in Bedford Borough

The Council have been working with Straight to promote a special offer on Water Butt kits to residents in Bedford since 2010. To date approximately 450 water butts have been sold as part of this offer. It is estimated that around 24,000 of water can be collected from the average residential roof each year.<sup>23</sup> These kits are advertised on the Council's webpage and at any water events the Council holds/attends.



Figure 19: An example of a previous campaign leaflet for the Council's Water Butt offer

<sup>22</sup> [www.bedford.gov.uk/environment\\_and\\_planning/sustainability/water\\_conservation.aspx](http://www.bedford.gov.uk/environment_and_planning/sustainability/water_conservation.aspx)

<sup>23</sup> [www.bbc.co.uk/gardening/basics/techniques/watering\\_savingwater1.shtml](http://www.bbc.co.uk/gardening/basics/techniques/watering_savingwater1.shtml)



## 7.4 World Water Day / Anglian Water Business Love Every Drop Campaign

Every year the Council holds a stand in the town centre promoting World Water Day. Here the Council promote the water butts offer and also Anglian Water Business's Love Every Drop and Drop 20 campaigns. The Sustainability Team hand out leaflets, which provide advice on how to save water, and free water saving devices (courtesy of Anglian Water Business) which include shower saves (which reduce the flow of water in non-electric showers) and save-a-flush devices for use in toilet cisterns.

The Council will continue to support these annual campaigns.



Figure 20: World Water Day stand in Bedford 2014

## 7.5 School Water Efficiency Audits

In 2011 and 2012, the Energy Management Unit promoted Anglian Water Business's free water efficiency audits to Bedford Borough schools. Around 30 schools benefited from this free service and the majority found they could make simple, no/low cost savings. Recommendations included changing tariffs, installing water saving devices, changing flush times of urinals, installing self-closing taps and/or checking for leaks. Table 8 highlights a number of the schools audited that could save a large amount of money each year by applying the suggested measures.

School	Total potential financial savings per year
Springfield Lower school	£2,032
Hastingsbury Business & Enterprise College	£1,736
Elstow Lower School	£1,191
Biddenham Upper	£929
Hazeldene Lower	£755
Wootton Lower	£510
St John Rigby	£433
Castle Lower	£403

Table 8: WEA's Schools savings

The Council will continue to work with schools and look at the possibilities of rolling out the Building Managers Handbook as well as any posters produced. The Council will work with Anglian Water Business and the schools to promote water efficiency and work towards a better understanding of Bedford schools water consumption.

## 7.6 Working in Partnership with Fusion Lifestyle

Built into the contract with the Council is a requirement for Fusion Lifestyle to closely monitor water usage and make efforts to reduce water consumption. The services specification document, which forms part of the contract documentation, requires Fusion to:

- Operate the leisure facilities in an environmentally sensitive and sustainable manner, to reduce energy consumption, reduce water and wastewater consumption.
- Have a clear policy and implement effective operational practices that demonstrably have a positive effect on the environment. This shall be set out in an Environmental Management Method Statement and shall include:
  - Proposed approach to energy management (including as appropriate reducing energy consumption, energy conservation and use of renewable energy)
  - Targets for reducing CO<sub>2</sub> emissions
  - Increasing water efficiency and maximising water recycling opportunities
- Establish an “Environmental and Energy Management Plan” Year. The plan, actions and results will be reviewed by/with the Authority (the Sustainability Team) on a quarterly basis and will include:
  - Accurate records of electricity, gas and water consumption for each of the Centres
  - Maximising energy conservation and benchmarking energy consumption
  - Carbon management
  - Maximising water use reduction and recycling opportunities

The Council will continue to monitor progress through Fusion Lifestyle’s Environmental and Energy Management Plan and monthly utility reports.

## 7.7 Sharing Best Practise

Wherever possible, the Council actively seeks to share best practise with other local authorities, organisations and individuals to share expertise and lessons learnt. The Council will continue to raise awareness of the successes and challenges of implementing this Water Strategy through local and regional networks, case studies and other means available.

## 8. Water Strategy Action Plan

Appendix C summarises all actions implemented by the Council to date.

The following action plan details the projects which will be investigated/implemented through the delivery of this Water Strategy.

Action	Project Lead	Completion Date	Estimated level of cost to implement	Estimated level of cost saving	Site(s) affected
<b>Building Managers Handbook</b>					
Produce a building managers handbook to demonstrate best practice in water management, efficiency and reduction	Energy Management Unit in partnership with Anglian Water Business	February 2015			
Create posters to encourage water efficiency and water saving tips (to be distributed to building managers)	Energy Management Unit in partnership with Anglian Water Business	February 2015			
Create site audit checklist to enable building managers to review current assets and metering arrangements	Energy Management Unit in partnership with Anglian Water Business	February 2015	Low	Low	Multiple
Launch the building managers handbook and supporting resources	Energy Management Unit in partnership with Anglian Water Business	March 2015			
<b>Site Checklist</b>					
Produce and distribute a site checklist for water fixtures and metering (this will form part of the building managers handbook)	Energy Management Unit	March 2015	Low		
Complete the site checklist and return to the Energy Management Unit	Building Managers	March 2015	Low		
Collate information from the site checklist. Review opportunities and seek to implement any appropriate measures	Energy Management Unit and Building managers	April 2015			
If a meter on site cannot be located, the Energy Management Unit will work with Anglian Water Business to conduct site surveys	Energy Management Unit , Building Managers and Anglian Water Business	April 2015	Low – Medium	Low – Medium	Multiple
Plot meter locations on GIS, drawing upon information already held and information learned from the site checklist	Energy Management Unit , GIS Team	April 2015	Low		
Explore opportunities to incorporate a site checklist within existing processes e.g. workplace inspections	Energy Management Unit	Ongoing	Low		

Action	Project Lead	Completion Date	Estimated level of cost to implement	Estimated level of cost saving	Site(s) affected
<b>Regular Meter Reads</b>					
Complete and record meter readings on a monthly basis	Site managers / appointed staff	Ongoing action-monthly	Low	Low	Multiple
Submit monthly meter readings to Anglian Water Business and the Energy Management Unit	Site managers / appointed staff	Ongoing action-monthly			
Input meter readings into Team Sigma	Energy Management Unit	Ongoing action-monthly			
Energy Team to work with Team Energy to develop a method of uploading water data into Team Sigma; making recording and monitoring water usage quicker and easier	Energy Management Unit	2015			
<b>Training</b>					
Complete initial training for building managers at the launch event for the building manager's handbook	Energy Management Unit in partnership with Anglian Water Business	March 2015	Low	Low	Multiple
Arrange and carry out talks or training sessions on water efficiency as required	Energy Management Unit	Ongoing action - as required			
Look into the possibility of an e-learning course on My View (intranet) for staff to complete to raise water awareness and update intranet pages	Energy Management Unit / ICT	May 2015			
<b>Water Efficiency Audits</b>					
Identify sites which have yet to have a WEA completed, or those that should be revisited	Energy Management Unit	January 2015	Low	Low	Multiple
Commission WEAs where appropriate	Energy Management Unit /Anglian Water Business	February 2015		Low	
Assess recommendations from completed WEAs and seek to implement opportunities	Energy Management Unit	March 2015		Low - Medium	

Action	Project Lead	Completion Date	Estimated level of cost to implement	Estimated level of cost saving	Site(s) affected
<b>Allotments and Parks</b>					
Identify the needs of parks and allotments, how the water is currently used and if any measures have already been implemented to date	Energy Management Unit / Parks, Allotments	March 2015			
Investigate potential measures to implement at parks and/or allotments, including changes to the current planting regime rain water harvesting and improved watering practises	Energy Management Unit / Parks, Allotments	March/April 2015	Low	Low	Allotments and Parks
Implement proposed measures	Energy Management Unit / Parks/Allotments	May 2015		Low – Medium	
<b>Borough Hall Taps</b>					
Investigate the number of turn taps in Borough Hall and conduct a flow test on the taps. Complete a desktop assessment to determine the best solution	Energy Management Unit / Facilities manager	January 2015	Low		
Implement project to upgrade current push taps in Borough Hall	Energy Management Unit / Facilities manager	February 2015	Medium	Low - Medium	Borough Hall
<b>Foam Soap</b>					
Complete a desktop assessment to ascertain the current costs associated with liquid soap and the potential savings associated with utilising foam soap. Develop a business case (if appropriate) and agree proposals	Energy Management Unit /Facility Managers	February 2015	Low		
Implement foam soap at Council sites (if appropriate)	Energy Management Unit	April 2015	Medium	Low - Medium	Multiple
<b>Waterless Urinals</b>					
Installation of a sub meter at Allhallows Multi Storey Car Park Toilets to monitor water consumed by the urinals	Design Services	January 2015	Low		Allhallows MSCP
Complete a trial of a waterless urinal system at Allhallows Multi Storey Car Park Toilets and analyse results	Energy Management Unit	March/April 2015	No Cost	Low - Medium	
Complete a business case to roll out waterless urinals to other Bedford Borough Council sites (if appropriate)	Energy Management Unit	April 2015	Low		Multiple
Implement waterless urinals (if / where appropriate)	Energy Management Unit	June 2015	Medium		

Action	Project Lead	Completion Date	Estimated level of cost to implement	Estimated level of cost saving	Site(s) affected
<b>Improvements to Borough Hall Canteen</b>					
Investigate the feasibility of changing the dishwasher in Borough Hall canteen to a newer, more efficient model	Energy Management Unit	January 2015	Low	Low - Medium	Borough Hall
Conduct a flow test on the taps in Borough Hall canteen and complete a desktop assessment to investigate the benefits of fitting flow regulators or tap aerators to the kitchen taps	Property Services / Energy Management Unit	December 2014	Low		
Investigate if the rinsing device in Borough Hall canteen is being used efficiently and/or could be upgraded to a more efficient model	Energy Management Unit	January 2015	Low		
Implement any appropriate projects in Borough Hall canteen	Property Services	April 2015	Medium		
<b>Vehicle Repair Depot</b>					
Install 2 sub-meters at the Vehicle Repair Depot (one on the existing vehicle wash down area and one on the vehicle fill area) and complete a water mass balance study	Site Manager / Property Services / Energy Management Unit / Anglian Water Business	January/ February 2015	Low	Low - Medium	Vehicle Repair Depot
Identify and implement no/low cost measures at the Vehicle Repair Depot	Energy Management Unit / Site manager / Anglian Water Business/Property Services	February 2015	Low		
Investigate the feasibility of grey water recycling and rain watering harvesting at the Vehicle Repair Depot and build and present a business case for approval (if appropriate)	Site Manager/ Energy Management Unit / Anglian Water Business	April 2015	Low - Medium	Medium - High	
Implement water recycling project(s) at the Vehicle Repair Depot (if appropriate)	Site Manager / Energy Management Unit	June 2015	High		

Action	Project Lead	Completion Date	Estimated level of cost to implement	Estimated level of cost saving	Site(s) affected
<b>Data Management</b>					
Work with Anglian Water Business and TEAM Energy to develop electronic billing files compatible with TEAM Sigma software	Energy Management Unit	Ongoing	Low	Low	Multiple
Roll out the Team Sigma Energy Viewer to building managers	Energy Management Unit	June 2015	Low	Low	Multiple
<b>Programme Management</b>					
Produce an annual report which details trends in water consumption	Energy Management Unit	Ongoing	Low	Low	Multiple
Raise staff awareness (e.g. Connect, My View, Energy Champions)	Sustainability Unit	Ongoing	Low	Low	Multiple
<b>Leadership and Partnership</b>					
Develop a policy document to stipulate water efficient practices	Energy Management Unit / Design Services	June 2015	Low	Low - Medium	Multiple
Update the Council and school webpages	Energy Management Unit	February 2015	Low	Low	Multiple
Continue to support initiatives to raise water efficiency awareness in the community	Sustainability Team	Ongoing	Low	Community Initiative	Community
Provide ongoing support to schools to become more water efficient e.g. roll out building managers handbook	Energy Management Unit	Ongoing	Low	Community Initiative	Schools
Work in partnership with Fusion Lifestyle to reduce consumption in leisure sites	Energy Management Unit / Design Team	Ongoing	Low	Community Initiative	Leisure sites

## 8.1 Summary of Actions to Follow Up from Previous Water Efficiency Audits

A number of recommendations identified through previous water efficiency audits have yet to be taken forward by our sites. Table 9 summarises a series of actions which will be followed up and investigated.

Site (date of WEA)	Recommendation	Action	Completed by
Foster Hill Cemetery (2012)	Ensure that all urinals flush no more than three times per hour	Investigate the flush regime of the urinals and make suggested improvements	March 2015
Norse Road Cemetery (2012)	Install one automatic flushing device to the urinal and ensure that all urinals flush no more than three times per hour	Investigate the flush regime of the urinals and make suggested improvements	
	Install water saving devices in 20 WC cisterns	Investigate the feasibility of installing these devices.	
Bedford Central Library (2012)	Decrease the flow rate from the taps on the washbasins by installing a service valve and regulating the flow to around 7 litres per minute	Investigate the flow rate of the taps and the type of taps. Install appropriate measures	
Kempston Library (2012)	Decrease the flow rate from the taps on the washbasins by installing a service valve and regulating the flow to around 7 litres per minute	Investigate the flow rate of the taps and the type of taps. Install appropriate measures	
Wootton Library (2012)	Decrease the flow rate from the taps on the washbasins by installing a service valve and regulating the flow to around 7 litres per minute	Investigate the flow rate of the taps and the type of taps. Install appropriate measures	
Putnoe Library (2012)	Install water saving devices in WC cisterns	Investigate the feasibility of installing these devices	
Parkside House (2010)	Install water saving devices in WC cisterns	Investigate the feasibility of installing these devices	
Conduit Road Day Centre (2010)	It is possible that there is an underground leak at the site. The site should conduct a 'soundness test' to determine this.	Investigate leak on site	
George Beal House (2010)	Install water saving devices in WC cisterns	Investigate the feasibility of installing these devices	

Table 9: Summary of actions to follow up from previous water efficiency audits



## Appendix A - Summary of Water Efficiency Audits Recommendations

Any actions are incorporated into Table 9.

Site	Location	Recommendation	Year Implemented
Foster Hill Cemetery (2012)	All toilet cisterns	Install water saving devices in 20 WC cisterns	Fitted 2012
		Make regular checks to ensure none of the WC cisterns are overflowing	Ongoing
	Male toilets Site	Ensure that all urinals flush no more than three times per hour Ensuring taps, hoses and similar devices are not left running when in use	To investigate Ongoing Behaviour Change
Norse Road Cemetery (2012)	All toilet cisterns	Install water saving devices in 20 WC cisterns	To investigate
		Make regular checks to ensure none of the WC cisterns are overflowing	Ongoing Behaviour Change
	Male toilets Site	Install one automatic flushing device to the urinal and ensure that all urinals flush no more than three times per hour Ensuring taps, hoses and similar devices are not left running when in use	To investigate Ongoing Behaviour Change
Bedford Central Library (2012)	Site	Read revenue meters on a monthly basis	Ongoing Behaviour Change
	Toilet washbasins	Decrease the flow rate from the taps on the washbasins by installing a service valve and regulating the flow to around 7 litres per minute	To investigate
Putnoe Library (2012)	All toilet cisterns	Install water saving devices in WC cisterns	To investigate
Kempston Library (2012)	Site	Read revenue both meters on a monthly basis	Ongoing Behaviour Change
	Toilet washbasins	Decrease the flow rate from the taps on the washbasins by installing a service valve and regulating the flow to around 7 litres per minute	To investigate
Wootton Library (2012)	Site	Read revenue meters on a monthly basis	Ongoing Behaviour Change
	Toilet washbasins	Decrease the flow rate from the taps on the washbasins by installing a service valve and regulating the flow to around 7 litres per minute	To investigate
Parkside House (2010)	All toilet cisterns	Install water saving devices in WC cisterns	To investigate
	Site	Ensuring taps, hoses and similar devices are not left running when in use	Ongoing Behaviour Change
Conduit Road Day Centre (2010)	Site	It is possible that there is an underground leak at the site. The site should conduct a 'soundness test' to determine this	To investigate
Kempston Centre (2010)	Site	Read the revenue meter on a monthly basis	Ongoing Behaviour Change
	All toilet cisterns	Install water saving devices in WC cisterns	Installed
George Beal House (2010)	Site	Read the revenue meter on a monthly basis	Ongoing Behaviour Change
	All toilet cisterns	Install water saving devices in WC cisterns	To investigate
	Site	It is possible that there is an underground leak at the site. The site should conduct a 'soundness test' to determine this	Resolved 2012
Huddleston Way Day Centre (2010)	Site	Ensuring taps, hoses and similar devices are not left running when in use	Ongoing Behaviour Change

## Appendix B - Full Tariff Optimisation table

Site Name	Current Tariff	Site Consumption m <sup>3</sup>	Proposed Tariff	Potential Financial Saving Total
91 Bromham Road - Foxgloves	Domestic	751	Orange	£151.68
Allen Park Sports Pavilion	Orange	67	Green	£73.35
Bedford Park Cricket Pavilion	Green	2,010	Orange	£152.44
Bedford Social Centre / Conduit Road Day Centre	Green	857	Orange	£60.08
Bunyan Centre	Green	4,756	Orange	£715.58
Corn Exchange	Green	969	Orange	£78.91
CSD Offices, Barkers Lane	Green	1,012	Orange	£86.14
George Beal House	Green	1,441	Orange	£158.26
Kempston Centre	Green	854	Orange	£59.57
Lurke Street MSCP	Orange	62	Green	£73.58
Mowsbury Golf Course	Blue	3,729	Orange	£201.00
Priory Street Bowl Pavilion	Orange	24	Green	£79.97
Southfields Community Centre	Green	682	Orange	£30.66
Sunflower House	Green	685	Orange	£31.16
The Higgins Bedford	Green	1,421	Orange	£154.90
Hillgrounds Changing Rooms	Green	1,283	Orange	£131.70
Cricket Pitches Bedford Park	Orange	63	Green	£37.61
56 Singer Way	Orange	0	Green	£84.00
Mill Meadows	Domestic	832	Orange	£146.15

## Appendix C - Summary of what actions have been achieved to date

Site	Action	Implemented in
Borough Hall	Percussion taps installed	2008/2009
Day centres and Borough Hall	Water Efficiency Audits	2010
Borough Hall	Kettles removed	2010/2011
Priory Country Park	Rain Water Harvesting Installed	2011
Leisure centres, libraries, the crematorium and the cemetery	Water Efficiency Audits	2012
The Higgins Bedford	Rain Water Harvesting Installed	2012/13
Robinson Pool	Leak fixed	2013
Oasis Pool	Smart meter installed	2013
All sites	Tariff optimisation	2013
Various Public Conveniences	Modernisation programme closed down PC's and removed APCs	2013
Allhallows MSCP PC	Public Convenience full refurbishment, sensor taps, WC and urinals	2013/2014
Lurke Street MSCP PC	Public Convenience refurbishment. Dual flush toilets	2014
Robinson Pool	Smart Meter installed	2014
Borough Hall	Water Efficiency Audit	2014
Borough Hall	Fixed leaking WCs and urinals	2014
The Higgins Bedford	Water Efficiency Audit	2014
The Higgins Bedford	Installed save-a-flush devices	2014
The Higgins Bedford	Repaired leaking cistern	2014
The Higgins Bedford	Reduced the flow of cold and hot taps to 7.5 litres /minute	2014
Hillgrounds Changing Rooms	Overflowing cistern and purging water cylinders repaired	2014
Borough Hall	Smart Meter installed	2014
All sites	Consolidated billing	2014





## Finding out more

If you would like further copies, a large-print copy or information about us and our services, please telephone or write to us at our address below.

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