PO Box 398, Parramatta NSW 2124
Level 14, 169 Macquarie Street
Parramatta NSW 2150
www.waternsw.com.au
ABN 21 147 934 787

Ref: D2017/094379

Kate Masters
Senior Planning Officer, Waste
Industry Assessments
Department of Planning & Environment
GPO Box 39
Sydney NSW 2001

Dear Ms Masters

Woodlawn Bioreactor Modifications (MP 10_0012 MOD 2 and DA 31-02-99 MOD 3)
Submissions on Modification Application

I refer to your email received 3 July 2017 seeking WaterNSW's comments on Woodlawn bioreactor (MP 10_0012 MOD 2 and DA 31-02-99 MOD 3). The bioreactor is located within the declared Sydney catchment area. Pursuant to section 7 (1) of the *Water NSW Act 2014* a function of WaterNSW is to protect and enhance the quality of water in the declared Sydney catchment area.

Veolia Environmental Services Pty Ltd seeks to modify the project approval and development consent for the Woodlawn bioreactor at Collector Road, Tarago. The modifications seek to:

1. Modify the on-site stormwater and leachate management arrangements
2. Construct a leachate treatment plant to process leachate from the bioreactor
3. Remove the need to seek upfront approval from the Secretary for the receipt of regional waste above 50,000 tpa
4. Modify the operating hours, and
5. Provide an interim leachate strategy which includes storing leachate in a purpose-built dam in ED1 (referred to Addendum Report by DPE in e-mail to WaterNSW dated 3 July 2017).

WaterNSW makes comments in regards to points 1, 2 and 5 above.

WaterNSW's major issues of concern are:

1. If leachate is added to ED1 (without lining of the floor), this will potentially cause treated leachate to seep from the dam. When seepage flows under the Collector Road, although staying within the Woodlawn Eco-Precinct, it potentially leaves the Woodlawn bioreactor Project Site (as defined by the Site EPL and Major Project Consent). This negatively affects the Project's ability to have a neutral or beneficial effect on water quality on the site.
2. The Long Term Leachate Management Solution Report (Veolia, July 2016), defines the leachate from the Membrane Brioreactor (MBR) to a target average quality, that satisfies an odour perspective, but not a long term water quality perspective.
3. Water NSW considers the method to ensure ED1 and ED2 integrity (including any interim dam in ED1) should involve HPDE lining of the evaporation dam floor.
4. The proposed modification to discharge treated leachate from the bioreactor (and also pumping of dewatered mine water from Woodlawn mining operations by Heron Resources),

would fill ED1 back to over 85% dam capacity. This volume of water will place a large area of water and increased hydraulic head back on the underlying aquifer system.

A comparison of groundwater monitoring bore (MB10) standing water level (SWL) from 1996 to 2016 with the pond storage in water balance for ED1 (Parson Brinkerhoff, 22 July 2016)), shows a strong correlation between ED1 storage volume and the SWL of the groundwater in monitoring bore MB10 (see graphs in Attachment 1).

A significant increase in the volume of contaminated mine water or leachate in ED1 will potentially increase the amount of seepage discharged under the dam towards Crisps Creek.

5. Woodlawn LTP Modification EIA prepared by SG Haddard Advisory (dated May 2017) is recommending that an Ecological Risk Assessment be prepared to inform appropriate measures to either mitigate the potential for harm or remediate groundwater contaminated due to seepage.

   WaterNSW is concerned that allowing management of seepage from ED1 by an Ecological Risk Assessment means the downstream pH buffering capacity of the alluviums must be maintained. WaterNSW considers increased dam head, anecdotally means increased flow of seepage. It is not defined how much additional flow can be buffered, and if the buffering fails what is the potential impact on surface flows in Crisps Creek.

6. Evaporation Dams ED1 and ED2 Seepage Investigation Report (AECOM, 18 May 2017) detailed significant further field investigation including electromagnetic (EM) survey. The 2001 Woodlawn AEMR also detailed conductivity profiles in the upper catchment of Crisps Creek, soon after mining ceased.

   The compatibility between the two assessments, recent AECOM EM survey (dated May 2017) and 2001 EM profiles is not clear. The most recent AECOM analysis shows lower conductivity values in the area south of Crisps Creek, with more elevated levels under Crisps Creek. The 2001 EM survey had a 80 mS/m conductivity contour showing the development of a main plume to the east of the dam (but south of the watercourse), with increased conductivity levels (between 60-80mS/m) near the drainage line. The previous extremity of the 2001 EM survey (1050 metres downstream) appeared further to be further east than the existing works.

   The recent documents (AECOM 2017) refer to monitoring for 20 years. Potentially most of this monitoring is referring to the residual load that exists in the underlying alluvial sediments after the mine evaporation dams were operated at low levels. The original groundwater seepage of the dams predominately occurred in the first few years of monitoring when the Woodlawn mine was operational.

7. Adding treated leachate to ED1 may remobilise the heavy metals on the floor of ED1.It is noted in the Heron Mining 2015 AEMR, that when large rainfall occurred in 2013, conductivity in ED1 increased *'probably as a result of runoff from the dam floor to the main body of the dam'*.

8. Veolia should detail contingencies to manage the bioreactor leachate, without treated effluent being used by Heron Resources mining operations on the site. If the mine does commence, and the mine working are dewatered, the water balance shows that ED1 & ED2 will be run at almost maximum capacity with very little extra capacity if there are consecutive years with high rainfall.

   The management of ED1 and ED2 also require suitable contingencies for the various outcomes that could occur. These include:

- if the mine commences and continues as planned
- the mine commences and then ceases to operate
- if the mine commences and no longer has a use for the treated leachate, or alternatively requires lesser quantities of treated leachate.

All of these scenarios impact the long term risk of pumping treated leachate into ED1 and ED2.

WaterNSW would appreciate being involved in any future assessment of the application.

If you wish to discuss this letter or the project more generally please do not hesitate to contact Jim Caddey on 48243401.

MALCOLM HUGHES
Manager Catchment Protection

3/8/17

Attachment 1

Appendix: (data from reports on MB10)