WHEA Proposed Licence Variation

Affinity Water Limited is responsible for the water supply to 3.6 million people within the Southeast of England. Our supply area encompasses three distinct geographic regions: Central, Southeast and East. Central region provides water to North London, the Northern Home Counties, Surrey and extends to rural parts of Essex, Hertfordshire and Buckinghamshire, with a population of 3.2 million people. The majority of the Company's water resource in Central region, approximately 60%, is derived from the chalk aquifer with the remainder from surface water intakes on the River Thames and an import from Grafham Water Reservoir.

The Hyde Group of sources are located within the Affinity Water Central Region. The Hyde Group abstraction licence used to be made up of two sources, EASH (29/38/01/0041) and WHEA (29/38/01/0040). However, the licence was updated in 2008 to include a third source, ESSE (29/38/01/0060). These three groundwater sources sit within the Lee catchment (more specifically, the Upper Lee catchment) and together provide approximately 14.77 Ml/d on an annual average basis in order to meet local demand. The current licence is valid from the 1st April 2015 until the 31st March 2030. The EASH and WHEA licensed volumes for abstraction are linked and make up the Hyde sub-group. WHEA pumping station (PS) was the main contributor in the Hyde group licence with an annual Average Deployable Output (DO) of 7.5 Ml/d. ESSE has an annual average DO of 4.50Ml/d due to treatment constraints linked to the bromate contamination. EASH has an annual average DO of 2.18 Ml/d. The annual group average DO is typically 14.18Ml/d in relation to the annual group licence allowance of 14.77Ml/d. Historic abstraction rates for the Hyde Group show that the peak daily abstraction does not exceed 22.20 Ml/d.

Since 2014 though, there has been deterioration in the raw water quality at WHSD due to an unknown source of contamination. The contaminant trend has been increasing and blending is required to maintain the supply from WHEA source. Previously, boreholes 1 and 2 at WHEA were both used for supply and would pump at an average DO of 7.50 Ml/d. However, as concentrations of the contaminant have continued to increase, the rate of total abstraction have been reduced to approximately 5.3 Ml/d on average. This means that approximately 3.5 Ml/d is pumped from Borehole 1 and transferred to HARP Reservoir and subsequently blended with water originating from SHAK source. The remaining 1.5 Ml/d is pumped from WHEA borehole 2 via the washout to the River Lee, which the licence includes as consumptive use at present. The scavenging effect from borehole 2 ensures that the contaminant levels within borehole 1 remain at reduced concentrations and the water from borehole 1 can be pumped into the HARP Reservoir for further blending prior to onward distribution. The River Lee corridor provides some dilution for borehole 1 which is adjacent to the river and also provides dilution to the water that is discharged from borehole 2. In order to maintain supply, EASH source has been increased to approximately 4.5 Ml/d on average over 2017-2018. Overall, this has meant that at WHEA Pumping Station, when considering the annual average DO of 7.50 Ml/d in comparison to the 2017-18 average of 4.86Ml/d, we have lost approximately 2.64Ml/d on average. At EASH we have had to increase abstraction to make up for the shortfall at WHEA, going from an average DO of 2.18Ml/d to a 2017-18 average of 4.49Ml/d, an increase of 2.31Ml/d.

We continue to undertake a surface water and groundwater monitoring programme at a number of sites along the River Lee with ongoing sampling of the boreholes at WHEA PS. The investigation also includes a number of boreholes being sampled for groundwater quality within the catchment. New boreholes will be drilled in Autumn 2018 to investigate the extent of the contaminant plume. Current water quality data shows that the trend in WHEA boreholes 1 and 2 has remained fairly constant whilst the majority of the surface water samples remain below the limit of detection indicating sufficient dilution.

Overall, this means that in order to maintain supply in the HARP and EASH zones we are seeking to separate the pump to waste volume from WHEA borehole 2 from the Hyde group Licence (WHEA 29/38/01/0040, EASH 29/38/01/0041 and ESSE 29/38/01/0060) to regain the 1.5Ml/d so that it can be incorporated back into public water supply from EASH. This is required as an interim solution before a longer term solution can be implemented.