

## Attachment O

### Coliban Water's responses to EPA's correspondence dated 13 April, 2022 and 21 April, 2022

EPA correspondence dated 13 April 2022	
Issue	Response
<b>Discharge Risk Assessment</b>	
Discharge Risk Assessment (Attachment A) does not follow the recommended approach in EPA Publication 1287 with problem formulation, risk analysis, and risk characterisation.	Attachment A has been reformatted to align with risk assessment approach detailed in EPA Publication 1287. The relevant sections of the revised ERA are section 2.3 and section 6
Section 2.1 (page 3 of Attachment A) only discusses the broadest view of the catchment, but does not give any detail on the environmental values likely to be at risk from the current and future discharge.	These issues are discussed in other parts of Section 2, and are summarised in the Executive Summary, but during the reformatting process the environmental values likely to be at risk from the current and future discharge have been highlighted. The discussion on Environmental values can be found section 2.3.  In having to discuss the environmental values likely to be at risk from the current discharge, it has been assumed that the purpose of this is to highlight the change/improvement in the risk profile that will arise from the proposed/future discharge
Following the introduction, the report moves straight into detailed monitoring and risk assessment without establishing why the monitored endpoints relate to environmental values.	This has been rectified as part of the reformatting of the report The relevant section of the revised ERA is section 2.3
The methodology to generate a risk score is described on page 131 of Attachment A. However, the results of the risk scoring are not summarised with reference to a standard risk matrix. For example, in Table 19, the Total Risk Score suggests a reduction in risk, without any consideration of whether the current and future risks would be considered acceptable. These risk	The results have been put into a standard risk matrix, and the assessment now describes whether a reduction in risk occurs, or not, as well as providing some commentary as to whether the risks are considered acceptable  The relevant section of the revised ERA is section 6

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scores should be evaluated according to a standard risk matrix with a defined consequence and likelihood	
While the Total Risk Score is a useful method to consider overall risk, the individual components of the risk also need consideration.	<p>The current Discharge Risk Assessment assessed the risk associated with each of the proposed licence parameters, and then provides a Total Risk Score.</p> <p>To assist with clarity, a summary table has been added that summarises the assessed risk associated with each proposed licence parameter and the total risk score.</p> <p>The relevant section of the revised ERA is section 6</p>
Dilution Ratio and Mixing	
<p>The draft application proposes a discharge at approximately two-thirds the flow of the stream. Further supporting evidence is required to justify this dilution factor.</p>	<p>The outcomes of the ERA (Attachment A) show that the dilution ratio of <b>up to 66.7% of instream flow, as measured at the Kyneton gauging station, and based on the discharge of only BNR-treated water, and with the proposed associated licence limits</b>, does not pose an unacceptable risk to the Campaspe River, or associated beneficial uses, except potentially within the mixing zone proposed for nitrogen and phosphorous.</p> <p>In putting together this licence amended application, Coliban Water firstly reviewed the hydrological modelling data for the site (Attachment E).</p> <p>The hydrological modelling indicated that the use of a dilution ratio of <b>up to 66.7% of instream flow, as measured at the Kyneton gauging station</b>, aligned with the other improvement works that had been undertaken at the Kyneton WRP as part of the Kyneton Solutions Project.</p> <p>Applying the principles of reasonably practicable, which are used to support the application of GED, Coliban Water then requested GHD to undertake an environmental risk assessment (ERA) based on this dilution ratio and the discharge of only BNR-treated water to the Campaspe River.</p> <p>The increase in dilution ratio can be safely achieved by Coliban Water's commitment to the <b>discharge of only BNR-treated water</b> to the Campaspe River.</p>

**EPA correspondence dated 13 April 2022**

Issue	Response
<p>Generally, with such a low dilution factor, EPA in addition to median limits (ammonia and other toxicants) also requires maximum limits or at least upper percentiles (90 or 95%) and would need to see scenarios tested using these upper limits and mixing zones defined using the upper limits to demonstrate protection of environmental values.</p> <p>Furthermore, worst case scenarios of pH and temperature are also required to demonstrate that ammonia toxicity is not reached, or dangerously low DO levels (due to BOD inputs) are not reached</p>	<p>It is accepted that the proposed licence value for ammonia (annual rolling median of 2 mg/L) is too high. Therefore, the revised value that we would like to put forward is a <b>rolling 90%ile value of 1.4 mg/L</b>, which equates to a 90% species protection trigger value for waterways.</p> <p>As noted in EPA’s correspondence, pH and temperature influence instream ammonia toxicity, and detailed information on the relationship between the three can be found on the Water Quality Australia website: <a href="https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/ammonia-2000">https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/ammonia-2000</a></p> <p>The species protection trigger values for ammonia have been set at a pH of 8, and independent of temperature. The pH of the discharge is typically lower than 8, and according to Table 8.3.7 of the linked reference, as the pH decreases, the ammonia trigger value increases. Therefore, from a risk perspective, there is a high level of confidence that at least a 90% level of species protection will be maintained under typical pH values associated with a BNR-only discharge.</p> <p>It is also worth noting that the 90<sup>th</sup> percentile value of 1.4mg/L is measured in the discharge and once the discharge mixes with water in the Campaspe River, the instream concentration of ammonia would be considerably lower than this value.</p> <p>With respect to other toxicants, multiple lines of evidence for presence of instream toxicity are presented in the three available AQUEST reports (Attachment B – page 33; Attachment C – page 41; Attachment D – page 45). This work has been undertaken whilst a blended, lesser quality, discharge has been occurring from the Kyneton WRP. The available results do not show any discernible toxicity at the assessed sites below the discharge point.</p> <p>Therefore, Coliban Water has a high degree of confidence that the proposed discharge does not present an unacceptable toxicity risk to the Campaspe River downstream of the discharge point.</p> <p>The State’s Environment Reference Standard for this stretch of the Campaspe River sets the dissolved oxygen (percentage saturation) trigger values at a 25%ile value of ≥70% and a maximum value of 130%. The AQUEST monitoring program looks at dissolved oxygen (percentage saturation) at sites along the river (Attachment B – Table 2; Attachment C – Table 4; Attachment D – Table 4).</p>

<b>EPA correspondence dated 13 April 2022</b>	
<b>Issue</b>	<b>Response</b>
	Each data set is small, but the available data shows that dissolved oxygen (percentage saturation) varies widely, both upstream and downstream of the discharge point. Additionally, there is no available evidence that the discharge is depressing dissolved oxygen levels to dangerously low levels.
At what point downstream would the discharge no longer present an elevated risk to potential recreational uses and those who may irrigate this on vegetables eaten raw (noting the longer this zone, the higher the likelihood of the risk to occur). This point should be considered in the context of community consultation below	<p>The instream water quality data available to Coliban Water suggests that, regardless of whether a discharge occurs, or not, the Campaspe River, in its current state, is not suitable for either primary or secondary recreation uses. Given the multiple sources of microbial contaminant input across the catchment, this is not a particularly unexpected result.</p> <p>Similarly, based on the quality criteria set for the irrigation of vegetables that are eaten raw, which is detailed in EPA Publication 1910.2, Campaspe River water is never suitable for this purpose. Publication 1910.2 states that only Class A recycled water can be used to irrigate vegetables that are eaten raw, and general instream water quality, regardless of the presence of discharges from the Kyneton WRP, is less than the quality of Class A recycled water.</p> <p>As was stated in the original submission, Coliban Water can put in place a nominal mixing zone, or zone of impact, for microbial-related issues, but it would only ever be arbitrary, as there are multiple other sources microbial contamination along the waterway, which are beyond the control of Coliban Water, and which continue to impact the waterway in the absence of any discharge from the Kyneton WRP.</p>
<b>Community Consultation</b>	
It is not clear what community involvement/engagement there has been in the proposal.	As has been previously agree to with EPA's North West Office, EPA have indicated that they would be taking the lead on all community consultation with respect to the proposal. Coliban Water has undertaken some prior engagement with the community and additional details on this engagement have been added into the accompanying documentation.

**EPA correspondence dated 21 April 2022**

Issue	Response
<p>The comments previously provided on the document titled 'Further information on the Quantitative Microbial Risk Assessment (QMRA) for the discharge of treated wastewater to the Campaspe River', provided by Coliban Water, still stand as they have not been addressed in the application</p>	<p>Noted, and these concerns have now been addressed.</p>
<p>Suggest using the WHO recommended ingestion volume rather than a very limited local study. Normally, recreational water quality objectives are calculated based on 50 exposures per year, which would make the DALY much higher. DALY values should be provided as they were in previous reports.</p>	<p>In preparing this supplementary QMRA documentation, a range of recreational guideline documents were consulted, and a range of exposure and consumption scenarios were looked at. It is noted that EPA publication 2007 contains suggested ingestion volumes for both primary and secondary recreation, and these volumes will be used in the revised QMRA.</p> <p>Unlike coastal areas, where there are designated and patrolled primary recreation locations, no such locations exist along the Campaspe River. Nevertheless, the number of exposures per year in the QRMA has been revised up 30 to 50.</p> <p>Therefore, the revised annual exposure volumes, based on 95%ile calculations, have been revised to 4.03 litres for primary contact and 0.855 litres for secondary contact</p> <p>The relevant information can be found in section 8.7 and Appendix C of the revised ERA.</p>
<p>Viruses are the main driver of risk in recreational waters impacted by human sources so they should not be eliminated from the QMRA approach.</p>	<p>Noted.</p>

**EPA correspondence dated 21 April 2022**

Issue	Response
<p>Dose-response models for viruses (adenovirus and norovirus) exist and have been published. Please refer to EPA Publication 2007: Quantitative microbial risk assessment for assessing risks to recreational users in Port Phillip Bay (available online)</p>	<p>Noted. Coliban Water have been working on various iterations of the ERA in late 2020, and were unaware of the release of Publication 2007 in June 2021.</p> <p>It is accepted that there are dose-response models for adenovirus and norovirus, and versions of these have now been used within virus-specific QRMA's.</p> <p>The specific dose-response model that has been utilised uses a combined virus assessment for adenovirus and norovirus, as per the assessment methodology that was included in the draft 2020 version of the Australian Guidelines for Water Recycling (AGWR).</p> <p>The update information is presented in section 8.7 and Appendix C of the revised ERA.</p>
<p>There are also some concerns related to the existing irrigation schemes (Racecourse, council parks, Hardwicks, Crofton Park, flood and spray irrigation) reported in Attachment E "Hydrological Assessment and Water Balance Model Report" as Class B (and C?) recycled water is being used in non-restricted areas. Class B should not be used for the irrigation of non-restricted areas unless sub-surface irrigation is used.</p>	<p>This licence amendment application is specific to the discharge of treated water from the Kyneton WRP to the Campaspe River</p> <p>All irrigation schemes associated with the Kyneton WRP have been previously assessed and approved by EPA, and each scheme has an approved Environmental Improvement Plan (EIP).</p> <p>If EPA have concerns about the operation of the irrigation schemes, they can be dealt with separately to this licence amendment application.</p>
<p>The recycled water classes described in EPA Publication 1910.2 are merely a compliance tool. They cannot replace a risk assessment. It must be noted that the same document stipulates that:</p> <p>Any exceedance to the recommended <i>E. coli</i> levels for Class B recycled water (100 <i>E. coli</i> /100mL) should trigger resampling and retesting.</p> <ul style="list-style-type: none"> <li>• Levels ≥ 400 <i>E. coli</i> /100 mL in two consecutive samples or</li> </ul>	<p>It had been assumed the <i>E. coli</i> values in both publication 1910.2 and the ERS were underpinned by a relevant risk assessment, and, as such, were risk-based and suitable to use as licence limits (i.e. compliance figures).</p> <p>We accept EPA's advice that the licence limits for <i>E. coli</i> levels in the amended licence should be:</p> <ul style="list-style-type: none"> <li>• Rolling median of 100 <i>E. coli</i> /100mL</li> <li>• Maximum of 400 <i>E. coli</i> /100 mL</li> </ul>

**EPA correspondence dated 21 April 2022**

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<ul style="list-style-type: none"> <li>a rolling annual median <math>\geq 100</math> <i>E. coli</i> /100 mL should trigger a notification of WWTP failure to EPA and investigation to remediate the issue.</li> </ul> <p>This means that the <i>E. coli</i> levels proposed for the amended licence (see Attachment F and Permission pathway form) would not be appropriate:</p> <ul style="list-style-type: none"> <li>100 <i>E. coli</i> /100mL should be a rolling median, not an annual median</li> <li>400 <i>E. coli</i> /100 mL should be the maximum level instead of the proposed 500 <i>E. coli</i> /100 mL</li> </ul>	
<p>The reported enterococci or <i>E. coli</i> levels correspond to levels detected at the point of exposure and, because the water quality at the point of exposure is beyond Coliban Water’s control, they cannot be used at the point of discharge as it is not what they are designed for. Focus on excess risks that can attributed to the discharge and using predicted pathogen levels at the discharge point and water flow for the dilution ratio.</p>	<p>Noted. The assessed excess risk is considered to be acceptable for the likely downstream exposures during periods of discharge.</p> <p>An excess level of risk only arises if concentration of target microorganisms in Campaspe River upstream of the discharge point are lower than what is in the discharge</p>
<p>There is a discrepancy between the <i>E. coli</i> levels described in the GHD report and those reported in the RMIT AQUEST reports. These reports indicate that <i>E. coli</i> levels in the Campaspe River, upstream and downstream of the Kyneton WWTP varied spatially</p>	<p>The data in the ERA prepared by GHD is the full data set for instream <i>E. coli</i> monitoring data, which includes both the monitoring data that Coliban Water collects from the Campaspe River, and data from the AQUEST monitoring program.</p>

**EPA correspondence dated 21 April 2022**

Issue	Response
<p>and temporally, but they were mostly below the SEPP Waters trigger values indicating suitability for primary contact and secondary recreation. The GHD report indicated that levels were above these trigger values, and that the discharge would reduce <i>E. coli</i> levels in the Campaspe River.</p>	<p>Whenever a discharge from the Kyneton WRP to the Campaspe River is occurring, Coliban Water’s contract laboratory is requested to undertake sampling upstream and downstream of the discharge point. This form the bulk of the data reported in the ERA.</p> <p>The AQUEST monitoring program was designed specifically to demonstrate the effectiveness of the environmental offsets work along the Campaspe River. Under this program, samples are collected along the river when there is flow, regardless of whether a discharge is occurring to the river from the Kyneton WRP.</p> <p>Given the different program designs and the multiple potential sources of <i>E. coli</i> input along the river, it is not unexpected that the results vary.</p> <p>The underlying argument, that under the proposed discharged scenario of only BNR-treated water, that has been UV treated, that the instream concentration of <i>E. coli</i> will virtually always be higher than the concentration in the discharge, still holds true, regardless of which data set is used.</p>
<p>The fact that discharge occurs mostly in winter when recreational activities are rare would be the strongest argument that could be presented as it may eliminate the exposure pathway. It means however that signs should be placed at swimming spots and other areas where beneficial uses may be impacted whenever discharge occurs</p>	<p>Discharges to the Campaspe River are only likely to occur during the winter months, when recreational activity is highly unlikely to occur in the Campaspe River. This is because the river water is extremely cold and there are limited public access points where recreational activity may occur.</p> <p>During the summer months, when recreational activity may occur along the river, the demand for recycled water from irrigation purposes is such that there is no need to undertake discharges to the river.</p> <p>It also should have been mentioned in the original documentation that during the summer months that the Campaspe River is ephemeral, and often does not flow. Because of this, there are limited recreational opportunities.</p> <p>Nonetheless, and despite the low likelihood of recreational exposure occurring during a period of discharge, pathogen assessments and QMRA work has been undertaken to characterise the level of risk.</p> <p>Coliban Water agrees that, in order to improve and increase transparency with respect to discharges from the Kyneton WRP to the Campaspe River, signage should be erected at the point of discharge.</p>



**EPA correspondence dated 21 April 2022**

<b>Issue</b>	<b>Response</b>
	<p>Coliban Water does not agree that signage is necessary any further downstream of the discharge point, as the available data indicates that, from a human health perspective, the quality of river water is of a similar or poorer quality than the quality of the discharge, such that the river is likely to be unsuitable for some uses, regardless of whether a discharge is occurring.</p> <p>It is also important to note that a discharge will not occur every day to the river (currently, a discharge only occurs on 52% of days in any one year), so the value of year-round signage to the community is likely to be limited.</p> <p>However, Coliban Water is supportive of signage being erected at the closest publicly-accessible points to 500m and 1km downstream of the discharge point, in order to ensure the public is aware of the upstream discharge.</p>