NSW GOVERNMENT | Chief Scientist & Engineer

OUT16/11221

3 March 2016

Mr Howard Reed
Director - Resource Assessments
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Dear Mr Reed

Williamtown Contamination Water Working Group Comments on the EIS for the Cabbage Tree Road Sand Quarry Project

On 4 February 2016, Mr Colin Phillips, NSW Department of Planning, presented to the Williamtown Contamination Expert Panel regarding the Cabbage Tree Road Sand Quarry Project proposal. Following this the Expert Panel asked its technical sub-group, the Water Working Group (WWG), to review the project's Environmental Impact Statement (EIS) with a focus on the perfluoroalkyl sulfonate (PFAS) contamination resulting from the historical usage of the chemicals in firefighting foams at the Williamtown RAFF Base. The WWG comments are attached.

The WWG concluded that as long as the operations remain above the water table the sand mine presents a low risk with regards to PFAS exposure or contribution to the spread of PFAS.

Further the WWG suggests it would be worth clarifying whether any aspect of the site establishment or operation would involve interfering with the water table (i.e. pipework connections to water mains, etc.). If this is a possibility, then there should be a mechanism to communicate the potential contamination risks and specify requirements for control measures (e.g. through appropriate measures documented in a Construction Environmental Management Plan).

If you seek clarification please contact Dr Chris Armstrong, Director, Office of NSW Chief Scientist & Engineer, 02 9338 6745, or chris.armstrong@chiefscientist.nsw.gov.au.

Yours sincerely

Mary O'Kane
NSW Chief Scientist and Engineer
Chair, Williamtown Contamination Expert Panel

Attachment 1 – Water Working Group – Comments on EIS
Attachment 2 - Figures

29/2/2016

Williamtown Water Working Group
Comments on the EIS for the Cabbage Tree Road Sand Quarry Project

The Williamtown Water Working Group (WWG) has reviewed the EIS for the Cabbage Tree Road Sand Quarry Project. This memo summarises the comments arising from the WWG's review and are focused on the perfluoroalkyl sulfonate (PFAS)-based chemicals contamination resulting from historical usage of PFAS containing firefighting foams at the Williamtown RAAF Base.

Comments

Development proposal

- The development proposal is to extract sand to within 1m of the historic high water level (i.e. the intention is not to intersect the water table)
- No groundwater extraction is proposed to supply any of the water requirements for the sand mining operation. They intend to rely on mains water for their needs (which, according to their process description, are small as they will not be washing sand on-site). Water use will be for amenities blocks on site and dust suppression.
- The site is to the south, and slightly west, of the Facility 479 and 374 PFAS source areas on the Williamtown RAAF Base (see attached Figure)

Surface Water

- The EIS indicates that there are no water courses on the site.
- The Sampling, analytical and Quality Plan (SAQP) for the Stage 2B environmental assessment of the Williamtown site (Fig 4, see attached) indicates a tributary of the Dawson Drain extending across a portion of the site, however this may be an ephemeral surface drain.
- PFOS was reported at 0.02 µg/L in Dawson Drain where it intersects Cabbage Tree Rd, which appears to be ~200 metres east of the sand mining site boundary.
- The SAQP included a proposed sampling location (DD8) right at the sand mine site boundary (see attached Figure), but no results have been noted by the WWG to date.

Groundwater

- Based on an inferred southward groundwater flow direction in this area, a plume issuing from the Facility 479 and 374 would likely pass close to, but to the east of, the sand mining boundary
- Nested monitoring wells MW107S/I/D are located approx. midway between the sand mining site and the Facility 479 and 374 source areas – presumably these wells were intended to attempt to define the western boundary of PFAS impacted groundwater. Results from URS (2015) indicate:
    - PFOS was not detected in all three wells
    - PFOA was detected at 0.01 µg/L in the intermediate well (11m depth), and not detected in the others
- Monitoring well MW124 (7.5 m depth) is located on to Cabbage Tree Rd, adjacent to the southern boundary of the sand mining site. Results from URS (2015) indicate:
    - PFOS was detected at 0.01 ug/L
    - No detection for PFOA

PFAS risks for the proposed development

- The conservative assumption should be that there are low concentration PFAS impacts to groundwater beneath the sand mining site, and possibly in surface water close to the site, but so far outside the site boundary (especially since no permanent surface water course was indicated on the site).

- Because the operation of the mine does not propose to intercept groundwater or extract groundwater, the risk of site workers being exposed to PFAS impacted groundwater are likely to be low.

- For the same reason, the proposed development also appears unlikely to exacerbate the spread of, or the risk profile with respect to PFAS impacted surface water or groundwater.

- The potential PFAS exposure mechanisms could include:
    - a significant water table rise in response to rainfall, causing the water table to daylight once the base mining levels are reached. However, the probability of this is low if the mining operation is diligent about maintaining a vertical buffer between the water table and the base mining level. This should be confirmed through water level monitoring.
    - Construction or maintenance work, if any, extending below the water table. It was unclear whether this would be required as part of the proposed development. If so, the risk of exposure to PFAS impacted groundwater should be managed through the Construction Environmental Management Plan process.

- The approval should be conditioned to exclude interception of the water table (or at least, if proposed in the future, the risks will need to be evaluated in light of the most recently available data)

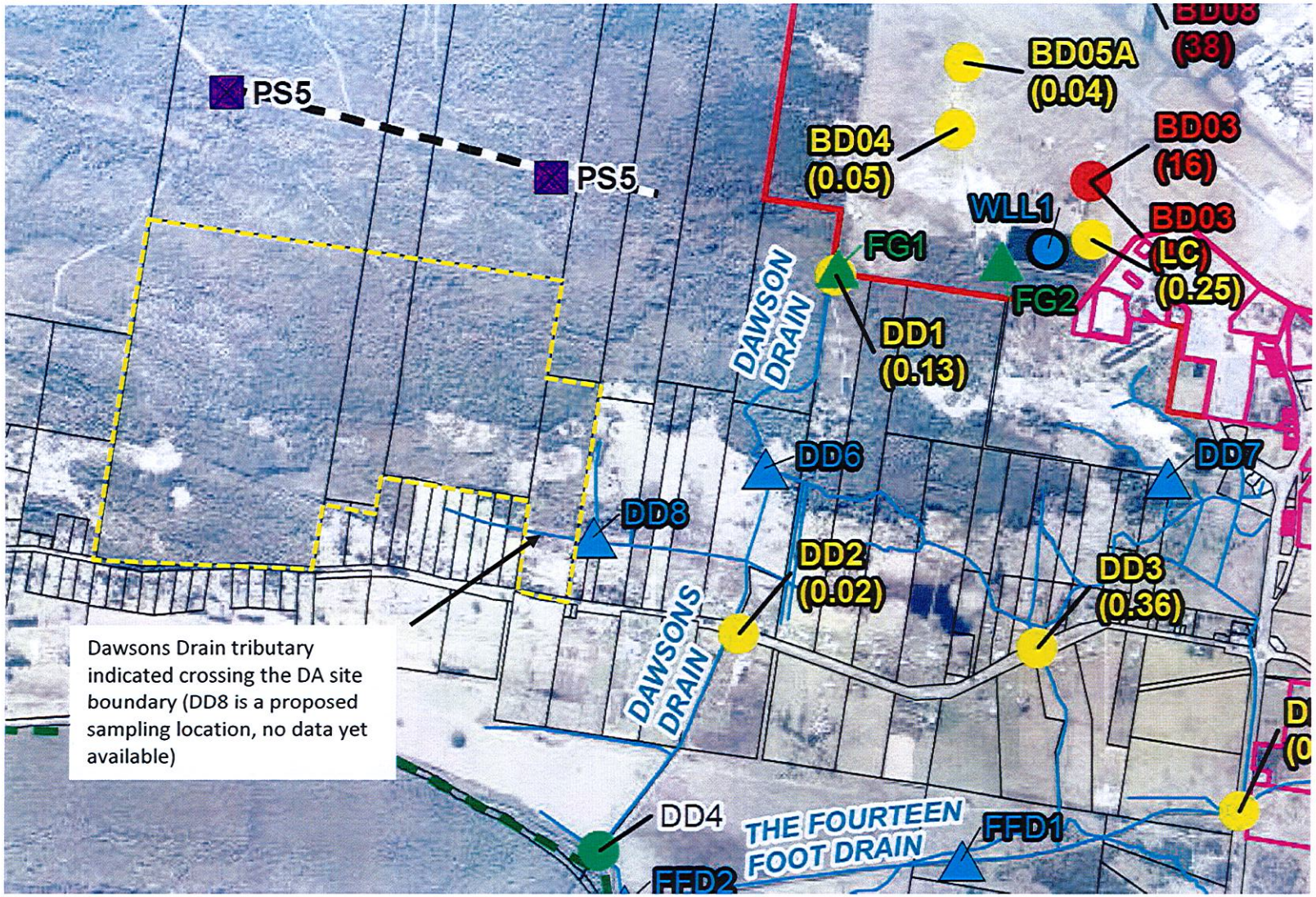
- The approval should also exclude use of bore water for water supply. They don't propose to need this, but there are old bores on the property so it should be made crystal clear that extracted groundwater should not be used for potable or non-potable (i.e. dust suppression) purposes.

- While the proposal indicates there are no surface water features on the site, it is unclear whether in a large storm event there could be flooding and back flushing from Dawson Drain up an ephemeral drainage that crosses the site. This is most likely a low risk – it is suspected that the drainage direction would be from the site towards Dawson Drain, not the other way around.

Conclusion and further clarification

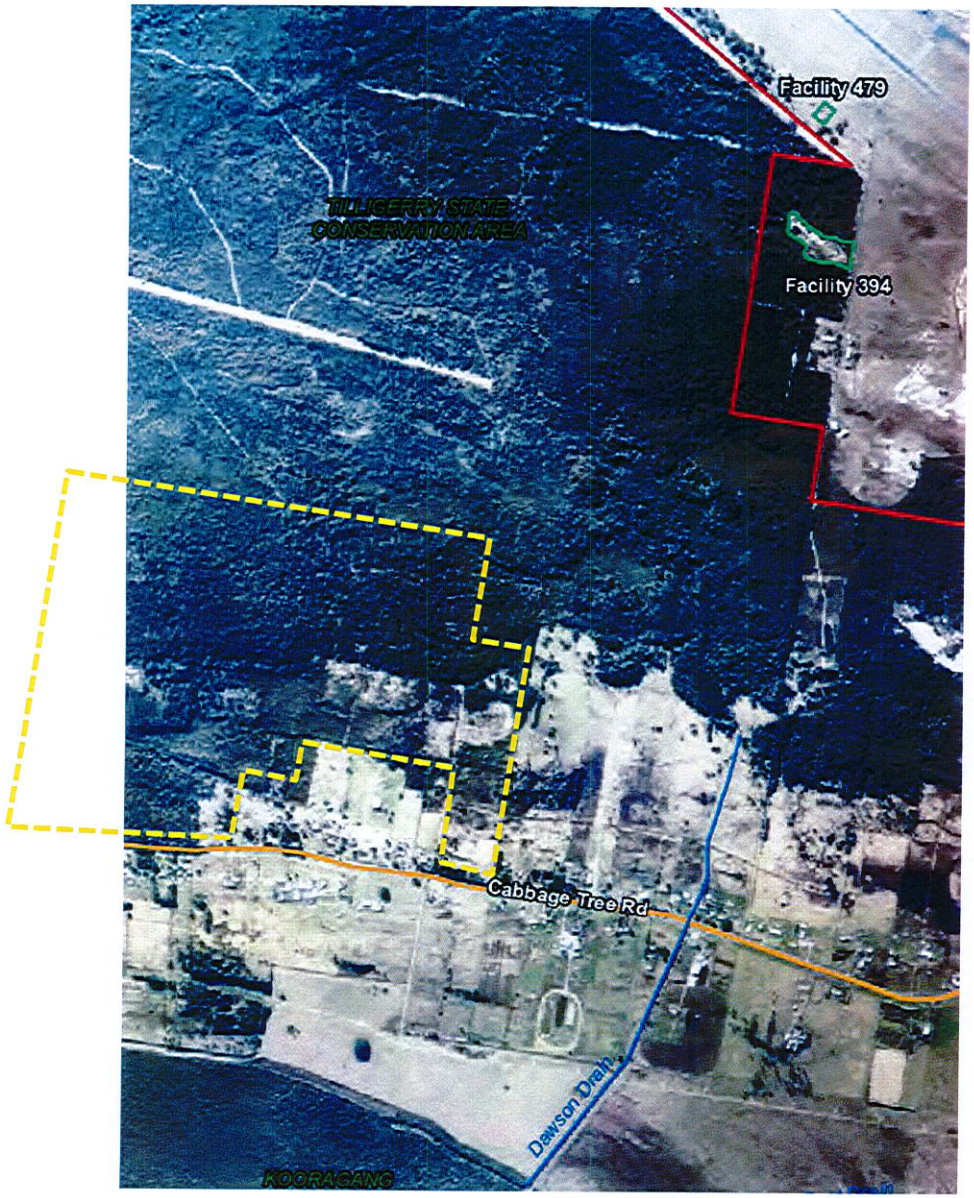
- The sand mine presents a low risk with respect to PFAS exposure, or contribution to the spread of PFAS, as long as operations remain above the water table.

- The WWG believe it would be worth clarifying whether any aspect of the site establishment or operation would involve intersecting the water table (i.e. pipework connections to water mains, etc.) as if this is a possibility then there should be a mechanism to communicate the contamination risks and specify requirements for control measures (e.g. through appropriate measures documented in a Construction Environmental Management Plan).



Source: AECOM Australia Pty Ltd (2015) Sampling Analysis and Quality Plan, RAAF Williamtown Stage 2B Environmental Assessment (Draft), Figure 4

Sand mine development proposal site boundary



Source: URS Australia Pty Ltd (2015) Stage 2 Environmental Investigation, AFFF PFAS, RAAF Base Williamtown, Williamtown, NSW

Sand mine development proposal site boundary