Submission to IPART Draft Report – Review of Prices for Sydney Water Corporation - - From 1 July 2016 to 30 June 2020

By Manly Environment Centre April 2016

1. **Odour compliance:**

   Odour compliance of the North Head Wastewater Treatment Plant has been a serious problem for many years. Not only has it received coverage in local and national media but almost resulted in an EPA prosecution and was the resulted in a lengthy investigation by the Ombudsman's office and production of an Ombudsman's Report.

   Since that time, the problems with odour have persisted, in spite of regular reporting by the many affected residents. To quote the Manly Daily "the issue they receive the most complaints about it odours from the North Head Wastewater Treatment Plant".

   Last year an Odour Forum was organised jointly by Manly Council, the Manly Environment Centre and Sydney Water which focused on odours. Many issues were raised by residents and staff from companies/organisation with offices in the area. This was very successful and 27 issues, mostly concerning odours were raised. A second forum has been organised for 28th April, 2016.

   These persistent odour problem is supported by Atkins Cardno's in their final report to IPART "Sydney Water Expenditure Review" (page 188) which states that "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."

2. **In 2006, as part of Process and Reliability/Renewals (PARR) and Performance and Reliability (PAR) projects at North Head one of the major drivers was the need to meet the Licence conditions until 2023. As a consequence:**

   i) Two additional sedimentation tanks were installed to capture more solids and oil/grease from the influent as the load increased. Six sedimentation tanks were therefore available.

   ii) Three digesters were installed and the community assured that the biosolids after digestion would not be "odorous" so that there would be no need for any treatment, and the Theiss Biosolids Building where biosolids used to be processed was decommissioned.

   However, only four of the six available sedimentation tanks are used because the digesters cannot handle a greater input.

   The load when only four sedimentation tanks are used is too high for the three digesters which operate with reduced residence time, leading to very odorous solids after treatment which have led to much community angst.

3. **Sydney Water has admitted that at least another digester is needed to overcome the odour problem.**

   The increase in load has meant that even with very loose licence requirements the plant is coming close to exceeding its limit of 50% solids to be discharged in the effluent Another digester is required to deal with the increase in load so that additional existing sedimentation tanks can be put into operation.

   However, Sydney Water has requested funding for two digesters in the next cycle of funding to be approved by IPART in July 2016.

4. Sydney Water Funding Application

Sydney water is seeking funding of $40.1million to install two additional digesters to "improve performance of biosolids and quality", an activity which will become increasingly necessary as population growth in the WWT's catchment increases demand on the plant.

5. The conflict between two different information sources

The "Sydney Water Corporation – Expenditure Review Final Report, 21st December, 2015" [1] state that, population is projected to grow to:

1.124 million In **2011**

1.255 million In **2020**(end date for current pricing determination)

1.462 million In **2036** (a 30%increase over 2011)

In contrast, 2014-2015 Sewage Treatment System Impact Monitoring Program (STSIMP) Data Report[2] indicated that, population is

1.277 million In **2014-2015**

6. ATKINS CARDNO Technical Assessment

In the Expenditure Review Final Report (1) on Page 188, Atkins Cardno addresses the need for two digesters.

"There are currently three digesters on site and the project costings are based on an additional two units, adding approximately 65% to digester capacity. This compares to 30% growth projections by 2036."

Obviously the remaining component of the 65% increase is needed to provide adequate residence time to address the odour problem.

As Cardno acknowledges that: "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."

Moreover, they state that: "The project is still at a very early stage of planning and the project initiation business case is still being prepared. 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."

It is not clear why "The project is at a very early stage of planning" nor why the submission was made with no "initial business case". Further Atkin Cardno write on page 188 that the project "is not purely driven by growth." Yet on page 189 the consultants indicate that the "Investment Driver" is "Growth" and clearly there is some confuse.

Meanwhile, they clearly stated that the with the current plant there are reliability issues with the existing digesters, that the plant is poorly performing, that there have been numerous odour complaints and they acknowledge "the biosolids are of poor quality and cannot be directly applied to land so are composted rather than sold as more valuable fertiliser. This has apparently increased operating costs."

[1] Atkins Cardno, Sydney Water Corporation – Expenditure Review Final Report, 21st December, 2015, pp. 188.

[2] Sydney Water Corporation, Sewage Treatment System Impact Monitoring Program Data Report 2014-2015, 2015, pp. 12.

However, the cost to Sydney Water will constantly increasing if there is no solution at source to improve the biosolids quality and reduce the biosolids volume. Therefore for a long term consideration, additional digesters is the appropriate option because it reduces odour impacts and increases the value of the product.

7. Recuperative Thickening(RT):

- Recuperative thickening (RT) could increase the solids retention time of digestion and provide more VSD, resulting in less odorous biosolids

In 2008, Sydney water Implemented RT at Bondi WWTP to increases digester Solids Retention time (SRT) from 15 days to 40 days, reducing biosolids production by 22% increasing the biogas by 20% reducing the H_2S from biosolids by 80%.

It can be seen that increased digester SRT has achieved significant environmental improvement at Bondi WWTP.

- Susan Ireland's award winning[3] refereed paper of 2011 states that:

A recuperative thickening trial was conducted throughout out the first half of 2010 on the North Head plant.

"The first stage of the recuperative thickening trail has demonstrated the benefit of the recuperative thickening process beyond improving digestion. This including removing process bottlenecks, reducing solids recycles, increased raw sludge withdraw volumes and process flexibility. When the process is automated, contiguous operation is expected to yield further benefits such as improved effluent quality, potentially more biogas production and lower biosolids odour and more efficient centrifuge operation".

In order to increase the residence time, Recuperative Thickening (RT) has been introduced to increase the residence time of solids, but has not resulted in any noticeable improvement of the odour of the solids after digestion. Clearly two additional digester are required to keep the plant operating, to meet the licence and odour requirements.

8. The NHWWTP is Close to the Licence limit

In Sydney Water's 2014 STSIMP Interpretive Report[4] on page 12 includes among key findings that the discharge of Suspended Solids from North Head WWTP is near to its Licence limits; and that Oil and Gases Concentration from ocean plant discharges increased until 2007 before steadying in response to plant upgrades.

In addition, in the 2014-2015 STSIMP Data Report on page 83 the Yearly summary statistics on wastewater discharge volume and quality of ocean plants **Table C-7** clearly shows that in 8 out of 10 previous years the plant exceeded its 50 percentile limit. In comparison to Bondi and Malabar WWTP, which have not exceeded to their 50 percentile limit in same time frame, therefore North Head WWTP obviously has much poorer performance than Bondi and Malabar WWTP.

In order to meet its Licence requirement two digesters are required; one to reduce the odour of the biosolids and the second to meet the Licence requirements with the increased load due to population growth.

[3] S. Ireland. Biosolids Process Optimisation At Sydney's North Head STP – Recuperation Thickening Increase Solids Throughput, Water Journal May 2011, pp. 86-89.

[4] Sydney Water Corporation, 2014 Sewage Treatment System Impact Monitoring Program Interpretive Report Volume 1 Executive Summary, 2014, pp. 12.

Conclusion:

The Manly Environment Centre fully supports the need for two additional digesters at the North Head Wastewater Treatment Plant for the following reasons:

. The plant has a long history of receiving numerous odour complaints about the plant and trucks

. The discharge of Suspended Solids from the Plant is near to its Licence Limit and exceeded its 50 percentile limit (where as Malabar and Bondi WWTP's performed much better).

. Only 4 out of the 6 sedimentation are in use because of the lack of enough digesters.

. Atkins Cardno and Sydney Water both acknowledge the poor quality of Biosolids which cannot be directly applied for land use.

. Composting the Biosolids is not an economical solution.

. Recuperative Thickening was previously implemented at Bondi WWTP with a successful outcome, i.e. increasing the retention time, reducing biosolids production, increasing biogas, improving the quality of biosolids, reducing H2S from biosolids, thus reducing odours from the plant and trucks.

. Using the actual population figures from STSIMP have already exceeded the population figures used by Sydney Water in their application to IPART