

# Draft Water Resources Management Plan 2024 Annex 24: Water resource planning tables

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from  
**Southern  
Water** 

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## Glossary

ADO	Average Deployable Output
DMA	District Metered Area
DO	Deployable Output
HAZ	Hampshire Andover
HKZ	Hampshire Kingsclere
HRZ	Hampshire Rural
HSE	Hampshire Southampton East
HSW	Hampshire Southampton West
HWZ	Hampshire Winchester
IOW	Isle of Wight
KME	Kent Medway East
KMW	Kent Medway West
KTZ	Kent Thanet
MDO	Minimum Deployable Output
PDO	Peak Deployable Output
RMS	River Medway Scheme
SBZ	Sussex Brighton
SHZ	Sussex Hastings
SNZ	Sussex North
SWZ	Sussex Worthing
WBS	Water Booster Station
WRZ	Water Resource Zone
WSW	Water Supply Works
WTMP	Water Resources Management Plan

## 1. Table 1 Base Year Licences

- Our Deployable Output (DO) assessments were carried out at a Water Resource Zone Level to estimate “system response” (as per the WRPG) to include the conjunctive use Deployable Outputs. Because of this, specific estimates of deployable output at a source and licence level are not available.
- For Table 1a (Individual Licences), where a Water Resource Zone is dominated by individual licences, a single DO is given per Water Resource Zone and other licence lines within that zone, reference the deployable output in the “Additional Notes (if desired)” column.
- For Water Resource Zones which have a combination of group and individual licences (e.g. Sussex Worthing), we have only included a single DO value in either Table 1a or 1b, depending which licence type dominates that particular zone. For example, for Sussex Worthing no DO is shown for the single individual groundwater licence; DO is instead reported in Table 1b for the group licence, which contains the majority of sources.
- All DO values are reported as the 1 in 500-year benefit for either DYAA or DYCP scenarios.
- Where relevant, we have listed stream support licences, but these do not have any deployable output benefits.
- We have no drought-only Licences nor any planned new licences within the current AMP period, so both Table 1d and Table 1e are intentionally blank.

## 2. Table 2 WC Level Data

### General – Final Plan Metering

The underlying raw meter data used for these lines is taken the smart metering model to be consistent with the investment profiles. The underlying data used is set out below. These data are annual totals.

	AMP-7	AMP-8				
	2025	2026	2027	2028	2029	2030
<b>1. Smart Meters Installed per year</b>						
HH						
AMR	-	98,107	135,025	141,203	163,693	81,601
VMR	-	60,868	60,868	60,868	60,868	60,868
New Dev	12,000	12,000	12,000	12,000	12,000	12,000
Unmetered	14,432	-	-	-	-	-
Sub total	26,432	170,975	207,893	214,071	236,561	154,469
NHH	-	7,868	9,695	10,001	11,114	7,051
<b>Total</b>	<b>26,432</b>	<b>178,843</b>	<b>217,588</b>	<b>224,072</b>	<b>247,675</b>	<b>161,520</b>

The data in the line items does not include replacement numbers post 2030. Whether the exact meter type adopted is 10-15 years’ time or whether it is merely a battery replacement on these meters is not known.

### Line 0FPM

The line is defined as:

0FPM	Total Household Smart Meters (cumulative including existing)	000's
Definition:	<p>Total cumulative number of household smart meter in specified year across the water company under your final planning scenario. This should include smart meters as defined in the WRMP Direction 2022.</p> <p>This should reflect your existing smart meters and the installation of new smart meters (either newly metered properties or upgrades), increasing cumulatively over the planning period.</p>	

As it is the **cumulative** numbers of meters and reflects the **existing** and **installation** of new meters (inc **upgrades**), we have interpreted this as the total number of meters, not the number of metered properties.

This line is given by:

*Total number of meters in 2021/22 + the **cumulative** total numbers of meter installs (line 1FPM)*

Where:

2021/22 HH meter totals were:

- 636,525 HH AMR meters
  - 304,341 HH non-AMR meters
- (source: Baringa Smart Metering Model 15/09/22)

**Line 1.1FPM Basic (non-automated) meter installations (household)**

None.

**Line 1.21FPM Automated Meter Reading (AMR) - new installations (household)**

This is the current meter forecast installs in AMP7 for 'unmetered + new development' in 2025 (26,432).

**1.22FPM Automated Meter Reading (AMR) - upgrades from basic meters (household)**

None

**1.31FPM Advanced Metering Infrastructure (AMI) - new installations (household)**

This is the meter installs for new development in AMP8.

**1.32FPM Automated Meter Infrastructure (AMI) - upgrades from basic or AMR meters (household)**

This is the meter installs for upgrades to AMR + the meter installs to swap out the existing VMR (or dumb/visual meter read) assets in AMP8.

**2FPM Total non-household meter installations**

As with households, the definition is the number of installations. We have completed this as the number of meter installations, not the number of properties on a meter.

2FPM	Total non-household meter installations	000's
Definition:	Total number of non-household meter installations in specified year across the water company under your final planning scenario.	
Processing rule:	Input	

Although not explicit, we have assumed this line is the cumulative total to be consistent with the opening statement in the guideline:

*“You should reflect the cumulative total number of smart meters for each year and the annual installations of different meter types at the company level across the final planning period.”*

This line is given by:

*2021/22 current installs + future installations (lines 2.1-2.3FPM)*

Where, 2021/22 current installs are:

- 46,566 NHH meters
  - 12,500 AMR meters
  - Remainder are not AMR
- Source: Baringa Metering Model 15/09/2022

**2.1FPM Basic (non-automated) meter installations (non-household)**  
None.

**2.2FPM Automated Meter Reading (AMR) - installations (non-household)**  
None.

**2.3FPM Automated Meter Infrastructure (AMI) - installations (non-household)**  
This is the forecast annual installs of AMI meters in the smart metering model.

## 3. Table 4 Options Appraisal Summary

### 3.1 Short-term Drought measures

#### General

The initial version of the regional plan developed with WRSE identified deficits in several zones that could not be closed in the first few years of the planning period. To address this, we agreed with WRSE to include Short-Term Drought Schemes and to allow the regional plan to select these, where required.

The profiles of the water resource needs were:

#### Western area

Component (renamed)	WRZ	Area	Planning scenario	2026	2027	2028	2029
Emergency deficit (HSE): Recover DO	HSE	Western	2_DYAA (1:100)	0.00	0.00	4.50	2.75
Emergency deficit (HSE): Recover DO	HSE	Western	3_DYAA (1:500)	0.00	0.00	5.25	3.75
Emergency deficit (HSE): Recover DO	HSE	Western	4_DYCP (1:500)	1.52	0.00	1.21	0.00
Emergency deficit (HSE): Recover DO	HSE	Western	1_NYAA	5.23	0.12	0.00	0.00

#### Central area

Component (renamed)	WRZ	Area	Planning scenario	2026	2027
Emergency deficit (SBZ): Recover DO	SBZ	Central	2_DYAA (1:100)	9.64	5.88
Emergency deficit (SBZ): Recover DO	SBZ	Central	3_DYAA (1:500)	10.18	7.37

#### Western Area

The options were included as follows:

		Unit	2025/26	2026/27	2027/28	2028/29	2029/30
Water Resource Need	DYCP (1 in 500)	MI/d	-	1.52	0	1.21	0
	DYAA (1 in 500)	MI/d	-	0	0	5.25	3.75
	<b>Max need</b>	<b>MI/d</b>	<b>-</b>	<b>1.52</b>	<b>0</b>	<b>5.25</b>	<b>3.75</b>

			Unit	2025/26	2026/27	2027/28	2028/29	2029/30
Resources	STDS-Resources (HSE)	WAFU	MI/d		2.5	2.5	2.5	2.5
		Capex	£m					
		Opex	£m		£0.2	£0.2	-	-
Leakage	STDS-Leakage (HSE)	Saving	MI/d	-	-	-	0.25	0.25
		Capex	£m	-	-	-	-	-
		Opex	£m	-	-	-	-	-
Demand	STDS-Demand (HSE)	Products and services	MI/d	-	-	-	1.2	1.2
		Capex	£m	-	-	-	-	-
		Opex	£m	-	-	-	£0.54m	-
	SDS-Demand-Allowance (HSE)	Risk Allowance	MI/d				1.5	1.5
		Capex	£m					
		Opex	£m					
	<b>Totals</b>	<b>WAFU/Saving</b>	<b>MI/d</b>	<b>-</b>	<b>2.5</b>	<b>2.5</b>	<b>5.45</b>	<b>5.45</b>

### 1) STDS-Resource (HSE)

Optimisation of disused Greensand Borehole on loW at Knighton (2.5MI/d). Reduce need for transfer from HSE. Estimate cost of £0.2m BH operation (testing and env monitoring).

NPC from table 5a

### 2) STDS-Leakage (HSE)

Acceleration of the 2030 reductions to 2027.

Leakage in 2030 = 8MI/d (Table 3)

Leakage in 2028 = 8.38MI/d

Acceleration = 0.38MI/d. Rounded to 0.25MI/d to reflect impact of year end vs. year average performance.

As the activity is within the AMP, no additional costs are included.

### 3) STDS- Demand (HSE)

HSE Products and services cumulative savings in 2035 brought forward to 2028 as follows:

Table 5a	2028	2035	Delta
Cumulative savings in T100 plan	0.8MI/d	2.0MI/d	1.2MI/d
Capex	-	-	-
Opex (annual)	£0.0832m	£0.072m	-
Opex (cumulative)	-	£0.54m (28/29-34/35)	£0.54m

The sub option activities in this catalyst being accelerated are:

- Leaky Loo campaign
- Goal setting templates (using smart metering)
- Innovation programme

Specific points:

- Carbon – left blank to prevent double counting with option T100\_Solutions and Products (HSE)
- AIC - retained as the HSE value for T100 products and services
- NPC – From Table 5a

#### 4) STDS-Demand-Allowance (HSE)

Planning based on meeting the mid estimate of the demand savings in T100 with no allowance for risk. This is equal to 1.5MI/d.

#### Central Area

The options were included as follows

		Unit	2025/26	2026/27	2027/28	2028/29	2029/30
Water Resource Need	DYAA (1 in 100)	MI/d	-	9.64	5.88	-	-
	DYAA (1 in 500)	MI/d	-	10.18	7.37	-	-
	<b>Max need</b>	<b>MI/d</b>	-	<b>10.18</b>	<b>7.37</b>	-	-

Resources	STDS-Resources (SB)	WAFU	MI/d		10	10	-	-
		Capex	£m					
		Opex	£m		£1.2m	-	-	-
Demand	STDS-Demand (HSE)	Risk Allowance	MI/d		1.5	-	-	-
		Capex	£m					
		Opex	£m					
	<b>Totals</b>	<b>WAFU/Saving</b>	<b>MI/d</b>	-	<b>11.5</b>	<b>10</b>	-	-



### 1) STDS-Resource (SB)

Short-term implementation of the following sources (see Annex 22):

Site	Yield [MI/d]	Activity
Surrenden UGS	2	Recommissioning <ul style="list-style-type: none"> <li>• following NoDet investigation to provide additional water for Patcham WSW in summer months</li> <li>• removal of treatment concerns</li> </ul>
Sompting	2	Recommissioning <ul style="list-style-type: none"> <li>• to improve to reduce required import from North Sussex WRZ via Tenants Hill.</li> <li>• Winter abstraction may need to be reduced to maintain annual average abstraction</li> <li>• Will require NoDet investigations if not covered under current programme</li> </ul>
Lewes Road	2	Return to service to provide additional resource and relieve pressure on currently operational abstractions.  Lewes Road is constrained by license limit, could extract >19MI/d but limited to 7MI/d.
Balsdean	4 (estimated)	Maximum yield 16.07MI/d in 2019 but recent actual 12.3MI/d. Test yield and environmental monitoring and studies.
Total	10MI/d	

Estimated cost of £300k per investigation – a total of £1.2m. As a short-term solution, this is considered to be opex.

Average annual cost is £0.6m p.a. (£1.2m / 2 years).

No AIC included as short-term option.

No carbon included as a short-term option.

### 4) STDS-Demand-Allowance (SB)

Planning based on meeting the mid estimate of the demand savings in T100 with no allowance for risk. This is equal to 1.5MI/d.

## 3.2 T100

### General

This sets out the table commentary for the demand management (T100) actions included in Table 4.

Entries were included as follows:

- Preferred options – included for each of the 7 catalyst areas/feasible options for each Resource Zone and an entry for growth offsetting.
- Feasible options – all feasible options are in the preferred programme.
- Unconstrained options – the unconstrained options that were not chosen in the plan were included as a single line item each.

The data were completed as follows:

### Third-party options

The changes to Regulation and Policy were included as a Third-Party option.

### Interdependent options

Tariffs were linked to the smart metering programme.

Growth offset programme linked to the T100 comms campaign.

### Preferred/Least Cost/Core Programme

All preferred/feasible options included in all programmes as they are central to the overall delivery strategy.

As set out in the main text, the demand reductions have been included for a delivery plan that keeps the ambition open of meeting the T100 target. However, to balance uncertainty the demand forecast themselves are based on a target of 109l/p/d by 2040.

### Lead time

Set as 1 year for each option except:

Tariffs - This has a lead time of 3 years to reflect the tariffs design work needed.

Note: Smart metering has a c3 year lead time but as this work is planned for 25/26 onwards, this lead work will have already been completed.

### First year of option in use

- Marketing and Comms – 25/26. There is activity from 23/24, but to avoid double counting with the baseline demand forecast, only the 25/26 onwards benefits are included. The costs are included in any prior years to ensure the overall programme costs reflect the overall demand profile and are aligned to internal budgets.
- Education – as marketing and comms.
- Water Audits – as marketing and comms.
- Smart Metering – 27/28 for benefits. Programme and costs start in 25/26, but benefits are assumed to lag by 2 years as customers transition over.
- Policy and Regulation – 30/31 for building regs at 100l/p/d and water labelling. 34/35 for building regs at 85l/p/day.
- Tariffs – 30/31

### Carbon

- Embodied carbon – total embodied carbon from the planned activities.
- Operational carbon (maximum utilisation) – average carbon during years of implementation. This is a net value of the carbon expended from the activity from deployment less the carbon saving from the reduced water use. Calculated for the duration of the T100 programme.
- Operational carbon (average utilisation) – as per maximum utilisation.

The data used in the carbon calculation is given in the Technical Annex on the T100 Programme.

### AIC

- 80-year calculation at discount rate of 3.5%
- Costs from Table 5a (opex + financing cost including depreciation).
- Demand profile from Table 5 from 25/26. Assumes full utilisation as demand measures in constant use.
- Only costs and benefits from 2025/26 included to be consistent with the costs in Table 5a.
- Specific points on interpreting AIC values:
  - The AICs for a specific activity vary between the Resource Zone.  
This is because the pcc differs in each zone.

E.g. The cost of an individual water audit is the same for each property irrespective of the Resource Zone. However the water saving varies depending on the current pcc (the demand savings are proportionality allocated based on the MI/d saving needed in each zone which comes from the current pcc value). This means that the benefit of an audit varies between each zone, but the cost of an audit is fixed. As such the AIC varies.

- Smart metering:  
The smart metering AIC is based solely on the **direct** demand benefits of the metering programme. The **secondary demand benefits** from the Tariff programme and the benefits to leakage reduction which are enabled **are excluded**.

They are excluded to be consistent with Table 5a and Table 5 entries where they are set out as separate 'catalysts' or options. This was done to give detail on the elements that make up the programme; and in the case of leakage, to make sure the leakage benefits are made transparent and not within the metering programme itself in the WRMP tables.

The following table shows the AIC of smart metering as an overall programme accounting for all the benefits.

Zone	Smart Metering AIC p/m3	Tariff AIC p/m3	Aggregate AIC (inc tariffs) p/m3	Leakage benefit (NPV MI/d)	Aggregate AIC (inc tariffs and leakage)* p/m3
SWSHAD	141	2	71	191MI/d	43
SWSHKC	121	1	61		37
SWSHWN	156	2	79		48
SWSHRU	130	2	66		40
SWSHSE	162	2	82		50
SWSHSW	76	1	39		23
SWSIOW	187	2	94		57
SWSSNT	109	1	55		33
SWSSWR	164	2	83		50
SWSSBR	174	2	88		53
SWSKME	179	2	91		55
SWSKMW	367	4	185		112
SWSKTH	186	2	94		57
SWSSHT	146	2	74		45

\*Leakage NPV benefit = 191MI/d. Demand NPV benefit = 290MI/d. Inclusion of leakage increases overall volumetric benefit by 65%  $([290 - 191] / 290 = 1.65)$ . AICs therefore reduce by a factor of 1.65

- KMW:  
This zone has high AIC values. This is explained by the demand profile. The household demand profile in MI/d slightly increases in the first five years of the programme although pcc is reducing i.e. growth is creating the increase in demand. This mean that there is no net demand benefit allocated to the zone from the activities in the programme in these early years. However, the costs are included to reduce the underlying pcc. The result of no planned MI/d reduction in the early part of the programme means the AIC appears high. This is a function of the demand forecast in the zone and not the activity itself.

## NPC

This is the total NPC from Table 5a.

Note: the growth offsetting option in the short term should be achieved through the T100 actions. As such, no cost is included in Table 5a.

### Natural Capital

These fields have been left blank. The WRSE BVP planning process did not include these fields for demand measures. For consistency with the BVP score from that process, these fields have been left blank.

### Other – Non-Household

The WRSE demand forecasts did not include a specific non-household demand reduction programme. For consistency, options for non-household have not been included in the Table. However, the supporting technical annex on the demand reduction programme sets out feasible options and a proposed plan for the next update for inclusion in the WRSE plan and the revised Draft WRMP.

## 3.3 Leakage

Entries are included for each Resource Zone. The breakdown of the sub options within the programme are given in the accompanying leakage appendix.

The sub options are not broken down as they are interdependent as the programme is set as a package.

The AIC was calculated as follows:

- 80-year time period
- WACC 3.29% for financing costs
- Discount rate 3.5%
- Opex and financing costs from Table 5a

A value of 22p/m<sup>3</sup> is for the opex only AIC. The capital costs are dominated by the mains replacement programme for offsetting the leakage natural rate of rise. The inclusion of this capex gives an AIC > 100 p/m<sup>3</sup>. This is considered misleading for the purposes of this table as such activity is effectively a maintenance of existing assets and not directly comparable with other options.

## 4. Table 5 Options Benefits

### 4.1 T100

#### General

This sets out the table commentary for the demand management (T100) actions included in Table 5.

Entries were included as follows:

Preferred options – included for each of the 7 catalyst areas/feasible options for each Resource Zone.

The data were completed as follows:

#### Options Name

Given for each of the 7 catalyst areas for T100. This includes smart metering.

An 8<sup>th</sup> option of ‘adjustment for risk’ is included. This serves two purposes:

- To 2030 - to ensure the Draft WRMP ensures security of supply, the T100 demand programme was assessed for risk in the period to 2030. The programme was developed such that if the low or risk adjusted outturn from the demand management options were to occur, then supply-security could still be met. This risk management means that if the ‘catalysts’ in this table were just added at face value, the total would come to more than the demand profile would appear to need. This negative entry reduces the overall savings from demand management back to the T100 demand profile to ensure the supply-demand balance adds correctly in the other tables. It reflects the outcome at a low or risk adjusted total for the demand measures but without disturbing the raw data in the option. Failure to do so would mean the demand management benefits would add to more than the need, but that would not accurately reflect how delivery risk has been included into the programme.

This adjustment for risk does not overlap with the Target Headroom calculation as that is focussed on the uncertainty of the baseline forecast, not the options.

- Post 2030 - it is not possible to ‘optimise’ the demand management savings every year post 2030 to precisely match the pcc reduction profile. E.g. savings from comms campaigns can’t be forecast to exactly meet, say, a 0.8l/p/d reduction in a year. Post 2030, this line offset any additional saving in the demand management, so it balances back to the T100 demand profile. Again this is to ensure the supply-demand balance tables correctly add. This is merely a calculation adjustment, and the impact is relatively small.

Growth – a line item for growth offsetting is included. This includes savings to 2040 to align to the T100 programme. The savings are then held constant after that date.

### Option ID

Unique ID for each option.

### Option Type

Option type from the drop-down list. The closest match was used.

Option Name	Option Type	
Marketing and Comms (HA)	Other water efficiency	
Education (HA)	Water efficiency customer education / awareness	
Water efficiency solutions and products (inc innovation) (HA)	Other water efficiency	
Water Audits (HA)	Household water audit	
Smart Metering (HA)	Other water efficiency	This is a programme of upgrading the meters from AMR/Dumb to AMI meters. It doesn’t fit into any of these categories (e.g. it isn’t a selective metering programme). So was placed under ‘other water efficiency’.
		Metering change of occupancy

Option Name	Option Type	
		Metering compulsory
		Metering optants
		Metering other selective
Policy and Regulation (HA)	Other water efficiency	
Tariffs (HA)	Tariff	
Adjustment for risk (HA)	Other water efficiency	A negative entry to reduce the totals from the options so they add to the demand profile reduction needed to 2030.
Growth Offset	Water efficiency customer education / awareness	Growth assumed to be offset as a result of other actions preventing the increase in demand. Placed against customer comms as the main driver.

### Preferred/Least Cost/Core Programme

All preferred/feasible options included in all programmes as they are central to the overall delivery strategy.

### Savings in Demand from Selected Programme

This is the normal year annual average saving.

The savings included in this line are the **cumulative forecast** saving for each catalyst in the programme, for each resource zone.

The saving is based on a proportional allocation of the overall demand saving programme consistent with the reduction in PCC needed in that zone to meet T100 between 2024/25 and 2039/40.

The saving from any catalyst in **any year** is given by:

*Total company saving for the 'catalyst' [A] x T100 demand saving needed in that Resource Zone [B] / Total T100 demand saving for the company [C]*

The underlying demand forecasts used for this calculation are given at the end of the commentary.

Example: Smart Metering Saving in 2040 for HA Resource Zone (figures may not add due to rounding)

[A] Total company cumulative demand saving for smart metering in 2040 = 11MI/d

[B] T100 demand saving needed in that Resource Zone:

HH Demand in 2024/25 = 9.79MI/d

HH Demand in 2039/40 = 7.47MI/d

HH Demand reduction needed by 2039/40 = 2.33 MI/d [B]

[C] Total T100 demand saving for the company

HH Demand in 2024/25 = 361.7 MI/d

HH Demand in 2039/40 = 287.5 MI/d

HH Demand reduction needed by 2039/40 = 74.3 MI/d [C]



$$\text{Saving for Smart Metering in 2040} = 11 [A] \times 2.33 [B] / 74.3 [C] = 0.35 \text{ MI/d}$$

The savings for a Resource Zone therefore are consistent with the relative scale of the opportunity from the catalyst in a particular Zone compared to other Zones.

As the total household demand forecast may vary slightly year on year (e.g. due to growth), the savings from an initiative may fluctuate marginally from one year to the next as the proportion of total demand in that zone varies compared to the company total. The proportional allocation means the overall T100 target remains consistent when aggregated to the company total.

For reference:

- Volumes based on per property allocations - was rejected as this does not reflect the demand (and PCC) variation between zones.
- Volumes based on assessment of the catalysts at a specific zonal level - were rejected because the estimate of, say, a comms campaign on PCC at a zonal level cannot be precisely forecast.
- Volumes based on pcc – were rejected as the pcc value doesn't take into account the size of the zone and the total MI/d possible to save.

## 4.2 Leakage

The volumes are the cumulative savings from the leakage reduction programme. As set out in the main text, the tables are set for a delivery plan to set out a 62% leakage reduction.

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Annex 24: Water resource planning tables

Underlying Household Demand Forecasts used for Proportional Allocation

Source: SWS T100 forecast v9

In Ml/d

HH demand - T100 (NYAA)	Base-year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40
HA	8.99	9.80	9.86	9.88	9.84	9.79	9.75	9.57	9.40	9.22	9.06	8.89	8.72	8.56	8.40	8.24	8.08	7.93	7.77	7.62	7.47
HK	2.50	2.70	2.67	2.65	2.64	2.62	2.60	2.56	2.52	2.48	2.45	2.42	2.38	2.35	2.31	2.27	2.24	2.20	2.16	2.12	2.09
HW	8.86	10.00	10.02	10.03	10.04	10.05	10.07	9.97	9.87	9.72	9.56	9.40	9.26	9.11	8.95	8.78	8.62	8.45	8.27	8.10	7.93
HR	3.60	4.26	4.23	4.19	4.15	4.13	4.12	4.06	3.99	3.92	3.85	3.78	3.71	3.64	3.57	3.51	3.44	3.37	3.31	3.24	3.18
HSE	49.57	56.25	56.40	56.55	56.72	56.85	56.91	56.31	55.66	54.93	54.12	53.26	52.34	51.43	50.53	49.63	48.71	47.80	46.87	45.93	44.99
HSW	18.42	21.04	20.89	20.78	20.71	20.62	20.57	20.30	20.03	19.75	19.54	19.26	19.03	18.75	18.43	18.11	17.75	17.37	17.01	16.65	16.29
IOW	17.10	18.58	18.52	18.57	18.71	18.74	18.78	18.53	18.29	18.04	17.73	17.41	17.10	16.79	16.49	16.19	15.88	15.57	15.26	14.94	14.62
SN	35.77	39.52	39.46	39.57	39.71	39.78	39.84	37.44	36.73	36.11	35.50	34.87	34.24	33.62	33.00	32.39	31.78	31.16	30.55	29.94	29.34
SW	24.76	27.02	26.95	26.87	26.93	26.90	26.95	26.58	26.18	25.77	25.32	24.86	24.45	24.03	23.62	23.20	22.78	22.37	21.96	21.54	21.13
SB	50.97	55.27	55.10	55.07	55.07	55.12	55.17	54.56	53.96	53.30	52.63	51.93	51.21	50.47	49.71	48.94	48.16	47.35	46.52	45.68	44.83
KME	40.03	43.59	43.69	43.83	44.02	44.19	44.31	43.82	43.34	42.77	42.19	41.54	40.87	40.15	39.46	38.89	38.28	37.65	37.00	36.35	35.69
KMW	22.38	25.49	25.74	25.97	26.20	26.62	27.02	27.10	27.14	27.13	26.97	26.74	26.50	26.22	25.93	25.52	25.14	24.74	24.33	23.91	23.49
KT	24.65	28.52	28.86	29.33	29.66	29.84	30.00	29.80	29.51	29.11	28.64	28.11	27.62	27.13	26.64	26.16	25.67	25.18	24.68	24.19	23.70
SH	15.14	16.90	16.76	16.66	16.56	16.49	16.45	16.19	15.93	15.67	15.41	15.14	14.87	14.61	14.34	14.08	13.81	13.55	13.28	13.00	12.73
West area	109.05	122.62	122.59	122.65	122.81	122.80	122.79	121.31	119.75	118.06	116.32	114.41	112.55	110.62	108.67	106.72	104.72	102.69	100.65	98.60	96.57
Central area	111.50	121.80	121.52	121.52	121.70	121.80	121.96	118.58	116.87	115.18	113.45	111.66	109.91	108.12	106.33	104.54	102.72	100.89	99.03	97.17	95.30
East area	102.20	114.50	115.05	115.79	116.45	117.14	117.78	116.92	115.91	114.68	113.21	111.54	109.86	108.10	106.37	104.65	102.90	101.11	99.29	97.46	95.61
<b>SWS TOTAL</b>	<b>322.75</b>	<b>358.92</b>	<b>359.16</b>	<b>359.95</b>	<b>360.96</b>	<b>361.74</b>	<b>362.53</b>	<b>356.81</b>	<b>352.53</b>	<b>347.92</b>	<b>342.98</b>	<b>337.61</b>	<b>332.32</b>	<b>326.84</b>	<b>321.38</b>	<b>315.91</b>	<b>310.34</b>	<b>304.69</b>	<b>298.97</b>	<b>293.23</b>	<b>287.48</b>

Accompanying pcc

Overall Per Capita Consumption - T100 (NYAA)	Base-year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40
HA	125.16	133.91	132.45	131.33	130.35	129.62	128.99	126.70	124.31	122.03	119.77	117.38	114.97	112.55	110.14	107.74	105.32	102.92	100.49	98.06	95.74
HK	152.84	164.42	162.41	160.84	159.37	157.76	156.32	153.42	150.70	147.93	145.43	142.61	139.70	136.82	133.89	130.99	128.05	125.17	122.24	119.28	116.53
HW	122.72	136.27	134.12	132.43	131.04	129.93	129.12	126.86	124.65	122.25	119.98	117.63	115.47	113.10	110.71	108.29	105.90	103.52	101.10	98.62	96.20
HR	134.85	156.56	154.31	152.39	150.83	149.93	149.15	146.54	143.76	141.14	138.47	135.68	132.90	130.11	127.34	124.58	121.77	119.00	116.21	113.42	110.73
HSE	124.00	138.12	136.16	134.50	133.14	132.10	131.21	128.94	126.62	124.28	121.93	119.54	117.13	114.65	112.22	109.80	107.37	104.97	102.51	100.05	97.59
HSW	114.22	129.95	128.38	127.02	125.93	124.93	124.19	122.10	119.88	117.38	115.53	112.87	110.95	108.74	106.34	104.04	101.67	99.28	96.95	94.62	92.29
IOW	124.65	135.32	134.28	133.39	132.66	132.18	131.87	129.48	127.11	124.78	122.47	120.00	117.51	115.07	112.62	110.13	107.72	105.25	102.78	100.30	97.79
SN	131.95	144.06	142.70	141.46	140.49	139.67	138.99	130.04	127.14	124.78	122.41	120.01	117.59	115.14	112.69	110.24	107.81	105.34	102.85	100.38	97.83
SW	131.77	143.04	141.45	140.14	139.01	138.14	137.38	135.05	132.62	130.15	127.64	125.13	122.68	120.14	117.59	115.03	112.46	109.91	107.34	104.73	102.10
SB	138.52	148.93	147.11	145.54	144.26	143.18	142.33	139.71	137.18	134.62	132.05	129.46	126.90	124.28	121.63	119.00	116.38	113.75	111.10	108.43	105.80
KME	125.46	135.53	133.87	132.46	131.29	130.31	129.46	127.20	124.90	122.63	120.29	117.86	115.51	113.09	110.68	108.37	105.98	103.58	101.14	98.73	96.28
KMW	124.75	139.29	137.31	135.80	134.51	133.34	132.37	130.16	127.80	125.53	123.25	120.85	118.48	116.04	113.54	111.01	108.47	106.02	103.52	101.05	98.53
KT	123.68	141.43	139.73	138.31	137.26	136.35	135.59	133.25	130.83	128.51	126.09	123.60	121.13	118.61	116.07	113.55	111.06	108.54	105.98	103.43	100.83
SH	137.70	153.46	151.96	150.66	149.72	148.90	148.21	145.63	142.97	140.26	137.59	134.90	132.12	129.40	126.62	123.88	121.13	118.42	115.64	112.84	110.94
West area	123.17	136.76	135.03	133.58	132.38	131.45	130.69	128.41	126.08	123.70	121.44	118.97	116.64	114.21	111.77	109.34	106.91	104.49	102.04	99.58	97.14
Central area	134.83	146.00	144.38	142.98	141.83	140.89	140.11	135.48	132.86	130.39	127.91	125.41	122.93	120.39	117.83	115.28	112.73	110.18	107.60	105.01	102.41
East area	126.53	140.25	138.51	137.07	135.91	134.90	134.05	131.73	129.33	126.98	124.59	122.11	119.67	117.18	114.66	112.17	109.69	107.20	104.67	102.16	99.60
<b>SWS TOTAL</b>	<b>128.07</b>	<b>140.90</b>	<b>139.20</b>	<b>137.76</b>	<b>136.59</b>	<b>135.63</b>	<b>134.84</b>	<b>131.79</b>	<b>129.34</b>	<b>126.94</b>	<b>124.56</b>	<b>122.08</b>	<b>119.66</b>	<b>117.18</b>	<b>114.68</b>	<b>112.19</b>	<b>109.71</b>	<b>107.22</b>	<b>104.71</b>	<b>102.19</b>	<b>99.66</b>



## 5. Table 5a Cost Profiles

### 5.1 T100

#### General

This sets out the table commentary for the demand management (T100) actions included in Table 5a.

Entries were included as follows:

- Preferred options – included for each of the 7 catalyst areas/feasible options for each Resource Zone.

All demand management options are classified as opex with the following exceptions:

- Smart metering – meters, installation and IT infrastructure costs are classified as capex.
- Water efficiency solutions and products (inc innovation) – the sub option of colour showers/more efficient showers is classified as capex.

As the long-term activities in the innovation programme cannot be forecast, this option was classified as opex. However, this will be reviewed for the Final Plan classification as it may be more appropriate to classify this research area as capital spend.

The T100 programme sets a target by 2040. The tables have been filled in assuming the activities are maintained thereafter unless stated otherwise order to maintain the savings.

No entry included for the risk adjustment as not required.

No entry included for growth offsetting as this is assumed to be delivered through the other initiatives. This will be reviewed for the final plan following feedback on the overall targets for demand reduction.

#### Capex

The annual capex for the catalyst in each Resource Zone.

The Zonal cost is based on a proportional allocation of the programme capex based on the property numbers in that Zone. This is consistent with how the catalysts have been built in the programme (e.g. smart metering capex is based on the numbers of properties where meters are installed).

No on-going maintenance cost is included for metering post 2040 as this was not available at the time.

#### Opex

The annual opex for the catalyst in each Resource Zone.

The Zonal cost is based on a proportional allocation of the programme opex based on the property numbers in that Zone. This is consistent with how the catalysts have been built in the programme (e.g. water audits are based on numbers of homes audited).

All activities are forecast to continue after 2040, with the costs in that year maintained through the planning horizon with the following exceptions:

- Water audits – ends in 2040 as the programme is no longer cost effective.

The opex is the enhancement opex cost. It does not include the cost saving from a reduced production of water. The reason is twofold:

- Definition – the line definition is “total opex enhancement”. This has been interpreted as excluding base (or current costs). However, this has been included in the supporting appendix to show the net base opex impact.
- Current operating costs – current energy costs are at high and are not considered to be representative of costs over the next 80 years. Inclusion of the current opex production costs savings would therefore bias the comparison of options.

### Financing costs/Discounting

This has been calculated using the example in Table 5c. The parameters used were:

- WACC = 2.92%
- Asset lives
  - Smart metering - 15 years (blend of 10 years for the meter + infra assets and IT)
  - Water efficiency products and services – 10 years
- Discounting
  - Discount rate of 3.5% used
  - Yr 1 = 2022/23

### Capex (costed risk/optimism bias)

Excluded.

### NPC

NPC given by the sum of:

(Financing cost + opex cost) \* discount factor for each year

### Underlying Household Demand Forecasts used for Proportional Allocation

Source: SWS T100 forecast v9

HH demand - T100 (NYAA)

	Base-year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40
HA	8.99	9.80	9.86	9.88	9.84	9.79	9.75	9.57	9.40	9.22	9.06	8.89	8.72	8.56	8.40	8.24	8.08	7.93	7.77	7.62	7.47
HK	2.50	2.70	2.67	2.65	2.64	2.62	2.60	2.56	2.52	2.48	2.45	2.42	2.38	2.35	2.31	2.27	2.24	2.20	2.16	2.12	2.09
HW	8.86	10.00	10.02	10.03	10.04	10.05	10.07	9.97	9.87	9.72	9.56	9.40	9.26	9.11	8.95	8.78	8.62	8.45	8.27	8.10	7.93
HR	3.60	4.26	4.23	4.19	4.15	4.13	4.12	4.06	3.99	3.92	3.85	3.78	3.71	3.64	3.57	3.51	3.44	3.37	3.31	3.24	3.18
HSE	49.57	56.25	56.40	56.55	56.72	56.85	56.91	56.31	55.66	54.93	54.12	53.26	52.34	51.43	50.53	49.63	48.71	47.80	46.87	45.93	44.99
HSW	18.42	21.04	20.89	20.78	20.71	20.62	20.57	20.30	20.03	19.75	19.54	19.26	19.03	18.75	18.43	18.11	17.75	17.37	17.01	16.65	16.29
IOW	17.10	18.58	18.52	18.57	18.71	18.74	18.78	18.53	18.29	18.04	17.73	17.41	17.10	16.79	16.49	16.19	15.88	15.57	15.26	14.94	14.62
SN	35.77	39.52	39.46	39.57	39.71	39.78	39.84	37.44	36.73	36.11	35.50	34.87	34.24	33.62	33.00	32.39	31.78	31.16	30.55	29.94	29.34
SW	24.76	27.02	26.95	26.87	26.93	26.90	26.95	26.58	26.18	25.77	25.32	24.86	24.45	24.03	23.62	23.20	22.78	22.37	21.96	21.54	21.13
SB	50.97	55.27	55.10	55.07	55.07	55.12	55.17	54.56	53.96	53.30	52.63	51.93	51.21	50.47	49.71	48.94	48.16	47.35	46.52	45.68	44.83
KME	40.03	43.59	43.69	43.83	44.02	44.19	44.31	43.82	43.34	42.77	42.19	41.54	40.87	40.15	39.46	38.89	38.28	37.65	37.00	36.35	35.69
KMW	22.38	25.49	25.74	25.97	26.20	26.62	27.02	27.10	27.14	27.13	26.97	26.74	26.50	26.22	25.93	25.52	25.14	24.74	24.33	23.91	23.49
KT	24.65	28.52	28.86	29.33	29.66	29.84	30.00	29.80	29.51	29.11	28.64	28.11	27.62	27.13	26.64	26.16	25.67	25.18	24.68	24.19	23.70
SH	15.14	16.90	16.76	16.66	16.56	16.49	16.45	16.19	15.93	15.67	15.41	15.14	14.87	14.61	14.34	14.08	13.81	13.55	13.28	13.00	12.73
West area	109.05	122.62	122.59	122.65	122.81	122.80	122.79	121.31	119.75	118.06	116.32	114.41	112.55	110.62	108.67	106.72	104.72	102.69	100.65	98.60	96.57
Central area	111.50	121.80	121.52	121.52	121.70	121.80	121.96	118.58	116.87	115.18	113.45	111.66	109.91	108.12	106.33	104.54	102.72	100.89	99.03	97.17	95.30
East area	102.20	114.50	115.05	115.79	116.45	117.14	117.78	116.92	115.91	114.68	113.21	111.54	109.86	108.10	106.37	104.65	102.90	101.11	99.29	97.46	95.61
<b>SWS TOTAL</b>	<b>322.75</b>	<b>358.92</b>	<b>359.16</b>	<b>359.95</b>	<b>360.96</b>	<b>361.74</b>	<b>362.53</b>	<b>356.81</b>	<b>352.53</b>	<b>347.92</b>	<b>342.98</b>	<b>337.61</b>	<b>332.32</b>	<b>326.84</b>	<b>321.38</b>	<b>315.91</b>	<b>310.34</b>	<b>304.69</b>	<b>298.97</b>	<b>293.23</b>	<b>287.48</b>

### Accompanying pcc

Overall Per Capita Consumption - T100 (NYAA)

	Base-year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40
HA	125.16	133.91	132.45	131.33	130.35	129.62	128.99	126.70	124.31	122.03	119.77	117.38	114.97	112.55	110.14	107.74	105.32	102.92	100.49	98.06	95.74
HK	152.84	164.42	162.41	160.84	159.37	157.76	156.32	153.42	150.70	147.93	145.43	142.61	139.70	136.82	133.89	130.99	128.05	125.17	122.24	119.28	116.53
HW	122.72	136.27	134.12	132.43	131.04	129.93	129.12	126.86	124.65	122.25	119.98	117.63	115.47	113.10	110.71	108.29	105.90	103.52	101.10	98.62	96.20
HR	134.85	156.56	154.31	152.39	150.83	149.93	149.15	146.54	143.76	141.14	138.47	135.68	132.90	130.11	127.34	124.58	121.77	119.00	116.21	113.42	110.73
HSE	124.00	138.12	136.16	134.50	133.14	132.10	131.21	128.94	126.62	124.28	121.93	119.54	117.13	114.65	112.22	109.80	107.37	104.97	102.51	100.05	97.59
HSW	114.22	129.95	128.38	127.02	125.93	124.93	124.19	122.10	119.88	117.38	115.53	112.87	110.95	108.74	106.34	104.04	101.67	99.28	96.95	94.62	92.29
IOW	124.65	135.32	134.28	133.39	132.66	132.18	131.87	129.48	127.11	124.78	122.47	120.00	117.51	115.07	112.62	110.13	107.72	105.25	102.78	100.30	97.79
SN	131.95	144.06	142.70	141.46	140.49	139.67	138.99	130.04	127.14	124.78	122.41	120.01	117.59	115.14	112.69	110.24	107.81	105.34	102.85	100.38	97.83
SW	131.77	143.04	141.45	140.14	139.01	138.14	137.38	135.05	132.62	130.15	127.64	125.13	122.68	120.14	117.59	115.03	112.46	109.91	107.34	104.73	102.10
SB	138.52	148.93	147.11	145.54	144.26	143.18	142.33	139.71	137.18	134.62	132.05	129.46	126.90	124.28	121.63	119.00	116.38	113.75	111.10	108.43	105.80
KME	125.46	135.53	133.87	132.46	131.29	130.31	129.46	127.20	124.90	122.63	120.29	117.86	115.51	113.09	110.68	108.37	105.98	103.58	101.14	98.73	96.28
KMW	124.75	139.29	137.31	135.80	134.51	133.34	132.37	130.16	127.80	125.53	123.25	120.85	118.48	116.04	113.54	110.91	108.47	106.02	103.52	101.05	98.53
KT	123.68	141.43	139.73	138.31	137.26	136.35	135.59	133.25	130.83	128.51	126.09	123.60	121.13	118.61	116.07	113.55	111.06	108.54	105.98	103.43	100.83
SH	137.70	153.46	151.96	150.66	149.72	148.90	148.21	145.63	142.97	140.26	137.59	134.90	132.12	129.40	126.62	123.88	121.13	118.42	115.64	112.84	109.94
West area	123.17	136.76	135.03	133.58	132.38	131.45	130.69	128.41	126.08	123.70	121.44	118.97	116.64	114.21	111.77	109.34	106.91	104.49	102.04	99.58	97.14
Central area	134.83	146.00	144.38	142.98	141.83	140.89	140.11	135.48	132.86	130.39	127.91	125.41	122.93	120.39	117.83	115.28	112.73	110.18	107.60	105.01	102.41
East area	126.53	140.25	138.51	137.07	135.91	134.90	134.05	131.73	129.33	126.98	124.59	122.11	119.67	117.18	114.66	112.17	109.69	107.20	104.67	102.16	99.60
<b>SWS TOTAL</b>	<b>128.07</b>	<b>140.90</b>	<b>139.20</b>	<b>137.76</b>	<b>136.59</b>	<b>135.63</b>	<b>134.84</b>	<b>131.79</b>	<b>129.34</b>	<b>126.94</b>	<b>124.56</b>	<b>122.08</b>	<b>119.66</b>	<b>117.18</b>	<b>114.68</b>	<b>112.19</b>	<b>109.71</b>	<b>107.22</b>	<b>104.71</b>	<b>102.19</b>	<b>99.66</b>

## 5.2 Leakage

Leakage costs are included for each Resource Zone as follows:

Opex: Advanced Find and Fix + Smart Metering

Capex: All other actions

Financing costs: capex costs with an average asset life of 40 years and WACC of 3.29%.

The financing costs follow the example in Table 5c and include depreciation.

The costs in this table include the mains replacement expenditure to give the true total programme cost of managing leakage, independent of regulatory financial allocations.

The AIC calc in Table 4 includes a value for opex only. Inclusion of the whole capex programme gives a value >100p/m3. However, as this contains significant expenditure on mains replacement to hold the natural rate of rise of leakage, this figure cannot be compared directly with other options.

WRMP24 Leakage Reduction Benefits and Costs	AMP8			AMP9			AMP10			AMP11			AMP12		
	Ml/d	£m	£m/Ml/d	Ml/d	£m	£m/Ml/d	Ml/d	£m	£m/Ml/d	Ml/d	£m	£m/Ml/d	Ml/d	£m	£m/Ml/d
Advanced F&F	4.13	6.61	1.60	6.69	10.70	1.60	7.98	12.77	1.60	9.60	15.36	1.60	2.14	3.43	1.60
Comms Pipe Replacement	1.77	13.59	7.68	1.37	13.59	9.93	1.06	13.59	12.83	0.82	13.59	16.58	0.63	13.59	21.43
Advanced Pressure Management	1.80	1.59	0.88	2.40	2.12	0.88	1.80	1.59	0.88	0.00	0.00	0.88	0.00	0.00	0.88
Smart Metering	7.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Digitalisation/Smart Networks	0.84	13.26	15.75	0.84	5.55	6.59	1.84	6.38	3.46	1.69	6.38	3.77	1.56	5.83	3.72
Mains Replacement (Net of NRR)	-2.11	413.75	46.52	-2.11	413.75	46.52	-2.11	413.75	46.52	-2.11	413.75	46.52	-2.11	413.75	46.52
<b>Total Reduction Requirement</b>	<b>13.95</b>	<b>448.80</b>	<b>16.59</b>	<b>9.19</b>	<b>445.72</b>	<b>20.49</b>	<b>10.58</b>	<b>448.08</b>	<b>19.18</b>	<b>10.01</b>	<b>449.08</b>	<b>19.70</b>	<b>2.24</b>	<b>436.59</b>	<b>31.26</b>

(Note: Total mains replacement benefit is 8.89 Ml/d)

(Note: No cost for Smart Metering included. Assumed to be included in Demand programme)

## 6. Table 6 Drought Plan Links

### General

The underlying data for this table is taken from the WRSE option upload spreadsheet "CATA1\_WRSE option upload". The template was used to populate the options database with information required for option appraisal, environmental analysis and the investment modeller.

### Demand measures

Both TUBs and NEUBs can be located in the "CATA1\_WRSE option upload" tab "Metrics". This tab is used to enter the attributes about options.

### Supply measures

All supply measures data is located in the "CATA1\_WRSE option upload" tab "Profiles". This table is used to enter the attributes about options.

## 7. Table 8 Business Plan Links

### 6.1 Demand Measures

## General

This sets out the table commentary for the demand management costs in Table 8 (lines B4 and B5).

The guidelines state this should include expenditure that “*enhances the supply-demand balance*” (see below).

As demand measures are reducing demand, they are all de facto contributing to an enhancement of the supply-demand balance.

These lines have therefore been completed as follows:

*The total cost of the T100 demand reduction programme*

*Less*

*Smart metering programme (included in other lines)*

As demand management forms a central part of the programme is included for: least cost, preferred plan and core programme.

B4	Demand-side improvements (excl. leakage and metering) - capex	£m
Notes:	Expenditure that enhances the supply-demand balance. Includes expenditure associated with schemes delivering demand side (water efficiency options) enhancements. This excludes benefits from leakage and metering activities. The benefits (M/d) associated with this expenditure are included in line E2. Expenditure recorded should be that resulting from adoption of the specified programme.	
Processing rules:	Input	

## B4 Demand Side Improvements (ex leakage and metering) Capex

This is the capex from Table 5a for all T100 initiatives excluding smart metering. Totals are as follows with copy of Table 5a below.

25/26 = £1.05m

26/27 = £1.05m

27/28 = £1.4m

Option ID	Option Name	Cost Metric (€m)	Cost Sub-metric (€m)	Asset Life: Estimated average number of years an asset is considered unusable before its value is fully depreciated.	Total/Fixed/Variable	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
SWS_HA_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (HA)	Capex		10	Total							0.0306344	0.0306344	0.040845824		
SWS_HK_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (HK)	Capex		10	Total							0.0059395	0.0059395	0.007919343		
SWS_HW_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (HW)	Capex		10	Total	0	0	0	0	0	0	0.0114293	0.0114293	0.015239115	0	0
SWS_HR_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (HR)	Capex		10	Total	0	0	0	0	0	0	0.1880675	0.1880675	0.224089936	0	0
SWS_HSE_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (HSE)	Capex		10	Total	0	0	0	0	0	0	0.0288544	0.0288544	0.03847252	0	0
SWS_HSW_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (HSW)	Capex		10	Total	0	0	0	0	0	0	0.0682013	0.0682013	0.090935046	0	0
SWS_IOW_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (IOW)	Capex		10	Total	0	0	0	0	0	0	0.1128319	0.1128319	0.150442541	0	0
SWS_SN_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (SN)	Capex		10	Total	0	0	0	0	0	0	0.0844085	0.0844085	0.112544611	0	0
SWS_SW_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (SW)	Capex		10	Total	0	0	0	0	0	0	0.1573688	0.1573688	0.209825125	0	0
SWS_SB_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (SB)	Capex		10	Total	0	0	0	0	0	0	0.1308859	0.1308859	0.174487866	0	0
SWS_KME_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (KME)	Capex		10	Total	0	0	0	0	0	0	0.0748434	0.0748434	0.099791221	0	0
SWS_KMW_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (KMW)	Capex		10	Total	0	0	0	0	0	0	0.0975241	0.0975241	0.13003212	0	0
SWS_KT_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (KT)	Capex		10	Total	0	0	0	0	0	0	0.0501579	0.0501579	0.066877231	0	0
SWS_SH_T100_Solutions and Products	Water efficiency solutions and products (inc innovation) (SHT)	Capex		10	Total	0	0	0	0	0	0	0.0501579	0.0501579	0.066877231	0	0

### B4 Demand Side Improvements (ex leakage and metering) Opex

This is the opex from Table 5a for all T100 initiatives excluding smart metering. Totals are a copy of Table 5a for all zones.

## 6.2 Metering

### General

This sets out the table commentary for the metering data in Table 8.

All data is taken from the smart metering investment model. The raw output of which is set out below.

		AMP-7	AMP-8	AMP-9	AMP-10	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
<b>1. Smart Meters Installed per year</b>																					
HH																					
AMR																					
VMR																					
New Dev																					
Unmetered																					
Sub total																					
NHH																					
<b>Total</b>																					
<b>2. Costs</b>																					
Smart asset (€m)	CAPEX	0.9	10.0	12.3	12.7	14.1	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH		0.9	9.5	11.8	12.1	13.5	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NHH		0.0	0.5	0.6	0.6	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Network Infrastructure (€m)	OPEX	0.0	0.6	1.2	1.7	2.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
HH		0.0	0.6	1.1	1.7	2.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
NHH		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Costs (€m)	CAPEX	3.2	13.8	17.0	17.5	19.5	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH - Metered Replacement		0.0	13.1	16.7	16.7	18.3	11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH - New Developments Install		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH - Unmetered Install		3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NHH Replacement		0.0	0.6	0.6	0.8	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FTE/IT Costs (€m)	CAPEX	0.3	8.1	5.2	1.7	1.6	1.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Meter Reader Costs (€m)	OPEX	0.7	0.3	-0.2	-0.7	-1.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
OPEX (€m)		0.7	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
HH		0.7	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
NHH		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAPEX (€m)		4.2	31.9	34.6	31.9	35.2	22.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
HH (all FTE/IT)		4.2	30.8	33.2	30.5	33.6	21.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NHH (no FTE/IT)		0.0	1.1	1.4	1.4	1.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>3. Annual Benefits</b>																					
Leakage Savings (ML/d)		-	-	-	3.54	5.30	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24	7.24
PCC Savings (ML/d)		-	-	-	5.37	8.03	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.97

Note: VMR = visual meter read or dumb meter  
Source: Baringa Smart Metering Model v1.14

The metering programme is a replacement programme from AMR/dumb to AMI meters.

For the purposes of the Draft Submission, all costs are assumed as enhancement as a change in service performance and an improvement to the supply-demand balance.

The smart metering programme is included in both the least cost, preferred and core programme as it is central to all.





**Note: the WRSE core programme is scenario 4 which includes smart metering and the T100 programme.**

**C1.2 New AMR meters requested by existing customers (optants)** **Capex**  
14,432 meters (see detail above).

Total capex £3.2m

**C2.2 New AMR meters requested by existing customers (optants)** **Opex**  
£0.35m. Based on total opex of £0.7m proportionally allocated based on total meter installs for HH vs new development.

**C4 New meters introduced by companies for existing customers** **Capex**  
Sum of C4.1-4.3

Note: although the line title in the WRMP tables says 'optants', the tables guidelines say existing customers. The latter is assumed.

**C4.1 New basic meters introduced by companies for existing customers** **Capex**  
None.

**C4.3 New AMI meters introduced by companies for existing customers** **Capex**  
Given by the install costs for HH metered.

**C5.2 New AMR meters introduced by companies for existing customers** **Opex**  
Given by meter reading opex for 24/25.

**C5.3 New AMI meters introduced by companies for existing customers** **Opex**  
Given by meter reading total opex costs from 25/26 onwards.

**C7.3 New AMI meters for existing customers - business** **Capex**  
Given by install cost for NonHH.

**C8.3 New AMI meters for existing customers - business** **Opex**  
Null entry. No separate cost estimate from the overall network infra costs. Will be updated for the Business Plan.

**C11 Replacement of existing basic meters with AMI meters** **Capex**  
These lines are not filled in as only for companies with smart metering in PR19.

**C12 Smart metering infrastructure** **Capex**  
Sum of the smart asset and FTE/IT install costs.

**C15 Smart metering infrastructure** **Opex**  
Network infrastructure opex. Note – there is an offsetting reduction in meter reading opex included in the other meter opex.

Check references

The following table shows the allocation of costs

			AMP-8	2026	2027	AMP-9	2029	2030	2031	2032	AMP-9	2034	2035	2036	2037	AMP-10	2039	2040
			2025															
<b>1 Smart Meters Installed per year</b>																		
HH																		
AMH			-	98,107	130,000	141,203	151,999	162,801	-	-	-	-	-	-	-	-	-	-
NMH			-	60,868	60,868	60,868	60,868	60,868	-	-	-	-	-	-	-	-	-	-
New Dev			10,000	10,000	10,000	10,000	10,000	10,000	-	-	-	-	-	-	-	-	-	-
Unmanned			14,432	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub total			26,432	170,975	207,893	214,071	236,901	254,469	-	-	-	-	-	-	-	-	-	-
NHH			-	7,868	9,695	10,001	11,114	7,051	-	-	-	-	-	-	-	-	-	-
<b>2 Costs</b>		Type																
Smart asset (Em)	CAPEX	C12	0.3	10.0	12.3	12.7	14.1	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH			0.0	9.3	11.4	12.1	13.5	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NHH			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Network Infrastructure (Em)	OPEX	C15	0.0	0.0	1.2	1.7	2.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
HH			0.0	0.0	1.2	1.7	2.4	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
NHH			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Costs (Em)	CAPEX		3.2	13.8	17.0	17.5	19.5	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH - Metered Replacement			0.0	11.3	16.2	16.9	18.5	11.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH - New Developments Install			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HH - Unmanned Install			3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NHH - Metered Replacement			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NHH - New Developments Install			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NHH - Unmanned Install			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AMP Replacement	CAPEX	C7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FTTH Costs (Em)	CAPEX	C12	0.1	9.1	5.2	3.7	3.4	3.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Meter Reader Costs (Em)	OPEX	C2.2 (50% for 24/25 for optants only) and C5.3	0.7	0.3	-0.2	-0.7	-1.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7



### Underlying Household Demand Forecasts used for Proportional Allocation

Source: SWS T100 forecast v9

#### In MI/d

HH demand - T100 (NYAA)

	Base-year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40
HA	8.99	9.80	9.86	9.88	9.84	9.79	9.75	9.57	9.40	9.22	9.06	8.89	8.72	8.56	8.40	8.24	8.08	7.93	7.77	7.62	7.47
HK	2.50	2.70	2.67	2.65	2.64	2.62	2.60	2.56	2.52	2.48	2.45	2.42	2.38	2.35	2.31	2.27	2.24	2.20	2.16	2.12	2.09
HW	8.86	10.00	10.02	10.03	10.04	10.05	10.07	9.97	9.87	9.72	9.56	9.40	9.26	9.11	8.95	8.78	8.62	8.45	8.27	8.10	7.93
HR	3.60	4.26	4.23	4.19	4.15	4.13	4.12	4.06	3.99	3.92	3.85	3.78	3.71	3.64	3.57	3.51	3.44	3.37	3.31	3.24	3.18
HSE	49.57	56.25	56.40	56.55	56.72	56.85	56.91	56.31	55.66	54.93	54.12	53.26	52.34	51.43	50.53	49.63	48.71	47.80	46.87	45.93	44.99
HSW	18.42	21.04	20.89	20.78	20.71	20.62	20.57	20.30	20.03	19.75	19.54	19.26	19.03	18.75	18.43	18.11	17.75	17.37	17.01	16.65	16.29
IOW	17.10	18.58	18.52	18.57	18.71	18.74	18.78	18.53	18.29	18.04	17.73	17.41	17.10	16.79	16.49	16.19	15.88	15.57	15.26	14.94	14.62
SN	35.77	39.52	39.46	39.57	39.71	39.78	39.84	37.44	36.73	36.11	35.50	34.87	34.24	33.62	33.00	32.39	31.78	31.16	30.55	29.94	29.34
SW	24.76	27.02	26.95	26.87	26.93	26.90	26.95	26.58	26.18	25.77	25.32	24.86	24.45	24.03	23.62	23.20	22.78	22.37	21.96	21.54	21.13
SB	50.97	55.27	55.10	55.07	55.07	55.12	55.17	54.56	53.96	53.30	52.63	51.93	51.21	50.47	49.71	48.94	48.16	47.35	46.52	45.68	44.83
KME	40.03	43.59	43.69	43.83	44.02	44.19	44.31	43.82	43.34	42.77	42.19	41.54	40.87	40.15	39.46	38.89	38.28	37.65	37.00	36.35	35.69
KMW	22.38	25.49	25.74	25.97	26.20	26.62	27.02	27.10	27.14	27.13	26.97	26.74	26.50	26.22	25.93	25.52	25.14	24.74	24.33	23.91	23.49
KT	24.65	28.52	28.86	29.33	29.66	29.84	30.00	29.80	29.51	29.11	28.64	28.11	27.62	27.13	26.64	26.16	25.67	25.18	24.68	24.19	23.70
SH	15.14	16.90	16.76	16.66	16.56	16.49	16.45	16.19	15.93	15.67	15.41	15.14	14.87	14.61	14.34	14.08	13.81	13.55	13.28	13.00	12.73
West area	109.05	122.62	122.59	122.65	122.81	122.80	122.79	121.31	119.75	118.06	116.32	114.41	112.55	110.62	108.67	106.72	104.72	102.69	100.65	98.60	96.57
Central area	111.50	121.80	121.52	121.52	121.70	121.80	121.96	118.58	116.87	115.18	113.45	111.66	109.91	108.12	106.33	104.54	102.72	100.89	99.03	97.17	95.30
East area	102.20	114.50	115.05	115.79	116.45	117.14	117.78	116.92	115.91	114.68	113.21	111.54	109.86	108.10	106.37	104.65	102.90	101.11	99.29	97.46	95.61
<b>SWS TOTAL</b>	<b>322.75</b>	<b>358.92</b>	<b>359.16</b>	<b>359.95</b>	<b>360.96</b>	<b>361.74</b>	<b>362.53</b>	<b>356.81</b>	<b>352.53</b>	<b>347.92</b>	<b>342.98</b>	<b>337.61</b>	<b>332.32</b>	<b>326.84</b>	<b>321.38</b>	<b>315.91</b>	<b>310.34</b>	<b>304.69</b>	<b>298.97</b>	<b>293.23</b>	<b>287.48</b>

#### Accompanying pcc

Overall Per Capita Consumption - T100 (NYAA)

	Base-year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40
HA	125.16	133.91	132.45	131.33	130.35	129.62	128.99	126.70	124.31	122.03	119.77	117.38	114.97	112.55	110.14	107.74	105.32	102.92	100.49	98.06	95.74
HK	152.84	164.42	162.41	160.84	159.37	157.76	156.32	153.42	150.70	147.93	145.43	142.61	139.70	136.82	133.89	130.99	128.05	125.17	122.24	119.28	116.53
HW	122.72	136.27	134.12	132.43	131.04	129.93	129.12	126.86	124.65	122.25	119.98	117.63	115.47	113.10	110.71	108.29	105.90	103.52	101.10	98.62	96.20
HR	134.85	156.56	154.31	152.39	150.83	149.93	149.15	146.54	143.76	141.14	138.47	135.68	132.90	130.11	127.34	124.58	121.77	119.00	116.21	113.42	110.73
HSE	124.00	138.12	136.16	134.50	133.14	132.10	131.21	128.94	126.62	124.28	121.93	119.54	117.13	114.65	112.22	109.80	107.37	104.97	102.51	100.05	97.59
HSW	114.22	129.95	128.38	127.02	125.93	124.93	124.19	122.10	119.88	117.38	115.53	112.87	110.95	108.74	106.34	104.04	101.67	99.28	96.95	94.62	92.29
IOW	124.65	135.32	134.28	133.39	132.66	132.18	131.87	129.48	127.11	124.78	122.47	120.00	117.51	115.07	112.62	110.13	107.72	105.25	102.78	100.30	97.79
SN	131.95	144.06	142.70	141.46	140.49	139.67	138.99	130.04	127.14	124.78	122.41	120.01	117.59	115.14	112.69	110.24	107.81	105.34	102.85	100.38	97.83
SW	131.77	143.04	141.45	140.14	139.01	138.14	137.38	135.05	132.62	130.15	127.64	125.13	122.68	120.14	117.59	115.03	112.46	109.91	107.34	104.73	102.10
SB	138.52	148.93	147.11	145.54	144.26	143.18	142.33	139.71	137.18	134.62	132.05	129.46	126.90	124.28	121.63	119.00	116.38	113.75	111.10	108.43	105.80
KME	125.46	135.53	133.87	132.46	131.29	130.31	129.46	127.20	124.90	122.63	120.29	117.86	115.51	113.09	110.68	108.37	105.98	103.58	101.14	98.73	96.28
KMW	124.75	139.29	137.31	135.80	134.51	133.34	132.37	130.16	127.80	125.53	123.25	120.85	118.48	116.04	113.54	110.91	108.47	106.02	103.52	101.05	98.53
KT	123.68	141.43	139.73	138.31	137.26	136.35	135.59	133.25	130.83	128.51	126.09	123.60	121.13	118.61	116.07	113.55	111.06	108.54	105.98	103.43	100.83
SH	137.70	153.46	151.96	150.66	149.72	148.90	148.21	145.63	142.97	140.26	137.59	134.90	132.12	129.40	126.62	123.88	121.13	118.42	115.64	112.84	109.94
West area	123.17	136.76	135.03	133.58	132.38	131.45	130.69	128.41	126.08	123.70	121.44	119.17	116.64	114.21	111.77	109.34	106.91	104.49	102.04	99.58	97.14
Central area	134.83	146.00	144.38	142.98	141.83	140.89	140.11	135.48	132.86	130.39	127.91	125.41	122.93	120.39	117.83	115.28	112.73	110.18	107.60	105.01	102.41
East area	126.53	140.25	138.51	137.07	135.91	134.90	134.05	131.73	129.33	126.98	124.59	122.11	119.67	117.18	114.66	112.17	109.69	107.20	104.67	102.16	99.60
<b>SWS TOTAL</b>	<b>128.07</b>	<b>140.90</b>	<b>139.20</b>	<b>137.76</b>	<b>136.59</b>	<b>135.63</b>	<b>134.84</b>	<b>131.79</b>	<b>129.34</b>	<b>126.94</b>	<b>124.56</b>	<b>122.08</b>	<b>119.66</b>	<b>117.18</b>	<b>114.68</b>	<b>112.19</b>	<b>109.71</b>	<b>107.22</b>	<b>104.71</b>	<b>102.19</b>	<b>99.66</b>

**E5.5 Benefits from replacing (or upgrading) existing basic or AMR meters with AMI meters (household)**

This line asks for all the benefits from “all metering activities in the specified programme”.

Benefits from the sum of:

smart metering option (t100\_[RZ]\_smart metering) in Table 5a.

+

Tariff option (T100\_[RZ]\_Tariff) in Table 5a