SUMMARY OF AUDIT FINDINGS VERSION: *1*
REVDATE: *01/05/2020*

Table T2 Lines 31-32 Water Resilience

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DATE OF AUDIT:	**7TH APRIL 2020**

1. Audit Scope

The Water Service Resilience Performance Commitment (PC) is structured around changes to a baseline risk score. The baseline is set as at 31st March 2020. Technical assurance was undertaken to the baseline on 2nd August 2018. Since then United Utilities has made changes to its asset base which have affected the baseline. The scope of this audit was to assure that those changes to the asset base have been correctly applied to the baseline.

Our usual approach is to conducts audits on site at UU offices. Due to the Covid-19 lockdown, this audit was undertaken via Microsoft Teams and offline review. Documentation provided to us was:

1) *Water Service Resilience Definition Document* version 0.5, dated 23rd April 2019.
2) *Water Service Resilience FY20*, dated 17th February 2020. This is the calculation model.
3) *Water Service Resilience – AMP6 Baseline position*, dated 10th March 2020. This is the commentary.
4) *Sweetloves SR Supply Resilience_v1.0*, dated 25th July 2017.
5) *Sweetloves WTW Outage Contact Tank A and B Available Supply Resilience Assessment*, dated 8th June 2018.
6) *RE: WSR FY20 Baseline Audit*, an email from Nicola Hughes (UU Asset Manager) to Edward Dalton, dated 30th April 2020.

We also reviewed the 2018 Jacobs audit report of the baseline and model.

2. Key Findings

Planned changes to the baseline and calculation model

Planned changes to the baseline and model were:

1) A decrease in the peak deficit at Wybersley WTW from 55 Ml/d to 37 Ml/d.
2) A decrease in the nominal flood/storm risk at Bridge End WTW from 1.0 to 0.1.
3) A decrease in the supply contingency at Sweetloves STS from 35 hours to 4.5 hours, while maintaining the peak demand deficit at 29 Ml/d.

4) A change in the calculation method of the model to increase the accuracy of the supply contingency from being accurate to the nearest day to being more accurate than the nearest second.

Materiality of proposed changes

Changes (1) and (2) would both reduced baseline risk, so they had the effect of reducing the scope for UU to claim reward under the performance commitment. We deemed these immaterial to the audit and did not investigate them further.

Change (3) would increase baseline risk and increases the scope for UU to claim reward under the performance commitment by £1.75 million.

Change (4) would increase the scope for claiming reward under the performance commitment where small improvements are made to WTW contingency.

Assessment of the change to Sweetloves WTW contingency

The 35 hours storage figure appears to come from the 2015 modelling report, which states in its conclusions, "*Based on past experience such as the Sweetloves incident of July 2015 […] Supply to WSZ 213 is maintained from storage in the two SRs, i.e. 15 hours for Johnson Fold SR and 18 hours for Springs SR, +/- 2 hours. This means that WSZ 213 is effectively without supply when the SRs are empty.*"

We noted that although Edward Dalton informed us that the modelling undertaken in the report was flawed, this statement means that operational experience and not modelling is the basis for the 35 hours figures.

However, Nicola Hughes informed us that since 2015, the configuration of the site has been changed as follows. The former configuration allowed water from other sources to fill back into the contact tank at Sweetloves WTW, which is not permissible. To prevent that, the rate of supply from Crompton Way Pumping Station has been limited. A secondary effect of that limitation is to reduce the length of time for which supplies can be maintained. Based on the June 2018 modelling, the peak deficit duration of supply is 4.5 hours.

Nicola further informed us via email that under the present configuration the contingent supply at Sweetloves WTW is 16 Ml/day, and the 2018 model states that peak demand is 30 Ml/d. This means that the peak demand deficit should be 30 Ml/d – 16 Ml/d = 14 Ml/d.

We conclude that amending the baseline for Sweetloves to a peak deficit supply duration of 4.5 hours and a peak demand deficit of 14 Ml/day is reasonable.

Assessment to change in calculation model

The change to the calculation appears to have been implemented correctly and there is nothing in the performance commitment definition which precludes the change. We conclude that this is a reasonable change.

Summary conclusions

In summary, we conclude that:

- Changes (1) and (2), decrease in peak deficit at Wybersley WTW and decrease in flood/storm risk at Bridge End WTW, are reasonable.
- Change (3), decrease in peak deficit supply duration at Sweetloves at WTW, is reasonable.
- The baseline peak demand deficit for Sweetloves WTW must be revised to 14 Ml/d.
- Change (4), increase of calculation accuracy, is reasonable.

As a check, the resulting total WTW risk baseline for FY20 should be 14,893 csd. The trunk main risk baseline remains unchanged at 8,047 csd.