Melbourne Water Innovation Competition – Reducing Scope 1 Greenhouse Gas Emissions

Responses to Questions Received to 30 October 2018

NOTE: Some similar questions have been consolidated into a single question and answer.

Q 1. Where can I find more detailed information about the competition requirements?

Details of the competition can be found on the Melbourne Water competition landing page (http://www.melbournewater.com.au/innovation-competition) and also by clicking on the link on this page and going through to the submission portal.

Q 2. Who is eligible to apply for the competition?

Individuals, institutions and corporations based in Australia and overseas are eligible to apply.

Q 3. What will be covered in the webinars?

The webinars will provide background to Melbourne Water and the Scope 1 challenge, details of the Innovation Competition and the Melbourne Water wastewater treatment plants that solutions will be applied to. The submission logistics and key dates of the competition will also be covered and will be followed by a Q&A session with Melbourne Water representatives.

Q 4. Will the webinar presentations be available?

The webinars will be recorded and will be made available to view on the competition landing page (http://www.melbournewater.com.au/innovation-competition).

Q 5. Do I need to register to submit a solution?

Yes. Registration is part of the submission process. Registration and submissions may be saved and completed later. All submissions must be completed by the Closing Date and Time.

Q 6. Can a solution provider enter more than one submission?

Yes. Please enter each idea as a separate submission.

Q 7. Is Melbourne Water's lagoon treatment system a focus in this competition?

The competition is focused on reducing Scope 1 greenhouse gas emissions from any source at Melbourne Water's wastewater treatment plants, including lagoons.

Q 8. Is Melbourne Water interested in phosphorus recovery as part of the solution submitted?

The competition is focused on reducing Scope 1 greenhouse gas emissions from any source. Recovery of phosphorus, if identified as adding value, may be of interest if it also delivers greenhouse gas emission reduction.

Q 9. Would a submission involving solar panels to run the pumps, and reduce emissions be eligible?

The competition is focused on reducing Scope 1 greenhouse gas emissions. That is direct emissions resulting from the treatment processes. Running pumps or other equipment using solar panels may result in reducing Scope 2 greenhouse gas emissions, but Scope 2 emission reduction is not the subject of this competition.

Q 10. Is Melbourne Water interested in N_2O and CH_4 monitoring for measuring and assessing emissions or only solutions for preventing emissions?

There are three solution categories; Emissions measurement and modelling, Optimisation of existing wastewater treatment processes, and Wastewater treatment processes of the future. N_2O and CH_4 monitoring would sit under the first solution category, but it should be noted that submissions need a high level of innovation and can sit in one or more of those areas.

Q 11. Is Melbourne Water currently running Anammox or other variations of nitrite-shunt operations as pilot trials at either WTP or ETP?

Melbourne Water is currently running a nitrite shunt trial (demonstration plant) at WTP. Results are yet to be published.

Q 12. How detailed should the solution idea be. How many pages etc.

The initial phase, the submission of ideas, limits the number of words for each required response. The required responses and word limits are detailed in the Request for Solution document and in the submission platform. The Detailed Solution, if awarded, will require significant detail and no restriction is placed on page numbers, etc. The content required of a Detailed Solution is contained in Section 8.8 of the Request for Solution document.

Q 13. How will you honour existing patents in other countries?

The approach to patents for idea submission is documented in Section E of the Request for Solution and Returnable Schedule 3 for submission of any Detailed Solution, if awarded.

Q 14. Where do I find the submission document on your site?

Details of the competition can be found on the Melbourne Water competition landing page (http://www.melbournewater.com.au/innovation-competition) and also by clicking on the link on this page and going through to the submission portal.

Q 15. What do you mean by a Detailed Solution?

The content of a Detailed Solution, if awarded, is contained in Section 8.8 of the Request for Solution document

Q 16. You mentioned biodiversity is a key factor, is there information available on this to explain further about the biodiversity?

Both ETP and WTP support populations of species that enhance these sites' biodiversity. This may be birdlife or other species such as the endangered Growling Grass Frog. WTP is also covered by the Ramsar Convention on Wetlands of International Importance and is subject to Australian and Victorian environmental controls as well. At WTP some of the treatment lagoons form habitat for water birds and therefore must support both treatment and biodiversity conservation objectives.

Q 17. In phase 1 or 2, will there be an opportunity to visit the sites?

Melbourne Water will not be conducting site visits during the initial phase of the competition. Site visits may be conducted, as necessary, for those awarded the preparation of a Detailed Solution.

Q 18. What is the split between Scope 1 emissions between the biosolids and the main plant biological process?

Indicative numbers are provided in the Request for Solution document as Fig 1b and 2b. Emissions from stockpiled biosolids, if any, are currently not required to be reported under Australia's National Greenhouse and Energy Reporting scheme (NGER).

Q 19. Is there a definition of what affordable is?

Affordability will be assess by analysing the Business Case surrounding the opportunity if implemented; its cost of implementation, its operational costs and savings and other costs or benefits accruing to the idea.

Q 20. Is the capital investment planned at both the plants available for the implementation of solutions developed?

The capital investment available to implement solutions developed will depend on the solution, its impact on emissions reduction, its cost of implementation, its operational costs and savings. Solutions will ultimately be assessed on a Business Case basis.

Q 21. Are the webinar slides available?

The webinar slides will be made available on the Melbourne Water Landing Page on conclusion of the webinar series.

Q 22. In regards to Wastewater treatment processes of the future - Decentralised treatment. What size range would make an ideal submission, e.g. 100kL/day, 500kL/day?"

Decentralised treatment may be proposed at any scale (for example household, suburb or catchment level) deemed to be of benefit with respect to Scope 1 greenhouse gas emissions.

Q 23. What is the volume of "sludge" produced annually? How is this waste stream currently dealt with?

A total of about 71 kt_{dry} of biosolids are produced annually; 30 kt_{dry} at the ETP and 41 kt_{dry} at the WTP. These biosolids are either stored on site, or reused beneficially, for example as landfill capping material or in direct land application. Melbourne Water has a significant program of investigations into alternative reuse pathways for maximising the value of biosolids.

Q 24. Can we be supplied with a chemical analysis of the "sludge"?

The composition of biosolids is summarised in the accompanying document: "Biosolids Data Summary.pdf".

Q 25. What would the total volume of stockpiled sludge be?

Current stockpiled sludge at each treatment plant is: ETP = 0.6 Mt_{dry} and WTP= 1.6 Mt_{dry}

Q 26. Can you provide in process water quality analysis data for current operations?

Process water quality changes through the plant from raw sewage at the plant inlet, to fully treated water at the outlet. Request for data at specific locations along the treatment train will be provided if available and where requested.

Q 27. Is algae control a problem in the ponds?

Algae is experienced in the downstream lagoons at the WTP, especially during the summer months.

Q 28. Please explain how the sludge drying beds work? How is the water removed from the treated sludge?

Sludge is delivered to shallow pans either directly from digesters at the ETP or from dredging of lagoons at the WTP. The sludge has a high water content, with approximately 3% solids. The solids are allowed to settle and supernatant is decanted off and returned to the treatment plant for processing. Solids are exposed to sun and wind and are turned by earth moving machinery. Once dry (60–80% solids), the solids are removed from the pans and stockpiled for future beneficial use.

Q 29. What is the average depth of ponds?

The average depth of facultative and maturation ponds at the WTP is typically about 2 m. Ponds with mechanical surface aeration are approx. 3 m deep. The depth of covered anaerobic lagoons at the WTP is about 6–8 m.

Q 30. Will influent flows and nutrient loadings be provided?

Please see the summary table, below:

Parameter	WTP	ETP
Flow	530 ML/d	390 ML/d
COD concentration	846 mg/L	916 mg/L
TKN concentration	62 mg/L	61 mg/L
Total P concentration	8 mg/L	12 mg/L

Q 31. In line with future planned works, is it anticipated that the effluent licence parameters may be tightened?

There is no current indication that effluent licence parameters will be tightened. However, with Melbourne Water's continued research into receiving water health and a general risk of regulatory change it is possible that some change in effluent quality might be expected in the future.

Q 32. Do you have data on dissolved methane concentration in both the treatment plants? If yes, what instrument are you using?

Dissolved methane at the WTP has been measured at about 18 mg/L in water exiting from underneath the anaerobic lagoon covers. This was measured by submerged grab sampling and lab analysis and by immersed measuring instruments. No reliable sampling has occurred at the ETP.

Q 33. Do I understand correctly that the first round will provide $10,000 to 5 finalists, leaving $150,000 left for final awards? How many final awards do you expect?

The allocation of the funding pool is explained in the Request for solution document. The number finalists will depend on the quality of the submissions received (up to 5).

Web Page: http://www.melbournewater.com.au/innovation-competition
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