



Thames Water

Final Water Resources Management Plan 2015 - 2040

Main Report



Section 6: Baseline Supply Demand Position

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Section 6 Baseline Supply Demand Position

In this section we provide the baseline supply demand position for each of our six water resource zones. A large and increasing supply demand deficit is shown in the London zone and deficits also exist in the mid-long term in the Swindon and Oxfordshire, Slough, Wycombe and Aylesbury and Guildford zones. The other two zones remain in surplus throughout. The forecast deficit in London is driven by a combination of population growth and climate change impacts. These also drive the SWOX deficit with the addition of sustainability reductions.

The baseline supply demand position is defined as:

“The resulting supply demand balance assuming no activity beyond the immediate AMP period other than that required to maintain leakage or that required by law.”

By comparing the profile of the unrestricted **demand** (Section 3), against the available **supply** (Section 4), plus an **allowance for uncertainty** (Section 5), a baseline supply demand balance for each WRZ is created.

This highlights if there is a “planning problem” i.e. a forecasted deficit in any zone before significant intervention from the company. We test this for both the dry year annual average (DYAA) and average day peak week (ADPW) condition, where appropriate. It is possible that deficits exist under both conditions. In this situation the condition showing the larger deficit takes precedence, although the plan must provide a solution to both.

The remainder of this section is structured as follows:

- Activity within the Baseline scenario
- Summary Baseline position
- What happens next?

6.1 Activity within the Baseline Scenario

It is assumed that activity included in price limits for the period 2010-2015 is delivered as planned. Section 2 shows we are on track to deliver our commitments.

Baseline activity beyond 2015 is restricted to the following components, which are summarised in Table 6-1.

- Leakage levels are maintained at the target position for 2015
- Optant metering programme continues at the current level.
- Water efficiency continues to be promoted to our customers.

The baseline forecast assumes no other supply-demand intervention activity is undertaken.

The detail behind the optant metering and water efficiency forecast was presented in a preceding section (Section 3).

In our final plan (see Section 9) we have a programme of further metering.

Table 6-1: Activity within the Baseline programme

| Activity | Unit | 2015-20 | 2020-25 | 2025-30 | 2030-35 | 2035-40 |
|----------------------------|------|---------|---------|---------|---------|---------|
| Optant Metering | 000 | 120,000 | 120,000 | 120,000 | 120,000 | 120,000 |
| Water Efficiency | MI/d | 3.45 | 3.45 | 3.45 | 3.45 | 3.45 |
| Leakage Forecast | MI/d | 665 | 665 | 665 | 665 | 665 |
| Selective Metering | 000 | 0 | 0 | 0 | 0 | 0 |
| Water Resource Development | None | | | | | |

6.2 Baseline supply demand position

The baseline supply demand position by zone is shown in Table 6-2 below and summary graphs within the following sub-sections.

London: we forecast a growing deficit on a dry year annual average increasing from -59 MI/d in 2015 to -414MI/d in 2040. The increased deficit in the long-term is driven primarily by increases in headroom. There has been a small short-term increase to reflect the inclusion of the updated outage allowance (AR13) and the additional bulk supply requirement to Affinity Water under the existing Fortis Green agreement.

Swindon and Oxfordshire: we predict a deficit on a dry year critical period growing from 0 MI/d in 2020 to -33 MI/d by 2040. These changes are principally driven by the impact of climate change on groundwater sources and therefore a reduction in available deployable output.

Slough, Wycombe and Aylesbury: we predict a small deficit in dry year critical period starting in 2031 of - 0.46 MI/d increasing to - 6MI/d in 2040. These changes are driven by both the impact of climate change on groundwater sources and therefore a reduction in available deployable output, and an increase in headroom.

Guildford has a small deficit in 2021/22 of -0.08 MI/d in the critical period increasing to -3.8 MI/d in 2040. The change is driven primarily by a reduction in DO as reported in AR13.

Henley and Kennet Valley WRZs remain in surplus throughout the planning period.

A full breakdown of the components of the forecast can be found in the WRP Tables (Appendix A).

Table 6-2: Baseline supply demand position by zone

| WRZ | Item | Volume (MI/d) | | | | | |
|-------------------------|----------------|---------------|-------------|-------------|-------------|-------------|-------------|
| | | 2014/15 | 2019/20 | 2024/25 | 2029/30 | 2034/35 | 2039/40 |
| London (DYAA) | Demand | 2035 | 2061 | 2095 | 2134 | 2177 | 2225 |
| | Headroom | 104 | 120 | 148 | 168 | 186 | 185 |
| | Supply | 2079 | 2048 | 2029 | 2010 | 2002 | 1994 |
| | Balance | -60 | -133 | -213 | -292 | -363 | -416 |
| SWOX (ADPW) | Demand | 323 | 332 | 340 | 345 | 350 | 355 |
| | Headroom | 12 | 14 | 16 | 18 | 17 | 17 |
| | Supply | 362 | 346 | 344 | 341 | 340 | 339 |
| | Balance | 26 | -1 | -12 | -21 | -27 | -32 |
| SWA (ADPW) | Demand | 168 | 170 | 173 | 175 | 178 | 181 |
| | Headroom | 13 | 13 | 13 | 14 | 14 | 14 |
| | Supply | 192 | 191 | 191 | 190 | 190 | 190 |
| | Balance | 12 | 8 | 5 | 1 | -3 | -6 |
| Kennet Valley (ADPW) | Demand | 120 | 123 | 125 | 128 | 131 | 134 |
| | Headroom | 7 | 7 | 8 | 9 | 10 | 9 |
| | Supply | 153 | 151 | 150 | 149 | 148 | 148 |
| | Balance | 26 | 22 | 16 | 11 | 8 | 5 |
| Guildford (ADPW) | Demand | 62.0 | 62.8 | 63.6 | 64.3 | 65.0 | 65.9 |
| | Headroom | 5.2 | 5.0 | 5.3 | 5.5 | 5.4 | 5.5 |
| | Supply | 68.0 | 67.9 | 67.8 | 67.6 | 67.6 | 67.5 |
| | Balance | 0.8 | 0.1 | -1.1 | -2.1 | -2.8 | -3.8 |
| Henley (ADPW) | Demand | 19.2 | 19.6 | 20.1 | 20.6 | 21.1 | 21.7 |
| | Headroom | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 |
| | Supply | 25.3 | 25.3 | 25.3 | 25.3 | 25.3 | 25.3 |
| | Balance | 5.1 | 4.8 | 4.3 | 3.8 | 3.3 | 2.7 |



6.2.1 London

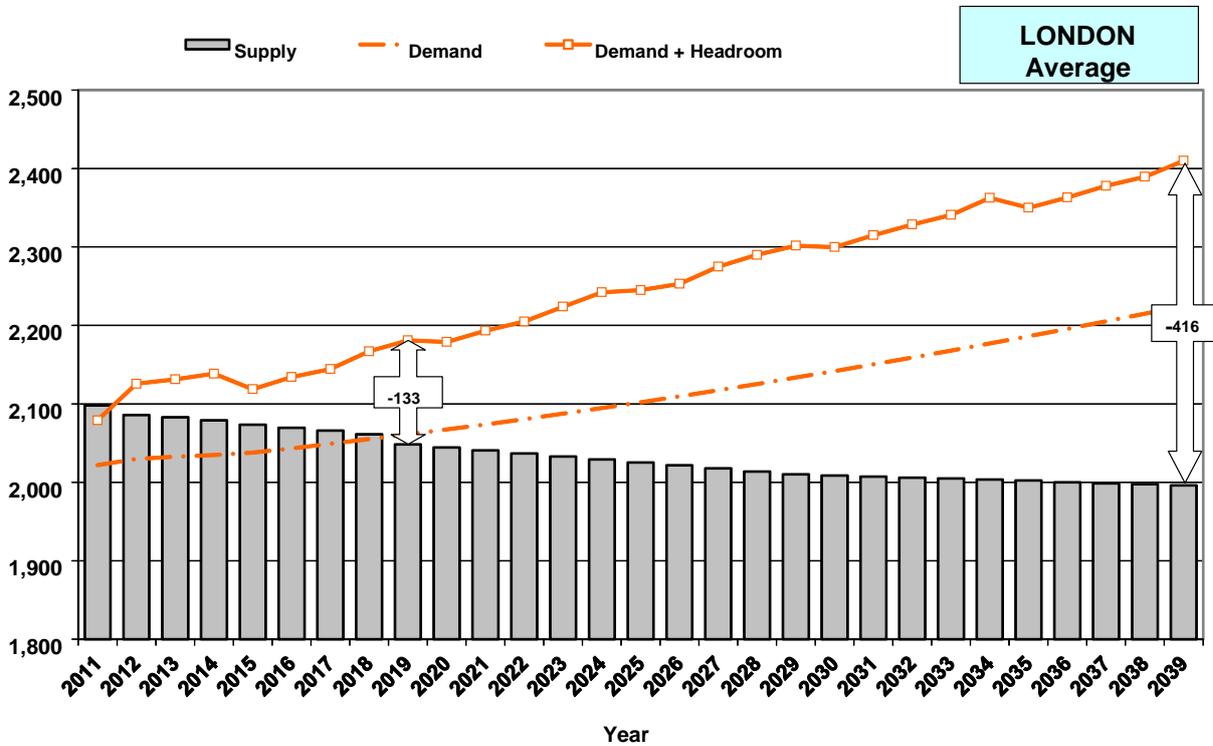


Figure 6-1: Baseline London supply demand graph – DYAA

By the end of the planning period a significant supply demand deficit under dry year annual average conditions is evident. Growth in demand due to population growth outstrips any demand management activity and climate change has an impact on the amount of water available to supply.

The planning problem is therefore:

- A DYAA deficit of 59 MI/d in 2014/15, increasing to 416 MI/d in 2039/40.

Without corrective action, this will result in a supply for London which is not secure. This means there is a greater probability that demand restrictions will be required in dry years than our stated levels of service. Demand management and resource options to close this gap have been considered through our economic analysis process. The result of this analysis is presented in the final plan in Section 9.



6.2.2 Swindon and Oxfordshire (SWOX)

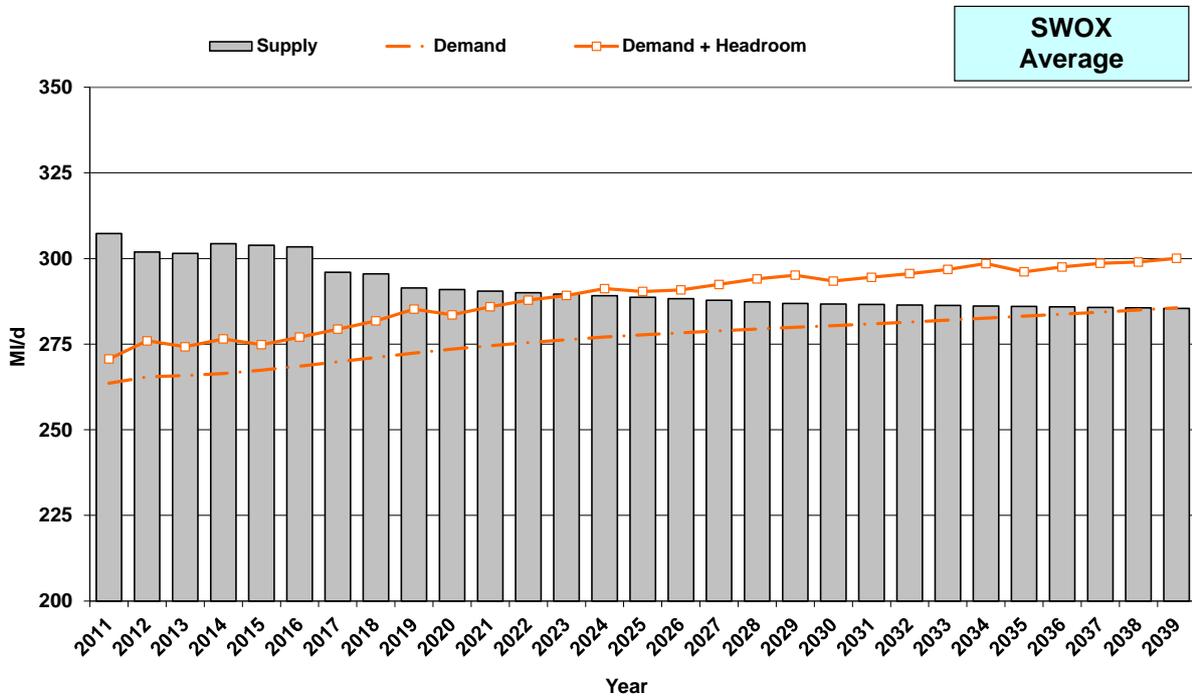


Figure 6-2: Baseline SWOX supply demand graph – DYAA

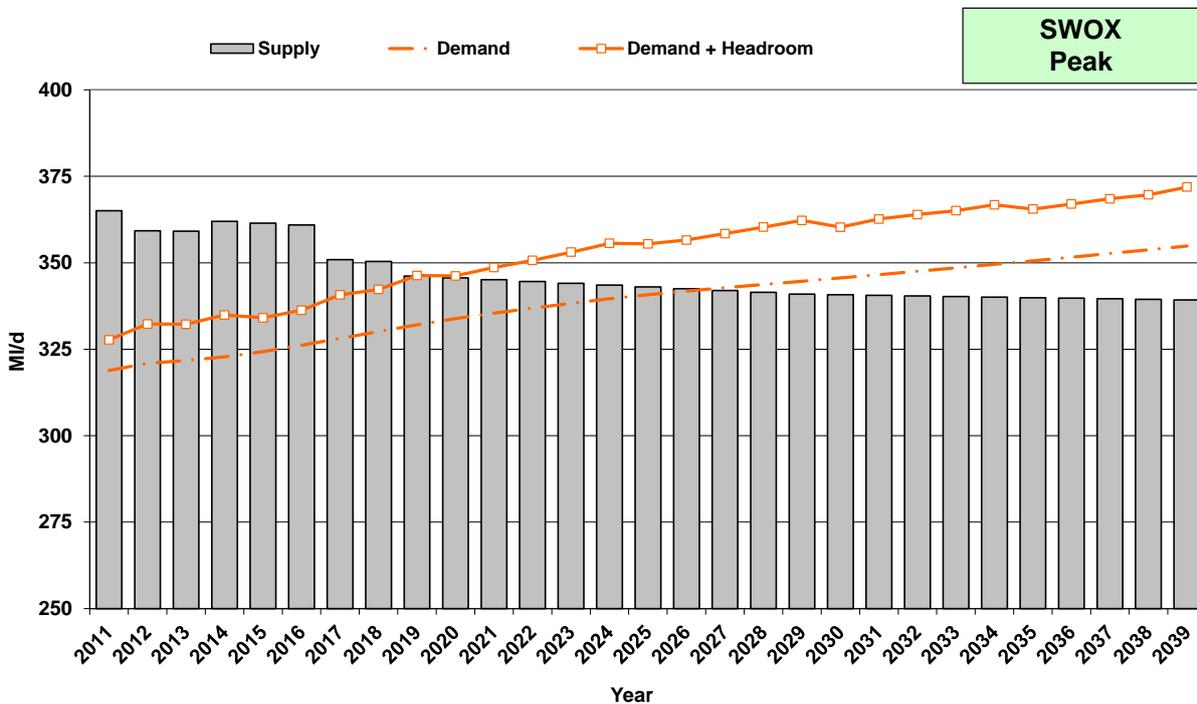


Figure 6-3: Baseline SWOX supply demand graph – ADPW



The SWOX WRZ has a dual planning problem.

Under dry year annual average conditions we forecast a deficit from 2024/25 growing to 15 MI/d by the end of the planning period. Under peak conditions a deficit is forecast from 2019/20 growing to 33 MI/d by 2040.

The main investment driver is therefore peak conditions, but when developing a solution it also needs to solve the dry year deficit.

The main planning problem is therefore:

- An ADPW deficit in 2019/20 of 0.1 MI/d, increasing to 32.7 MI/d by 2039/40.

Without corrective action, this will result in a supply for SWOX, which is not secure. This means there is a greater probability that demand restrictions will be required in dry years than our levels of service. Demand management and resource options to close this gap have been considered through our economic analysis process. The result of this analysis is presented in the final plan in Section 9.



6.2.3 Slough, Wycombe and Aylesbury (SWA)

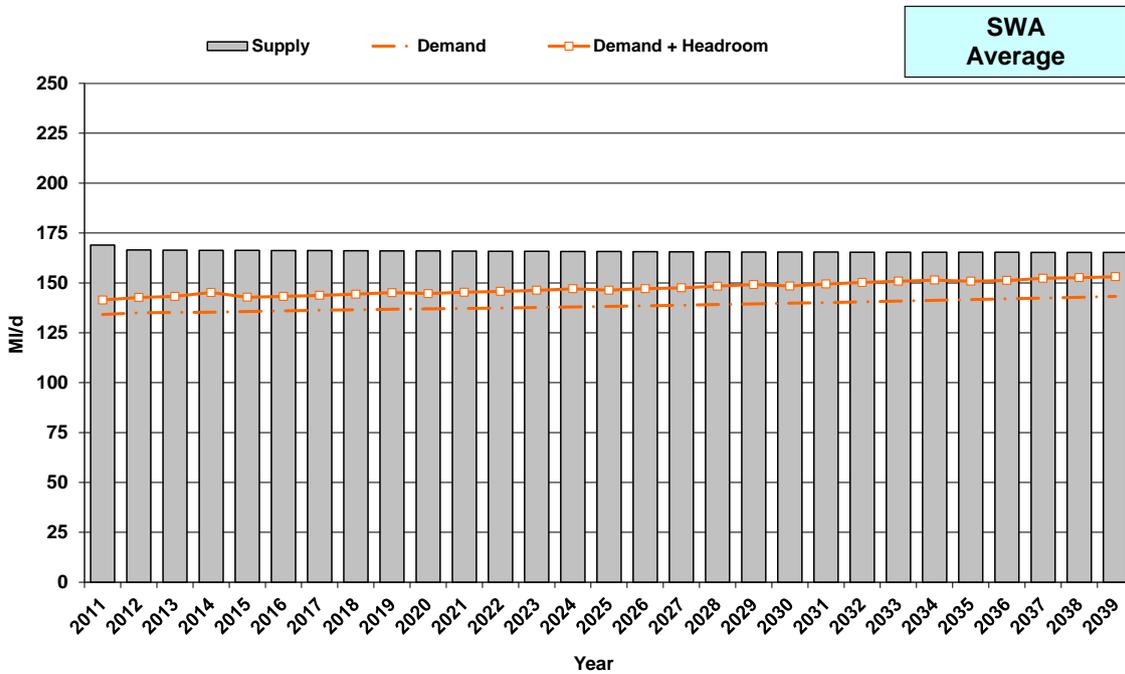


Figure 6-4: Baseline SWA supply demand graph – DYAA

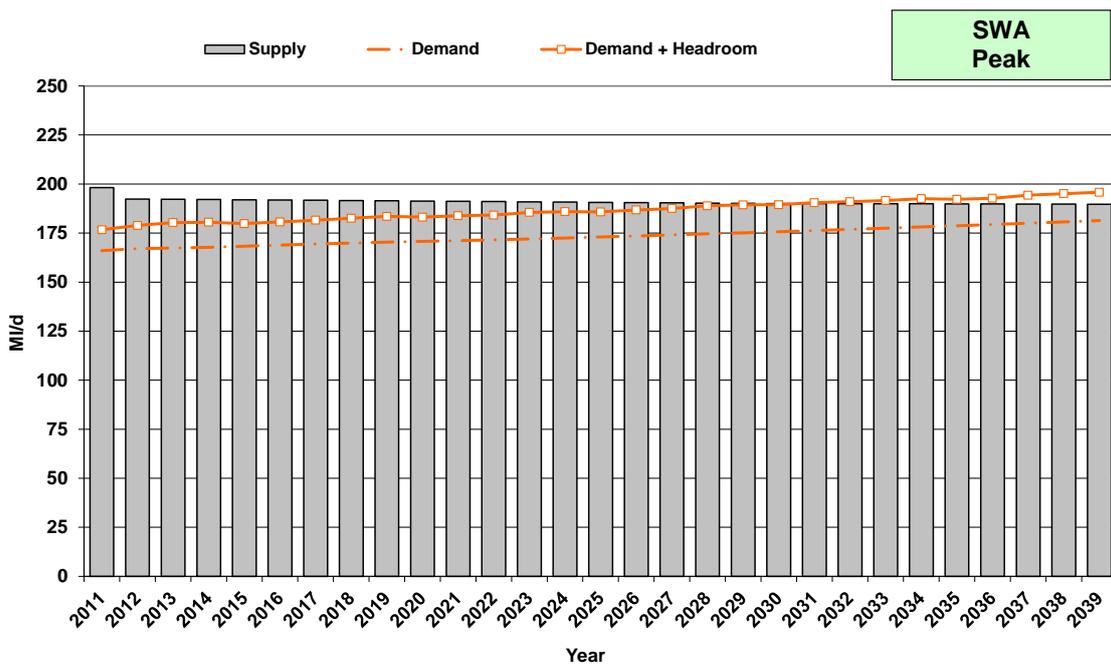


Figure 6-5: Baseline SWA supply demand graph – ADPW



The Slough, Wycombe and Aylesbury WRZ has a deficit under peak conditions but remains in surplus on average.

The planning problem is therefore:

- An ADPW deficit of 0.5 Ml/d in 2031/32, increasing to 6 Ml/d in 2039/40.

Without corrective action, this will result in a supply for Slough, Wycombe and Aylesbury which is not secure. This means there is a greater probability that demand restrictions will be required in dry years than our stated levels of service. Demand management and resource options to close this gap have been considered through our economic analysis process. The result of this analysis is presented in the final plan in Section 9.



6.2.4 Kennet Valley

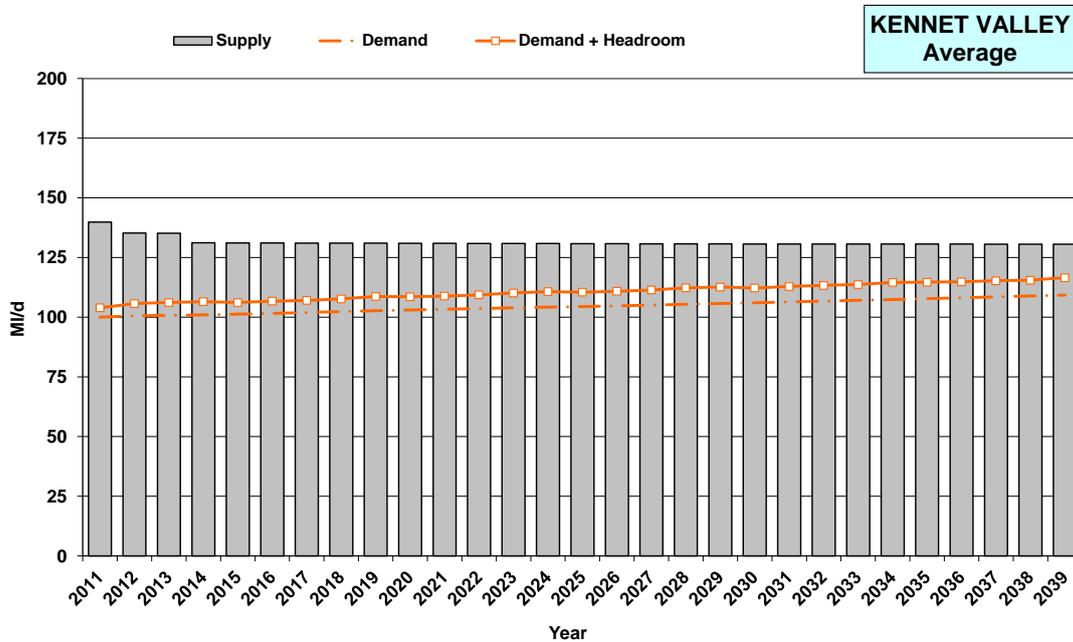


Figure 6-6: Baseline Kennet Valley supply demand graph – DYAA

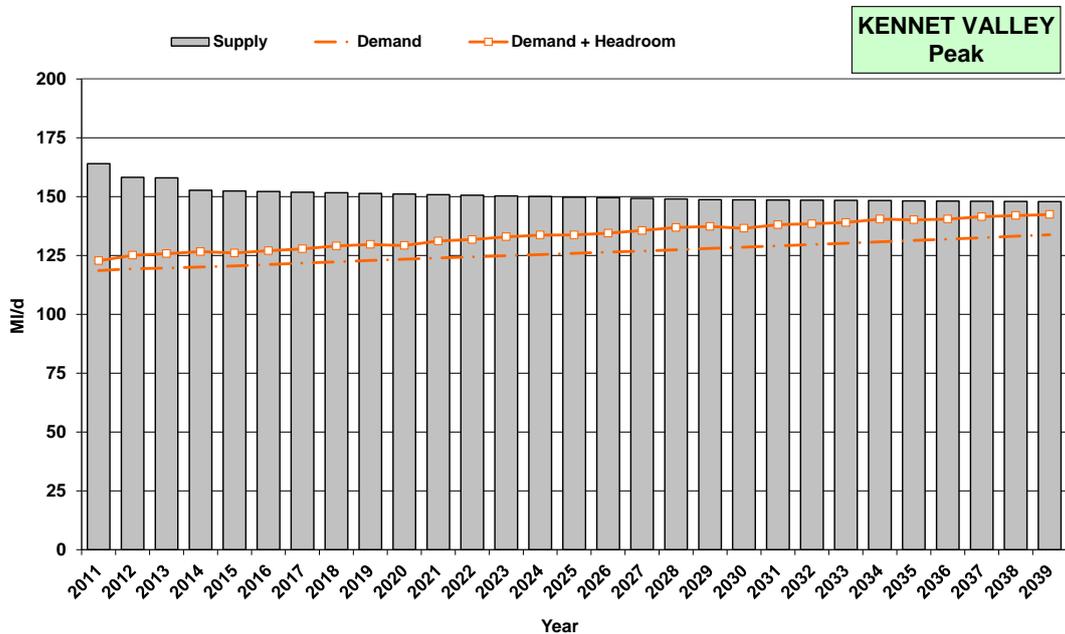


Figure 6-7: Baseline Kennet Valley supply demand graph – ADPW

No deficit exists in Kennet Valley WRZ on average or peak, based on the baseline supply demand balance throughout the planning period based on current forecasts. There is therefore no planning problem to solve.



6.2.5 Guildford

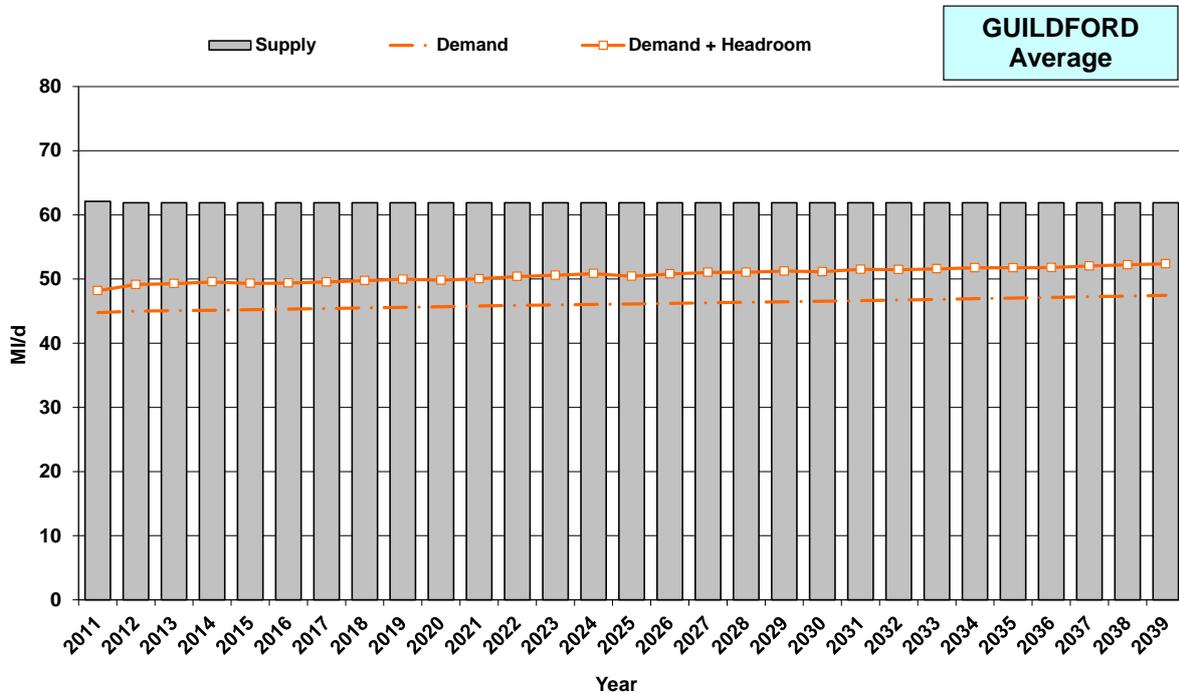


Figure 6-8: Baseline Guildford supply demand graph – DYAA

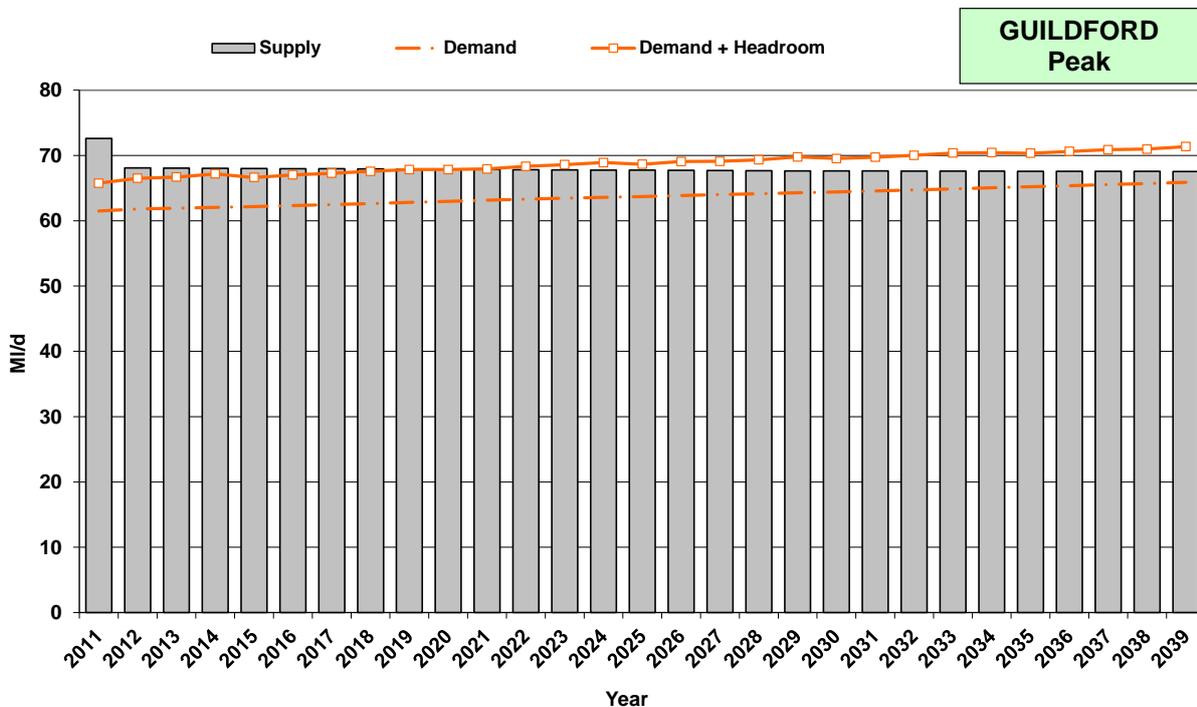


Figure 6-9: Baseline Guildford supply demand graph – ADPW

The Guildford WRZ has a deficit under peak conditions but remains in surplus on average.



The planning problem is therefore:

- An ADPW deficit of 0.1 MI/d in 2021/22, increasing to 3.8 MI/d in 2039/40.

Without corrective action, this will result in a supply for Guildford which is not secure. This means there is a greater probability that demand restrictions will be required in dry years than our stated levels of service. Demand management and resource options to close this gap have been considered through our economic analysis process. The result of this analysis is presented in the final plan in Section 9.



6.2.6 Henley

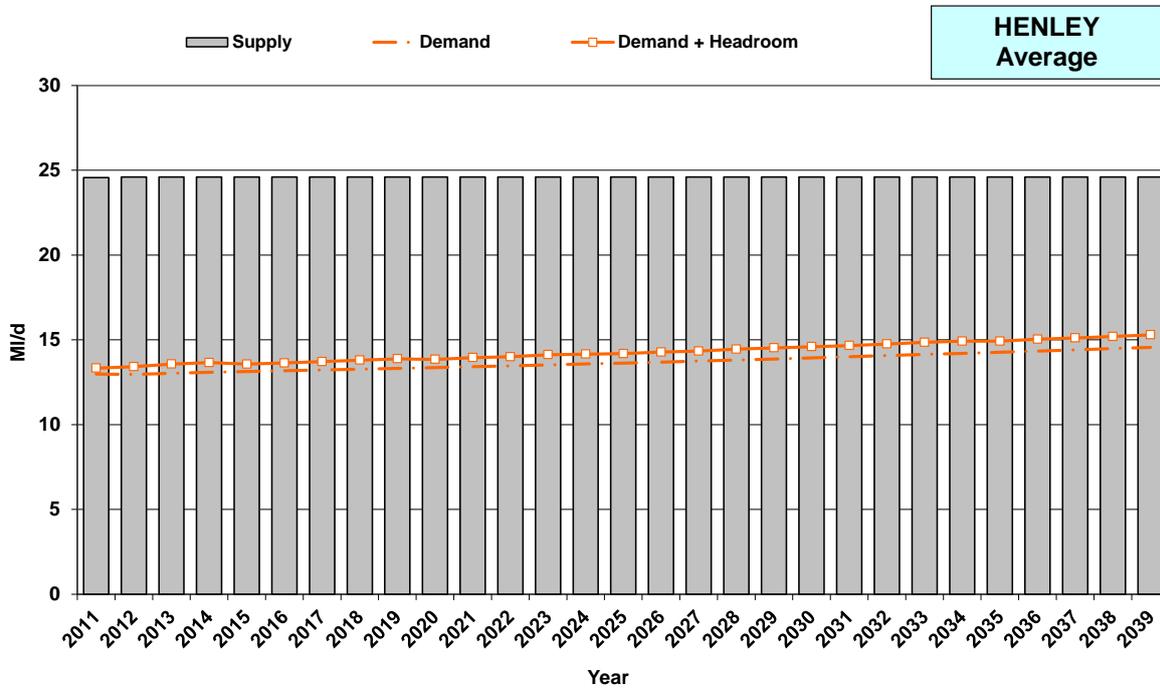


Figure 6-10: Baseline Henley supply demand graph – DYAA

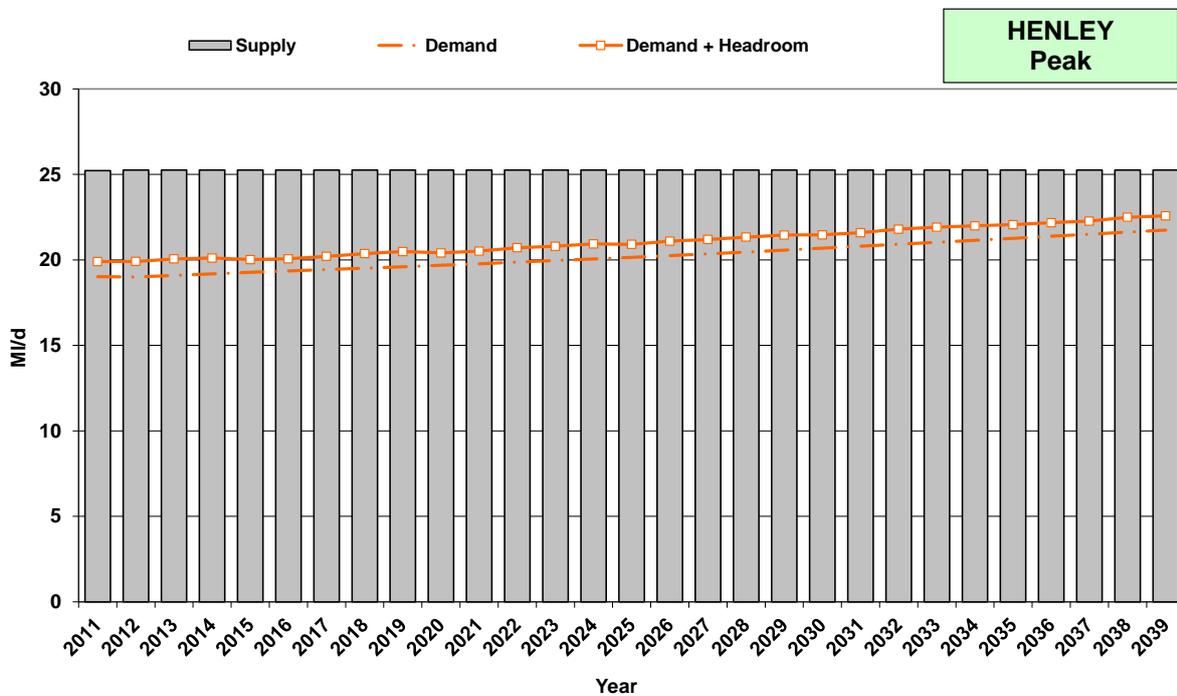


Figure 6-11: Baseline Henley supply demand graph – ADPW



No deficit exists in Henley WRZ on average or peak, based on the baseline supply demand balance throughout the planning period based on current forecasts. There is therefore no planning problem to solve.

6.3 What happens next?

Having understood the baseline supply demand position, there are three possible paths to choose:

1. **No further action.** There is enough supply to meet demand, including target headroom, so no further action is required apart from continuation of existing baseline activity.
2. **Do the right thing.** There is enough supply to meet demand, including target headroom, however measures could be implemented to become more efficient, better for the environment, maintain a positive supply-demand balance beyond the 25 years or to achieve company or stakeholder aspirations.
3. **Remove the deficit.** There is not enough supply to meet demand, including target headroom. Options to resolve the deficit should be investigated and the 'best' option(s) decided upon.

We have identified deficits to resolve in London, SWOX, SWA and Guildford.

In Kennet Valley and Henley, we consider no further action would be detrimental long-term and that there are wider benefits to be gained by activity in those zones, despite there being no deficit to resolve. Intervention will ensure we make a positive contribution to sustainable development and we are flexible and robust to the range of future risks and uncertainties.

The potential options available to the company to help address the deficits and to provide wider benefits are considered in Section 7, the solutions compared in Section 8 and a preferred programme produced in Section 9.