Purified Recycled Water Pilot Plant

Responsible Officer: Group Manager Planning and Delivery (Andrew Logan)

Recommendation

That Council:

(a) Take no further action to progress a pilot purified recycled water scheme at the Perradenya Estate as part of the Future Water Project 2060.
(b) Continue to investigate the possibility of implementing a Purified Recycled Water pilot at the most advantageous location to meet strategic objectives of the Future Water Project 2060.
(c) Delay any significant investigations into a Purified Recycled Water pilot until such time as the *Purified Recycled Water for Drinking Investigations – Option Assessment of Indirect and Direct Potable Reuse Schemes* has been completed.
(d) Consider the comparative viability of Purified Recycled Water as a potential Stage 3 option when assessing whether to proceed with additional pilot investigations.

Background

The Future Water Project 2060 included consideration of a Purified Recycled Water Pilot Plant. Resolution **[61/20]** relating to the Future Water Project includes the following item **6. iii)a)**:

"6. Undertake the following actions as described in Section 4 of this report:
i)…
ii)…
iii) Innovative action
a) Progress Perradenya Estate pilot purified recycled water scheme and work with relevant stakeholders to design a long-term public education campaign to increase awareness and acceptance of indirect potable reuse (IPR) and direct potable reuse (DPR)."

Council staff have progressed further investigations into the pilot purified recycled water scheme at the Perradenya Estate (hereafter referred to as the Perradenya Scheme) and determined that the scheme should not be progressed further at the Perradenya site.

Future Water Project – Strategic Objectives

The primary purpose of Purified Recycled Water (PRW) pilot plant is to provide a pathway to progress understanding and support strategic decision making in relation to PRW as a potential Stage 3 water source option. A pilot plant is also likely to be a pre-requisite for regulatory approval and implementation of a full-scale scheme.

The Perradenya Scheme is not optimised to meet the strategic needs of the Future Water Project 2060. It does not usefully reflect the potential full-scale Stage 3 implementation of PRW and has several limitations as described below.

1. It will not progress technical and engineering knowledge gaps required to progress full-scale scheme development because:
    - The proposed technology for the Perradenya Scheme is different from the likely technology for full-scale Stage 3 implementation.
    - The difference in technology severely limits opportunities to optimise and gain confidence in the engineering design and develop the necessary operational experience with potential technology.

2. It will not fully address specific health risks and other regulatory issues relevant to Stage 3 implementation because:
    - The limited source of treated wastewater and different catchment risks mean that risk assessments may not be representative of full-scale schemes.
    - There is no opportunity to clarify the composition of wastewaters, chemical and microbial hazards etc of any of the full-scale scheme options, resulting in the duplication of monitoring full-scale schemes in the future.
3. The current timing of the Perradenya Scheme is not optimised in relation to strategic considerations because:
    - There is ongoing regulatory development occurring in NSW, resulting in considerable regulatory uncertainty in the short to medium term.
    - Implementation of potential Stage 3 options is not currently envisaged to occur prior to 2040, allowing scope for the pilot plant to be delayed without impacting future implementation.
    - Council does not currently have a strong understanding of how PRW compares to other potential Stage 3 options. Council is about to commence investigations exploring the economic feasibility of PRW which will assist in evaluating Stage 3 options.

Lack of Regulatory Support to Explore "Direct Augmentation"

A proposed concept for a PRW pilot plant at Perradenya was submitted to key state government stakeholders including the then Water Minister in late 2020. This proposal was unsuccessful in gaining regulator support to explore the proposed "Direct Augmentation" option at Perradenya. Feedback noted that additional investigations would be required ahead of investment in the pilot scheme. The Minister also noted that there was no funding availability for the concept. Following additional consultation by Rous staff with regulators (NSW Health and DPE Water) and internal research, it was determined that further pursual of the Perradenya Scheme was unlikely to be successful and would not be in the best interest of Council.

The proposed concept is not well aligned with the current priorities for regulatory development in NSW. The approval of a "Direct Augmentation" scheme would currently require an extension of the existing national framework (Australian Guidelines for Water Recycling – Phase 2a – Augmentation of Drinking Water Supplies). The extension of a national framework is outside of NSW regulators' sphere of influence. Feedback from various stakeholders in the Water Industry is that progression of "Direct Augmentation" should be targeted at the National level and would require significant co-ordinated effort to be successful.

It should be noted that NSW regulators are currently working with other stakeholders to progress the regulatory environment for PRW in NSW, including a PRW pilot facility under construction by Sydney Water at Quaker's Hill. This pilot plant is designed to explore community engagement and regulatory issues associated with the implementation of "Indirect Augmentation".

Limitations of Perradenya Location for a Pilot Plant

The Perradenya location has significant drawbacks which affect the cost and suitability for the implementation of a PRW pilot plant. In order to build a PRW pilot plant, a source of treated wastewater is required (i.e. a Purified Recycled Water plant cannot use raw sewage as its source water). An immediate issue at Perradenya is the lack of a treated wastewater source at the site, requiring either a wastewater treatment infrastructure on-site or pipeline infrastructure to deliver treated wastewater to the site. The costs associated with each of these options are significant and do not add value to the pilot investigations. Further complicating this matter is that Rous is not a wastewater authority and does not operate any wastewater infrastructure. It is more practical and cost-effective to locate the pilot plant near to an existing source of treated wastewater.

The Perradenya location does not align well with Rous's community engagement objectives. It is not central nor a prominent area within the region, and does not represent a suitable location for full scale implementation as a potential Stage 3 option. There may also be issues with large vehicle access to the site, making construction and operation as a pilot plant more difficult, and limiting demonstration and engagement opportunities.

Historical Development Consent Conditions of the Perradenya Estate

A water reclamation facility at Perradenya is subject to historical development conditions. It was the previous view of Council that there was an efficiency gain by linking the Future Water Project and the Perradenya development. However, no such benefit has materialised, and the historical development conditions present the following challenges:

- A permanent water reclamation facility at Perradenya is not likely to be a good value proposition, and therefore is not likely to receive the required regulatory approvals. A preliminary economic analysis of the Perradenya Scheme estimated a water production cost of over $20/kL, as opposed the current notional bulk supply cost to constituent councils of $2.16/kL.
- There is likely to be substantial regulatory difficulty associated with construction and operation of wastewater treatment components at the proposed site due to odour, sludge disposal and other environmental concerns. It should be noted that there has been significant change in the regulatory environment since the concept was first considered by Lismore City Council and the original developers of the Perradenya Estate, Corpol Properties.
- The progression of the Perradenya Scheme may risk complicating the resolution of the development conditions at the Perradenya site.

Purified Recycled Water Investigations Underway

Two separate investigations are currently underway in relation to PRW, as described below.

1. Purified Recycled Water for Drinking Investigations – Option Assessment of Indirect and Direct Potable Reuse Schemes.

   This is a multi-year, consultant-led investigation seeking to evaluate the concept level feasibility of implementing PRW as a potential Stage 3 option (2040-2060) of the Future Water Project. This study will increase Rous's understanding of PRW as a full-scale Stage 3 implementation option and inform future decisions about how best to undertake a pilot project. The expected completion date is Q1 2024.

2. Preliminary site selection process and regulatory consultation.

   This is a short, staff-led investigation revisiting the objectives for the pilot and comparing these to various pilot implementation options. The study will consider various types of pilots (treatment capacities and configurations) and compare to other community engagement options. A preliminary site selection process will be performed, and regulator engagement undertaken. It is expected to be completed by June 2023.

Governance

- **Integrated Planning and Reporting**

The proposed changes for the pilot plant approach are consistent with the current actions in the Operational Plan (2022-2023) to:

- Undertake further investigations of Stage 3 source options to support future decision making
- Identify a preferred location and concept for a purified recycled water plant.

The outcomes of the *Purified Recycled Water for Drinking Investigations* will inform Council's future direction in relation to Purified Recycled Water and this will be reflected in future IP&R framework documents.

- **Finance**

The budget for the PRW pilot plant for 22/23 FY is $60,000 and is appropriate to facilitate a preliminary site selection process and regulatory consultation actions as described previously. The Long-Term Financial Plan currently has $5,673,000 budgeted with substantial expenditure commencing in the 23/24 FY to plan, design and construct a pilot plant. It is proposed to reduce the 23/24 budget and adjust the Long-Term Financial Plan to reflect the recommendation to delay any decision regarding the pilot plant until the completion of more detailed investigations into PRW in 2024.

- **Legal**

Council is not under any legal obligation to implement a PRW Plant at Perradenya, as part of the Future Water Project. The legal requirement for a water reclamation scheme at Perradenya Estate will be addressed in a future report to Council.

Consultation

Council staff have undertaken a number of formal and informal consultation activities in relation to the Perradenya Scheme. This has included:

- Community consultation with Perradenya residents at various times throughout Rous's ownership of the development.
- "Let's drink to the future" proposal to NSW Minister for Water, including response.
- Information-sharing with colleagues from Sydney Water in relation to pilot plant requirements.
- Consultation with NSW DPE Water and NSW Health staff regarding regulatory requirements.
- Participation in Water Services Association Purified Recycled Water Implementation Group (provides understanding of other PRW projects around Australia).

The information and feedback through this consultation has been reflected in this report.

Conclusion

Following further progress and investigation of the proposal, the Perradenya Estate is not considered a suitable location for implementation of a PRW pilot plant for the Future Water Project. It is recommended that the Future Water Project consider alternative locations, and any historical consent conditions for the Perradenya Estate be dealt separately based on their own merits.

Additionally, it is recommended that any significant investigations or decisions relating to the Purified Recycled Water pilot plant be delayed until the outcomes of the *Purified Recycled Water for Drinking Investigations* are known. This will allow the investigations of the Purified Recycled Water pilot plant to be undertaken with a better understanding of potential full-scale schemes, and their relative viability to other potential Stage 3 source options.