

## Policy Brief: The case for implementing an enhanced water efficiency standard for new developments in Leeds

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## I. Background

Since 2015, Part G of UK Building Regulations have required new dwellings to achieve a water efficiency target of 125 litres per day Per Capita Consumption (l/day PPC). A sub-section of the regulations allow local planning authorities to implement a more ambitious 110 l/day PPC target.

This policy brief aims to support Leeds City Council's proposal to adopt the reduced 110 l/day PPC target into their local Core Strategy EN2 by outlining that the proposal is consistent with national (and other regional) policy and clearly needed. Evidence of the costs and effectiveness of some example efficiency measures is also presented, covering both structural and non-structural measures. Finally, there is a brief concluding discussion about whether the target could be more ambitious.

## II. Is Leeds City Council's proposal to adopting 110 l/day PPC target consistent with national policy?

Leeds City Council's draft amendment is in line with national policy and similar activities conducted by and behalf of other local authorities around the country. For example:

### 1. Defra's 25-year Environment Plan (2018)<sup>1</sup>

This national policy paper sets out a vision to improve the environment in a variety of ways and has a clear focus on careful water resource management. For example, it states, "*We want to see water use in England fall - the average person currently consumes 140 litres per day... We will work with the industry to set an ambitious personal consumption target and agree cost effective measures to meet it.*" (p.70)

There is to be a "call for evidence" and "consultation" in early 2019 to examine policy options required to set the target and support implementation<sup>2</sup>.

### 2. National Infrastructure Commission: Preparing for a drier future – England's water infrastructure needs (2018)<sup>3</sup>

The National Infrastructure Commission (NIC) provides the government with impartial, expert advice on major long-term infrastructure challenges. Their recent report on water infrastructure highlights the need for careful water resource management beyond well-known water stress hotspots in the South East, for example:

*"The Department for Environment, Food and Rural Affairs should enable companies to implement compulsory metering beyond water stressed areas by the 2030s, by amending regulations before the end of 2019 and requiring all companies to consider systematic roll out of smart meters as a first step in a concerted campaign to improve water efficiency"* (p. 3).

### 3. UK Climate Change Risk Assessment (CCRA) (2017)

The Adaptation Sub-Committee's UK Climate Change Risk Assessment Evidence Report sets out the priority climate change risks and opportunities for the UK. The assessment takes place every five years and the most recent one (2017) it states that the risk of shortages in water supply is a "*high magnitude, high confidence*" risk, and "*More action*" is now necessary to mitigate this risk.<sup>4</sup> The evidence for this came from a 2015 report – "*updated projections for water availability for the UK*".<sup>5</sup>

#### 4. Other regional examples advocating adoption of the 110 litre/day regulations

A number of other local authorities and regional partnership organisations have developed evidence briefs advocating the adoption of the 110 l/day policy. These include:

- The London Plan<sup>6</sup>
- Rother District Council<sup>7</sup> - which also referenced other nearby authorities e.g. Lewes District Council, Brighton City Council, Worthing Borough Council
- South East Lincolnshire<sup>8</sup>
- Save Water South East<sup>9</sup>

In each case, the evidence to make the case was drawn from the Environment Agency water stressed areas – final classification (July 2013)<sup>10</sup>, climate change projections, River Basin Management plans and water company resource plans. There was no suggestion that the policies should refer to a minimum number of dwellings (e.g. 10).

### III. Evidence of need for adopting 110 l/day PPC target

There is evidence that water demand reduction in Yorkshire is required, for example:

#### 1. UK Climate Projections 2018 (UKCP18) in Yorkshire

UK Climate Projections 2018 (UKCP18) represent the most up to date assessment of potential future climate conditions. One of the high- level conclusions is that the UK will experience an increasing tendency towards hotter drier summers and warmer wetter winters.<sup>11</sup> The heatwave of 2018 is projected to be a ‘normal’ event by the 2050s (a 1 in 2 year event).

#### 2. Yorkshire Water’s Water Resources Management Plan, WRMP19 (2014, revised 2018)

The WRMP19<sup>12</sup> suggests there will be little change in total water delivered over the coming 25 year planning period. Although the population will increase, Yorkshire Water forecast a reduction in average consumption (both metered and unmetered) from 131 l/day to 112 l/day PPC during this time. There will however be a reduction in water availability due to climate change – this gap in supply and demand is to be met by a 40% reduction in leakage and increased groundwater abstractions.

#### 3. Yorkshire Water’s official statement on the heatwave and drought of 2018

*“...Our reservoirs were full at the end of April. However, starting from mid-May we have seen a prolonged period of very dry weather, and during June and July we also had a period of very hot weather which led to very high demands. Demand in late June / early July peaked at around 200 Ml/d higher than normal (equivalent to the city the size of Leeds). We have seen summer peaks of this nature in the past, but only over very short periods (e.g. a weekend). What was particularly unusual this year was that the high demands lasted for three weeks...”*

#### 4. Pressure on Yorkshire Water’s sewerage network

Climate change has and will result in more intense rainfall in Yorkshire, leading to pressure on the sewerage network and an increased risk of surface water flooding which is likely to be compounded by new developments<sup>13</sup>. Demand reduction measures can help remove surface water from the sewerage network (e.g. through rainwater harvesting and greywater reuse facilities). This is a more sustainable alternative to increasing sewer capacity and wastewater treatment facilities, which use chemicals and energy to ensure the water is suitable for returning to the environment<sup>14</sup>.

## **5. Energy saving co-benefits**

The costs and benefits for water efficiency measures should account for the energy required (and greenhouse gas emissions) to treat, move and heat water. For example, it is estimated that, on average, 10% of the daily average PPC in UK is wasted while users wait for water to reach a sufficiently warm temperature when using a hot water outlet (including kitchen sinks, showers and hand wash basins)<sup>15</sup>. The Energy Saving Trust (2018) estimate central heating and hot water make up 62% of household energy bills<sup>16</sup>.

## **IV. Effectiveness and cost of water efficiency measures – both structural and behavioural**

There is evidence that fitting water saving devices is low cost and effective, particularly if in association with soft-measures to encourage sustainable behavioural change, for example:

### **1. UK water company-water efficiency retrofit programmes**

Waterwise is a UK NGO that, amongst other activities, compiles evidence to help water companies identify the most effective efficiency retrofit activities e.g. from fitting items such as dual flush conversion devices to metering programmes and grey and rainwater harvesting systems<sup>17,18</sup>.

Based on such evidence, water companies provide water saving advice to their customers and many offer free water saving devices through mail order (self-fit) and/or home water audits. Companies have reported savings from the home visits can be up to 50 litres per property however, this can vary greatly between households as many are already water efficient. Costs per a property also vary depending on the type and number of devices fitted. It is also difficult to assess the longevity of the savings as most of the products fitted are easily removed<sup>19</sup>.

### **2. Department for Communities and Local Government – Housing Standards Review (2014)<sup>20</sup>**

Cost to developers of achieving the lower standard of 110 l/day PPC is estimated to be only up to a maximum of £9 per dwelling.

### **3. Soft-measures to encourage behavioural change**

While the installation of water saving devices may help reducing water demand use, there are other factors that need to go hand by hand as they also influence water conservation. There is a need to implement behavioural campaigns, public commitments or school-based education programmes to encourage a sustainable reduction in water use as habits and other psychosocial aspects influence water usage<sup>21</sup>. For instance, water use profiles amongst different ethnic and faith groups differ – an important consideration in communicating and influencing behaviour<sup>22</sup>. Also, (smart) meters used to provide individuals with information on where their PPC consumption lies amongst other similar households have a sustainable impact on water use reduction<sup>23</sup>.

## VI. Further ambition

In light of the challenges that lie ahead, the policies that Leeds City Council is proposing will move sustainability forward. The brief summary above demonstrates that Leeds City Council should adopt the reduced 110 l/day PPC target into their local Core Strategy EN2. Yet, Leeds City Council could be a front runner if more ambitious targets are developed as we found evidence that going further is possible within existing frameworks. For example:

### 1. WRC report: Water use in homes built to Part G building regulations and Code for Sustainable Homes (CSH) water efficiency standards (2013)<sup>24</sup>

A 2013 study on water use amongst 240 dwellings built according to the 125 l/day target or equivalent CSH level, found that the average consumption was actually 104.6 l/day PPC suggesting the 110 l/day target is easily achievable (WRC, 2013). In addition, the average metered customer water use for Yorkshire Water customers is already 105 l/day PPC, this includes new build households and older properties where a householder has opted to switch to a metered supply at some point<sup>25</sup>.

### 2. Yorkshire Water AMP7 Growth Planning for Parlington, East Leeds (2018)<sup>26</sup>

Yorkshire Water has investigated options to accommodate a planned development of 4,000 new dwellings in Parlington, East Leeds. The options include costed rainwater harvesting and greywater reuse facilities resulting in a potential reduction in potable demand of up to ~32 l/day (29% in addition to the 110 l/day target). This suggests the water efficiency measures described in Leeds City Council's Natural Resources and Waste Local Plan (2013)<sup>27</sup> would help the city comfortably exceed the 110 l/day target – these include: Sustainable urban drainage systems, rainwater collection and storage, grey water recycling and storage systems, and more absorbent surfaces for water drainage.

### 3. European research study: Guidance on evaluation and selection of sustainable water demand management technologies<sup>28</sup>.

A 2013 study of water conservation across the EU, including the UK, found that using Best Available Technologies Not Entailing Excessive Costs (BATNEEC) domestic water consumption could theoretically be reduced to 76 l/day PPC using appliances and fittings available in 2001, falling further to 53 l/day PPC using appliances and fittings available in 2006.

### 4. Building Research Establishment Environmental Assessment Method (BREEAM) Home Quality Mark

This framework operates a 'points-based system' of water efficiency for new homes and provides guidance that would be useful for delivering and exceeding the 110 l/day target: \*5/10 points are available if fittings are installed which lead to 110 litres/day PPC (see table below). \*8/10 if the advanced fitting are fitted. \*10/10 if rainwater or greywater is used to offset WC usage.

**Table 1 Water fitting guidelines taken from BREEAM Home Quality Mark**

Water fitting	Building regulations Part G2 optional fittings standard	Advanced fittings standard
WCs	≤ 4/2.6 litres dual flush	4/2 litres dual flush (max 3L effective flushing volume)
Showers	≤ 8L/min	≤ 6L/min
Baths	≤ 170 litres	≤ 170 litres
Basin taps	≤ 5L/min	≤ 5L/min
Kitchen Sink taps	≤ 6L/min	≤ 6L/min
Dishwashers	≤ 1.25L/place setting	≤ 1.25L/place setting
Washing machines	≤ 8.17L/kilogram	≤ 8.17L/kilogram

- <sup>1</sup> Defra's 25 year Environment Plan (2018) [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/693158/25-year-environment-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf) [Accessed 04.04.19]
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- <sup>11</sup> <https://www.metoffice.gov.uk/research/collaboration/ukcp/key-results> [Accessed 04.04.19]
- <sup>12</sup> Yorkshire Water (2018) Revised draft water resources management plan. <https://www.yorkshirewater.com/sites/default/files/Revised%20Draft%20Water%20Resources%20Management%20Plan%202019.pdf> [Accessed 08.04.19]
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