NSW GOVERNMENT | Department of Primary Industries

#19

Our Ref: OUT11/20944

Your Ref: MP 09_0134 MOD 3

16 November 2011

Lisa Chan
A/Senior Planner, Infrastructure Projects
Dept of Planning & Infrastructure
Sydney NSW 2000

Dear Lisa,

Re: Brooklyn and Dangar Island Sewerage Scheme - Modification to Condition 63 - Sydney Water Corporation's Assessment Report

Thank you for your letter of 19 October (INW11/31411) seeking comments on the proposed licence modification from the Department of Primary Industries - Fisheries Division (DPI-Fisheries).

DPI-Fisheries is responsible for ensuring that fish stocks are conserved and that there is no net loss of key fish habitats upon which they depend. To achieve this, DPI-Fisheries ensures that developments comply with the requirements of the FM Act (namely the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A, respectively), and the associated *Policy and Guidelines for Aquatic Habitat Management and Fish Conservation (1999)*. In addition, DPI-Fisheries is responsible for ensuring the sustainable management of commercial, recreational and Indigenous fishing, aquaculture, and marine protected areas within NSW.

DPI-Fisheries has reviewed the Assessment Report (AR) in light of those provisions and policies and **objects to Sydney Water's proposal** to increase effluent discharge limits of total phosphorus, total nitrogen and ammonia from the Brooklyn Wastewater Treatment Plant (BWTP) based on the information provided in the AR.

The proposal has the potential to undermine broader government policy objectives aimed at reducing nutrient inputs into the Hawkesbury-Nepean River, such as the $77.4 million Office of the Hawkesbury-Nepean River Recovery Program to reduce nutrient inputs by at least 48.2 tonnes per year. The proposal is also inconsistent with Sydney Water's objectives for the BWTP, including to 'reduce environmental degradation' and 'contribute to the achievement of a whole-of-river solution'. Further, the BWTP is currently operating at a third of its capacity (ADWF of 0.25 ML/d against a design of 0.71 ML/d), suggesting that the proposal is both premature relative to the life and capacity of the plant, and that ongoing optimisation problems could similarly cause Sydney Water to seek further modifications to the operating licence.

DPI-Fisheries provides the following comments to avoid such inconsistencies and uncertainties, and to achieve the best environmental outcomes for the Hawkesbury-Nepean River that a state-of-the-art facility like the BWTP can and should provide.

Justification and Assessment of Options

DPI-Fisheries considers the proposal to increase nutrient limits to have limited justification, likely long term impacts on the receiving environment, and should be the final option to implement after all other viable options to improve the long term operation of the BWTP have been assessed and/or tested. It is acknowledged that the AR considered some potential alternatives and modifications, but DPI-Fisheries is not convinced on the weight of evidence provided that those alternatives were either exhaustive or their dismissal justified.

For example, some options that were either not investigated or not described in the AR include, but are not limited to:

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1. operating the plant according to design specifications by using aluminium sulphate instead of, or in conjunction with ferric chloride for different parts of the process;
2. using another brand of membrane;
3. ensuring compliance with contractual obligations with respect to warranties and performance of the membranes, other consumables, and broader operational aspects of the BWTP;
4. providing economic incentives to encourage the remaining 50% of Gosford consumers to connect to the BWTP, or similar pricing or process mechanisms to achieve the ADWF of 0.71 ML/d; and
5. the use of carbon credits or similar environmental offsets akin to those for Sydney Water's desalination plant to compensate for the high electricity consumption typical of most membrane bioreactors.

Operating the BWTP according to design specifications would appear to be a ready engineering solution to the engineering problem, rather than potentially creating environmental and/or social problems by implementing the proposed discharge limits. Sydney Water's previous decision at the design stage to replace aluminium sulphate with ferric chloride may have seemed like a viable option at the time, however results from the optimisation phase showing restricted operational capacity of the BWTP, and an inability to meet licence conditions without significant cost, suggest that it may be time to re-think that decision.

Of the assessed options, the AR indicates that the alternative process of adding a tertiary phosphorus filter can achieve the existing effluent discharge limits. This was dismissed by Sydney Water on the basis that "it represents a considerable cost to the community", however the cost of approximately $1M does not appear to represent an inordinate amount over the 30 year lifecycle of the project.

Implementation of the tertiary filter is also recommended by the Aquaculture Management Unit of DPI-Fisheries, as there are a large number of Priority Oyster Aquaculture Areas (POAA) in the Hawkesbury River estuary less than one kilometre from the BWTP discharge point, as described in the NSW Oyster Industry Sustainable Aquaculture Strategy (the OISAS is available on the Department's website at: http://www.dpi.nsw.gov.au/fisheries/aquaculture/publications/general/nsw-oyster-industry-sustainable-aquaculture-strategy).

The most critical issue in relation to oyster aquaculture is the protection of sanitary water quality, and the removal or inactivation of human pathogenic viruses and bacteria. It is noted that Sydney Water's proposal only affects nitrogen and phosphorus, and faecal coliform levels will remain unchanged. It is also noted that the modified levels of nitrogen and phosphorus will remain within ANZECC water quality guidelines 97% and 99% of the time respectively.

Following consultation with the NSW Food Authority (NSW Shellfish Program), it is considered unlikely that the increase in these nutrients alone would be enough to cause algal blooms that could be detrimental to the oyster industry in the estuary. However, there is uncertainty surrounding the nutrient levels required to trigger an algal bloom. DPI-Fisheries (Aquaculture) therefore recommends that Sydney Water include a tertiary filter to address this uncertainty by ensuring that the current high effluent quality limits remain unchanged, thus providing the optimal long term environmental outcome for the local oyster industry.

Modelling and Monitoring

Figures 5-7 support the earlier comment that efforts to reduce nutrient inputs into the river over the last 20 years have been effective and are improving the quality of water in the Hawkesbury-Nepean River. Those figures used values averaged over each year and should have been supported by an indication of the variation in those values, and non-compliance with ANZECC guidelines and the operating licence. In particular, Sydney Water should have illustrated the

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performance of the BWTP against the current nutrient levels that their proposal seeks to amend, as well as a finer scale analysis of changes to water quality before and after operation of BWTP. The report should also have determined the probability of the proposal triggering or at least contributing to events where nutrient loads in the river become unacceptable, e.g. cause algal blooms. Without such information it is difficult to ascertain the outcomes of the proposal.

The modelling for potential impacts also appears to be restricted to near-field measurements, as if non-detection thereafter negated any potential for impacts beyond that temporal and spatial point. Such modelling does not consider cumulative impacts on the estuary, for example of an additional 25-75 kg/year of total phosphorus, nor does it provide detail about the length of time the enriched water stays within the estuary, its pathways of bioaccumulation, nor longer term impacts (lethal and sub-lethal) on fish due to increasing domestic wastewater inputs. This is particularly relevant in the Hawkesbury-Nepean basin, as its mid-reaches are currently undergoing a significant transformation from a predominantly rural to urban catchment with associated water supply and water treatment facilities. Such details and broader assessment of cumulative impacts are consistent with the findings of the Healthy Rivers Commission Independent Inquiry into the Hawkesbury-Nepean River System.

Summary and Recommendations

To reiterate, DPI-Fisheries objects to Sydney Water's current proposal to increase discharge limits for total phosphorus, total nitrogen and ammonia from the BWTP based on the information provided in the AR.

Before DPI-Fisheries can give further consideration to this or similar proposals, it is recommended that Sydney Water:

1. investigate and report on all options to address the operational difficulties currently experienced at the BWTP, including consideration of points 1-5 above; and
2. prepare a cost-benefit analysis for those options and for the tertiary filter compared to the proposal so as to provide a more transparent decision making tool and more accurate assessment of the long-term costs to the community and the environment.

It is also suggested that Sydney Water prepare a Preferred Strategy Report that summarises the primary concerns raised in submissions; Sydney Water's strategies to accommodate those submissions; and their revised strategy/proposal to overcome the existing operational difficulties.

DPI-Fisheries looks forward to working with Sydney Water and the Department of Planning and Infrastructure in the short term to resolve current operational issues at the BWTP, with the long-term aim of achieving the best environmental outcomes for the Hawkesbury-Nepean River.

If you require any further information, please do not hesitate to contact Marcel Green, Senior Environmental Assessments Officer, on 8437 4933.

Yours sincerely,

Bill Talbot
Director, Aquaculture, Conservation and Marine Parks
16 November 2011

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