Submission to
IPART Review of prices for Sydney Water Corporation
From 1 July 2016 to 30 June 2020
Concerning the North Head Wastewater Plant

by

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Abstract

Background

In 2001 Sydney Water commenced community consultation on Project North Head. The project was driven by the need to meet licence conditions for solids and grease/oil concentrations in the effluent from the North Head Wastewater Treatment Plant (NHWWTP) until 2023. This Project was abandoned in 2003 and in 2004 was replaced by what eventually became the Process and Reliability/Renewal (PARR) and Performance and Reliability (PAR) projects with a reduced mandate, but included the provision of additional infrastructure to ensure that the unchanged licence conditions would be met until 2023.

As a consequence, two sedimentation tanks were constructed in addition to the then existing four. Three digesters were also included among the improvements and additional equipment provided under PARR and PAR. The three digesters were designed to "process" the output from the six sedimentation tanks. The community was assured on many occasions that the biosolids from the digesters would not be "odourous". Accordingly, despite community opposition, the "Theiss Building", which had been used to store and treat biosolids, was decommissioned so that any post-digester odour treatment was thereby precluded. However, when the digesters were put into operation, the biosolids were exceedingly "odorous", leading to community complaints to the extent that one Sydney Water senior officer was driven to say "Shit stinks, get used to it!" in frustration at a regular meeting with the community.

Need for an Additional Digester

Unfortunately, it was found that the load on the three digesters from six sedimentation tanks lead to such a short residence time that the solids were only partially digested, thereby resulting in very "odourous" biosolids. Indeed, as pointed out by Ireland in her award-winning paper[1], the three digesters cannot handle the load from four sedimentation tanks and this was/is a cause for some of the numerous complaints about odours at North Head Wastewater Treatment Plant (NHWWTP) and the trucks transporting the biosolids for beneficial reuse.

[1] S. Ireland", May 2011, "Biosolids Process Optimisation At Sydney's North Head STP –Recuperative thickening increases solids throughput" AWA Journal, pp 86-89.

In an attempt to remediate the problem, Recuperative Thickening was implemented at North Head. But, despite the increased residence time of the solids in the digesters, there has been little improvement in the smell of the biosolids. A very senior Sydney Water Corporation officer mentioned at the Odour Forum held last year, that odours from the biosolids at North Head will only be improved by the installation of an additional digester. This surely means that an additional digester is required just to overcome the biosolids odour problems, otherwise community complaints and media attention will continue to plague both Sydney Water and the EPA.

Since licence conditions on solids and oil and grease concentrations in the effluent from the plant would be exceeded should the North Head Plant operate with only three sedimentation tanks in service, a minimum of four tanks must be operating at any given time. Indeed, even then the plant has come close to the allowable 50 and 90 percentile limits for solids of 200 and 250 mg/L respectively. For example in the 2010-2011 financial year, values[2] of 185 and 234 mg/L for the 50 percentile and 90 percentile, respectively, were obtained and in 2013-2014, these concentrations were 189 and 230 mg/L. It follows, that in the very near future another digester will be required to cope with the increasing solids load when five or more sedimentation tanks will need to be put into operation to meet the effluent licence conditions.

I am therefore totally in agreement with the statement in the Need For Scheme / Scope Of Works / Options Appraisal section on page 188 of the Atkins Cardno report[3]:

> "*The investment rationale is complex and is not purely driven by growth. SWC's view is that one additional digester is required due to growth and one digester is required to overcome the reliability issues of the existing digesters*"
>
> *"As a consequence of the current plant's poor performance, numerous odour complaints have been received about odour from the plant directly and because of trucking the biosolids out of the plant. The issue has been reported in the media."*

However, in view of the above statements, I do not understand how the consultants were able to write above the Table on the same page that:

> "*This project is in response to, and in anticipation of growth in the North Head catchment …*"

This completely contradicts the above two paragraphs and the statement immediately below the table, viz,

> "*The focus of the proposed project is to increase the digester capacity to cope with growth* ***and to help with existing performance concerns***"

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[2] Anon, 2015, "Sewage Treatment System Impact Monitoring Program – Data Report 2014-2015" Sydney Water, 2015

[3] Atkins Cardno "IPART -Sydney Water Corporation – Expenditure Review – Final report" 21 December 2015."

Similarly I cannot follow why in the "Key Data" Table on page 189 of the same report under the rubric "Investment Driver" only "Growth" appears and there is no mention of ongoing operational problems.

Indeed the Atkins Cardno report is suffused with comments that only "growth" is driving this proposal. For example they write on page 126 of the report:

> "*North Head WWTP is SWC's second biggest WWTP, serving an estimated 1.1million* [sic] *people in 2011. This project is to increase biosolid digester capacity in response to, and in anticipation of growth in the North Head catchment area."*

And conclude that:

> "*The case for two additional digesters appears to be based on growth projections to 2036. We have made an adjustment to the expenditure in the next price path as we consider that SWC has not made a strong case that a single additional digester would not be sufficient to cope with anticipated demand in the medium term (e.g. next price path + 5 years).*"

Further there is a very significant difference between Sydney Water's population projections and those provided by Atkins Cardno who reference Sydney Water as the source of their figures. On page 12 of the Sydney Waters report on Sewage Monitoring[2], a population projection of 1,276,909 is given for the years 2014-2015 in the Table 3-1, whereas on pages 126 and 188 of the Atkins Cardno report, a figure of 1,255,378 is given for 2020 in the uncaptioned Table. Both figures cannot be correct and both are sourced to Sydney Water. Would the use of alternate figures for load growth have led to a different conclusion?

Now, it may be that Sydney Water had not prepared its submission with sufficient care, so that Atkins Cardno were able to write on page 188 of their report that "*The project is still at a very early stage of planning and the project initiation business case is still being prepared.*" In that case why was the request for funds submitted?

It seems that despite evidence to the contrary, Atkins Cardno based their assessment that only one digester was required on the assumption that the plant was operating satisfactorily at present. This is not the case and I have demonstrated above that two digesters are urgently needed; one to overcome biosolids odour problems and the other to deal with the fact that in the near future NHWWPT is going to exceed its licence 50 and 90 percentile limits without it.

Since IPART[4] has accepted the Atkins Cardno Report the same sentiments concerning the needs at the North Head Waste Water Treatment Plant are expressed on page 79[4]

> "*Atkins has also recommended a reduction of* ***$13 million*** *on Sydney Water's proposed upgrade and augmentation of* ***biosolids management facilities at North Head*** *wastewater treatment plant.*[142] [emphasis in the

[4] IPART Review of prices for Sydney Water Corporation - From 1 July 2016 to 30 June 2020 Water — Draft Report. March 2016

original]

Sydney Water proposed to add an additional two digesters in order to increase capacity for growth, and to upgrade existing facilities. Atkins Cardno found that Sydney Water:

> …has not made a strong enough case that a single additional digester would not be sufficient to cope with anticipated demand in the medium term (eg. next price path +5 years).[143]

Atkins Cardno considered that the construction of one extra digester at North Head in 2017-18 would meet the load required to beyond 2020. As such, it has recommended that the cost of Sydney Water's proposed second digester be excluded from our decision on the efficient and prudent capital expenditure."

I believe that I have demonstrated above that there is a very strong case the need for two additional digesters at NHWWTP plant. One digester is required to allow the problems with odours to be overcome whilst the other is required to deal with the insipient breach of licence involving solids and oil/grease concentrations in the effluent from the plant.

Conclusion

Since Atkins and Cardno were clearly aware of the operational problems at NHWWPT, why did they isolate "growth" as the only "driver" of the project? The use of more than four sedimentation tanks was anticipated before 2001 when Project North Head Community Consultations had begun and the need for less "odourous" biosolids has also been known for almost ten years. I believe that the community has waited long enough for relief from odour problems from North Head and the proper treatment of biosolids transported through the streets. Sydney Water needs to be funded for two additional digesters not just one as recommended by Atkins Cardno.

I therefore request that IPART, overrule the recommendations from its consultant, Atkins Cardno, and restore the $13,000,000 to the allowable expenditure of Sydney Water for the provision of the second new digester at the North Head Waste Water Treatment Plant for the expenditure period 1 July 2016 to 30 June 2020.