Gingin Satellite Airfield - Comprehensive PFAS Investigation

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Executive Summary

Jacobs has undertaken an assessment of hydrogeological conditions at the Site and the surrounding area. This has included consideration of per- and polyfluoroalkyl substances (PFAS) dispersion, specifically Perfluorooctane sulfonate (PFOS) + Perfluorohexane sulfonate (PFHxS) using a highly conservative analytical approach. The reason why this assessment being undertaken is due to a concentration of PFOS + PFHxS being detected at the southern boundary of the site.

WA Water Corporation extracts groundwater from the superficial, Leederville, Mirrabooka and Yaragadee aquifers, via several bores, for Perth’s water supply. The closest water supply bores to the Site are:

- Pinjar production bore P140 located 7.5km south-southwest of the Site boundary. This bore is inferred to be screened in the superficial aquifer; and
- Pinjar production bore P145 located 7.5km south-southwest of the Site boundary. This bore is screened from 111 – 183 mbgl, which is inferred to be in the Leederville aquifer

These bores are located in the Gnangara Underground Water Pollution Control Area (Gnagara UWPCA) and are part of a network that supplies drinking water to Perth, the Peel region and towns in the Goldfields as part of a wider integrated supply system.

Based on the hydrogeological conceptual model and the outcomes of the analysis performed, it is acknowledged that while the potential for PFAS impacts to the Gnangara UWPCA cannot be ruled out, Jacobs considers that the risk to the current identified offsite receptors - the Pinjar Production Bores – has not occurred and future risk of this occurring is acceptably low. This determination is based on consideration of the following:

- PFAS was not detected in either of the two recent rounds of groundwater sampling and analysis performed by WA Water Corporation at the Pinjar P140 and P145 abstraction bores.
- PFAS was not detected in monitoring well GC19 located half way between the boundary of the site and the two abstraction bores above. This location of this well is such that is can be used to provide a reliable early indication as to whether PFAS might be detected in the Pinjar abstraction bores at some point in the future (i.e. it is highly unlikely that PFAS would be detected in the Pinjar abstraction bores without first being detected in the GC19 monitoring well).
- A highly conservative analysis of PFOS + PFHxS dispersion away from the identified source areas has been performed. The results indicate that the time period before which PFAS + PFHxS (or other PFAS compounds) would theoretically be detected at concentrations in exceedance of the drinking water criteria at the GC19 sentinel monitoring well location would be substantial - ranging from 50 years to 150 years. In reality, it is highly unlikely that PFAS would be detected in either sentinel monitoring well GC19 or the Pinjar production bores in the future given these dispersion time periods (which would likely be significant), or the fact that a continuous source of PFAS is no longer present at the site. As a result of the calculated travel time, a more strategic approach to monitoring and managing risk can be undertaken.

On the basis of the findings of this assessment, Jacobs makes the following recommendations:

1. The installation of up to three new shallow groundwater monitoring wells offsite. These wells should be installed in the superficial aquifer downgradient of the Site, between the identified on-site source areas and the existing off-site sentinel monitoring well (GC19). Jacobs recommends that these wells are installed at a distance where groundwater concentrations are below either laboratory reporting limits for PFAS or drinking water guidelines (0.07 µg/L). Based on existing information this would equate to approximately 500m from the boundary of the site, but would be nominated following further consideration of groundwater travel times and observed reduction in PFAS groundwater concentrations away from the identified sources. **[Recommended timing: implementation of PMAP]**

2. An ongoing monitoring plan (OMP) should be developed for the Site and implemented. This monitoring plan should include the sampling and analysis of existing groundwater monitoring wells at the Site as well as the three new wells identified above. Sampling of sentinel well GC19 should also be included in the monitoring plan. **[Recommended timing: implementation of PMAP]**
The purpose of the above recommendations is to monitor PFAS concentration trends over time within the management area defined in the PMAP.