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General Purpose Standing Committee No. 5

Sydney Water's Biosolids Strategy

Ordered to be printed 29 November 2001

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Terms of Reference

That General Purpose Standing Committee No 5 inquire into and report on Sydney Water's biosolids strategy, and in particular:

1. (a) evaluate the options presented for public consultation;
   (b) examine the scope the selected options provide for decentralisation and devoluming of the system;
   (c) examine the consultation process to determine its integrity;
   (d) evaluate the implementation of recommendations relating to the treatment of biosolids from previous parliamentary inquiries and reports on Sydney Water;
   (e) evaluate whether the biosolids strategy is consistent with the consent conditions imposed on the Northside Storage Tunnel by the Department of Urban Affairs and Planning; and
   (f) consider Sydney Water's options for a biosolids strategy for North Head.

(Self-referred by the Committee on 18 August 2000)

Committee Membership

The Hon Richard Jones MLC Independent *Chair*

Jan Burnswoods MLC Australian Labor Party

The Hon Rick Colless MLC National Party

The Hon Michael Costa MLC Australian Labor Party*

The Hon John Jobling MLC Liberal Party

The Hon Malcolm Jones MLC Outdoor Recreation Party

The Hon Janelle Saffin MLC Australian Labor Party

Members formerly on the committee during the inquiry

The Hon Richard Bull MLC National Party

The Hon Ron Dyer MLC Australian Labor Party

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Chair's Foreword

The inquiry into Sydney Water's Biosolids Strategy is the third Legislative Council committee inquiry related to the Northside Storage Tunnel. The first of these was conducted by a Select Committee which examined the proposed development of the tunnel. The second inquiry, conducted by General Purpose Standing Committee No 5, examined the health risks and odour issues concerning the tunnel's ventilation facilities with particular emphasis on impacts of the proximity of the Scotts Creek vent to the Glenaeon Rudolph Steiner School. The public demand for the present inquiry surfaced at the same time as the Scotts Creek inquiry and related to concern that Sydney Water retracted a previous undertaking to remove road transport of biosolids from the North Head Sewage Treatment Plant utilising "sludge trucks".

In November 1997, Sydney Water advertised in *The Manly Daily* explaining the benefits of the Northside Storage Tunnel. A passage in this advertisement stated that the project would include funding of "$50 million to take biosolids away from North Head rather than rely on trucks". In May 1999, Sydney Water retracted this apparent commitment and informed the community that it had made a mistake. As a result, the committee resolved to, evaluate whether the Biosolids Strategy is consistent with the consent conditions imposed on the Northside Storage Tunnel, examine the integrity of the public consultation process, evaluate the options presented for public consultation and examine the scope the selected options provide for decentralisation and devoluming of the system.

Two advisory panels and two previous parliamentary inquiries found Sydney Water's public consultation practices to be insufficient and lacking transparency. Four recommendations are made with a view to Sydney Water reforming its public consultation processes so that the community's faith in Sydney Water's public accountability can be restored.

A key recommendation of this report is that Sydney Water continue to work with Manly Council to address local community concerns regarding local traffic issues in Manly. Sydney Water should be required to report annually to the community on the effectiveness of short term traffic management improvements in an effort to rebuild public confidence.

The report also recommends that Sydney Water take a more environmentally sustainable approach to the collection, treatment and disposal of sewage through measures such as:

- upgrading major ocean sewage treatment plants beyond full primary treatment to, eventually, full tertiary treatment,
- continued consideration of new sustainable technologies with a view to long term implementation,
- planning for decentralisation of water treatment in the review of Waterplan21, and
- retaining the facility for the biosolids pipeline within the NST so that the possibility of adding a biosolids transfer pipeline in the future is not compromised.

Some of the options presented for public consultation for the Biosolids Strategy were clearly not viable or realistic. The option to use the Sydney Water land acquired at Camellia for sewage treatment had been ruled out prior to the public consultation process as a result of planning problems and other considerations. The option to use the Sydney Water land at Bunnerong as a central point to treat Sydney's sewage sludge, whilst recommended in an internal Sydney Water executive paper in 1998, had apparently been ruled out the following year as a feasible option. It is evident that the only option that

was truly feasible for Sydney Water was to treat sewage sludge in situ at the Sewage Treatment Plants (STPs) and then remove the biosolids by truck, or barge in the case of the North Head STP.

To my mind the public consultation process was misleading as at least two of the major options proposed never had a realistic chance of being adopted. Sydney Water has to be far more open and genuine in its dealings with the public and those affected by its decisions. It needs to do much more work to reduce the impact of sewage on the ocean, research new technologies and further investigate decentralisation options and reduce the impact of trucks in the municipality of Manly.

I wish to extend my gratitude to all those who made submissions to the inquiry. The balanced discussion provided in this report is a reflection upon the valuable submissions received from both government agencies and from the community during the inquiry process.

Finally I would like to thank my fellow Members of the committee and the committee secretariat for their involvement during the Inquiry and in preparing this report. I particularly note the efforts of the committee's Acting Director, Rob Stefanic, Senior Project Officer, Vicki Buchbach and Committee Officer, Annie Marshall for their research, analysis and administrative support.

Hon Richard Jones MLC
Chair

Summary of Recommendations

Recommendation 1 12

The committee recommends that the EPA ensures its *Environmental Guidelines: Use and Disposal of Biosolids Products* meet world's best practice for the detection of endocrine disruptors and other dangerous contaminants.

Recommendation 2 32

The committee recommends that Sydney Water make greater efforts to engage the community effectively in consultation and demonstrate that community concerns are reflected in the outcomes through:

- only including those options which are realistic and genuine,
- identifying any known factors adversely affecting options outlined in those proposals, and
- using public consultation periods of at least three months for major projects to allow for an in depth consideration of issues and preparation of comprehensive submissions by expert community groups.

Recommendation 3 32

The committee recommends that Sydney Water liaise with government agencies more thoroughly prior to undertaking public consultation to ensure that planning issues of concern to other government agencies in relation to options are made clear to the public.

Recommendation 4 32

The committee recommends that an interdepartmental government committee consisting of Sydney Water, DUAP, EPA, NSW Health and Department of Local Government meet at least six monthly for five years, to review and monitor implementation of the Biosolids Strategy and make recommendations to the Minister for Energy.

Recommendation 5 42

The committee recommends that Sydney Water and Manly Council maintain an ongoing dialogue to discuss local traffic concerns in Manly.

Recommendation 6 42

The committee recommends that Sydney Water revises its long term planning to include provision for upgrading urgently to full primary treatment to increase capture of biosolids from the current 30-35% to 65% and then to full tertiary treatment to capture 95% of biosolids at the major ocean STPs.

Recommendation 7 57

The committee recommends that Sydney Water continues to consider carefully new sustainable technologies including undertaking research trials where appropriate with a view to long term implementation.

Recommendation 8 57

The committee recommends that Sydney Water investigate any alternative technologies for biosolids management which will result in less impact on local communities and reduce the number of truck movements required to transport biosolids products.

Glossary

Advanced alkaline stabilisation	The processing of biosolids by addition of lime (or other alkaline materials) and/or heat to sewage sludge. Alkaline stabilisation of biosolids are classified as Grade A stability
Aerobic digestion	The biochemical decomposition of the organic matter in sewage sludge into carbon dioxide and water by micro-organisms in the presence of air
Anaerobic digestion	The biochemical decomposition of the organic matter in sewage sludge into methane gas and carbon dioxide by micro-organisms in the absence of air. In particular, it is a stabilisation process for sewage sludge Sewage sludge collected is transferred into heated and mixed anaerobic digestion tanks which are heated to between 30 C and 35 C for 20-30 days where bacteria break down organic material in the absence of oxygen, and produce carbon dioxide, methane and water. Digested sludge is classified as Grade B stability.
Biosolids	Primarily an organic solid product produced by the municipal sewage treatment process, previously referred to as sewage sludge. Solids become biosolids when they are treated for recycling . Until such solids are suitable for recycling they are defined as wastewater solids.
Biosolids Strategy	Sydney Water *North Head Sewage Treatment Plant Biosolids Handling and Transport Strategy,* August 2000
BOOS	Bondi Ocean Outfall System
Contaminant Grade	Classification category used to describe the quality of a biosolids product based on the concentration of its constituent contaminants. Contaminant acceptance concentration thresholds for classes A to D are defined by the NSW EPA *Environmental Guidelines: Use and Disposal of Biosolids Guidelines*, October 1997.
Decentralisation	In relation to the sewerage system, reducing reliance on major Sewage Treatment Plants establishing STPs in local water catchment areas to manage recycling and wastewater treatment within those areas.
Devolume	In relation to biosolids treatment, any process that reduces the volume of biosolids and waste water discharged from the sewerage system.
DUAP	Department of Urban Affairs and Planning (On 21 November 2001, it was announced that the Department would be renamed Planning NSW.)
Effluent	A waste product that is discharged to the environment, usually used to mean treated wastewater discharged from wastewater treatment plants.
Endocrine disruptors	Any of a variety of substances including herbicides and pesticides and some heavy metals which disrupt the operation of hormones in humans or animals.
EPA	NSW Environment Protection Authority
High-rate Primary treatment	A classification of sewage treatment which occurs at high flow rates and removes fewer solids than full primary treatment.
NCC	Nature Conservation Council of NSW Inc.
NSOOS	Northern Suburbs Ocean Outfall System
NST	Northside Storage Tunnel
Pathogen	Disease causing organisms, including certain bacteria, protozoa, viruses and viable helminth (eg tapeworm) ova.
Primary treatment	The initial stage of sewage treatment, it removes solids that float or settle by physical processes including screening and sedimentation

Pyrolysis	Combustion of sewage sludge under conditions of reduced oxygen at approximately 600 C. Three streams are produced, gas, liquid (oil) and solid (char) the which can be used to produce energy.
Scum	The floating material of a sewage origin that is removed from the surface of a primary sedimentation tank consisting of oils and grease as well as floatable debris such as plastics and litter.
Secondary treatment	This level of sewage treatment removes dissolved and suspended organic and inorganic solids, through bacterial decomposition which breaks down this material
Sewage Sludge	A solid, semi-solid or liquid organic residue generated during the treatment of sewage in a treatment works.
Stabilisation Grade	Classification category used to describe the quality of a biosolids product based on its microbial characteristics, vector attraction and potential to generate offensive odours. The requirements for classifications A and B are defined by the NSW EPA *Environmental Guidelines: Use and Disposal of Biosolids Guidelines*, October 1997.
SWOOS	Southern and Western Ocean Suburbs Outfall System
Tertiary treatment	The third and highest level of sewage treatment, this further removes inorganic compounds, and substances such as the plant nutrients nitrogen (N) and phosphorus (P).
WaterPlan 21	Sydney Water's publication setting out long term goals for managing water and wastewater including a program of capital works.

Chapter 1 Introduction

Background to this inquiry

1.1 On 18 August 2000, in response to the concerns of Manly residents that a sludge pipe would no longer be included in the proposed Northside Storage Tunnel[1], General Purpose Standing Committee No 5 resolved, in accordance with its powers under paragraphs 3 and 4 of the Resolution establishing the committee, to adopt terms of reference for an inquiry into and report on Sydney Water's Biosolids Strategy[2] and, in particular:

- evaluate the options presented for public consultation,
- examine the scope the selected options provide for decentralisation and devoluming of the system,
- examine the consultation process to determine its integrity,
- evaluate the implementation of recommendations relating to the treatment of biosolids from previous parliamentary inquiries and reports on Sydney Water,
- evaluate whether the Biosolids Strategy is consistent with the consent conditions imposed on the Northside Storage Tunnel by the Department of Urban Affairs and Planning, and
- consider Sydney Water's options for a biosolids strategy for North Head.

1.2 The committee also resolved on a reporting date of 4 December 2000. On 17 November 2000, the reporting date for the inquiry was extended from Monday 4 December 2000 to Friday 29 June 2001 to enable the committee to complete its ongoing inquiry into Oil Spills in Sydney Harbour. At its meeting on 14 March 2001, the committee resolved to conduct a second inquiry on the M5 East Ventilation Stack. Subsequently, on 30 May 2001, the committee further extended the reporting date to 16 October 2001 to facilitate the completion of the M5 East Ventilation Stack report as well as to facilitate the annual Budget Estimates process. On 18 September 2001, the committee extended this reporting date until 23 October 2001. On 23 October 2001, the committee resolved on a final reporting date of 30 November 2001.

Conduct of the inquiry

1.3 In conducting this public inquiry the committee endeavoured to:

- seek broad and diverse public participation,

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1 General Purpose Standing Committee No 5, *Report on Inquiry into Northside Storage Tunnel, Scotts Creek Vent*, November 2000, paragraphs 7.12-7.13

2 Sydney Water *North Head Sewage Treatment Plant Biosolids Handling and Transport Strategy*, August 2000 (the Biosolids Strategy)

- generate public and stakeholder discussion, and
- achieve the above aims in a cost effective manner.

1.4 The committee applied four mechanisms to achieve these aims. Firstly, the committee agreed to advertise its terms of reference inviting public submissions in major metropolitan and local print media.[3] A list of publications and locations of advertisements is presented as Table 1.1.

Table 1.1: Publications, position and date of advertising of committee's terms of reference

Publication	Position	Insertion date	Estimated circulation[4]
Metropolitan			
The Sydney Morning Herald	Early General News	Saturday 10 February 2001	385,000
Local area			
The Manly Daily	Early General News	Saturday 10 February 2001	90,000
The Wentworth Courier	Early General News	Wednesday 14 February 2001	52,500
The Weekly Southern Courier	Early General News	Tuesday 13 February 2001	48,000

1.5 The combined print media circulation for the committee's terms of reference was 575,500.

1.6 The committee received 17 submissions in response to its call for submissions. The authors of the submissions received are listed in Appendix 1.

1.7 The committee held a public hearing on 28 September 2001 at Parliament House, Sydney. The eight witnesses who gave evidence during the course of the hearing days are listed in Appendix 2.

1.8 The committee considered the Chair's draft report at its meetings on 16 and 26 November 2001. The Minutes of the Proceedings of the committee (Appendix 4), detail relevant resolutions and activities of the committee over the course of the inquiry including deliberations on the draft report. The committee adopted its report at a deliberative meeting held on 26 November 2001.

Structure of this report

1.9 Chapter 2 provides information about implementation of the recommendations of previous parliamentary inquiries relating to the treatment of biosolids.

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3 Meeting of General Purpose Standing Committee No 5, 17 November 2000, Minutes No 43

4 DPWS, Government Advertising Agency, *Media Rate List, July 2000 to June 2001*; AARDS, June 1999; Sydney Morning Herald pers comms 9 May 2001

1.10 Chapter 3 provides background information on the production of and uses for biosolids.

1.11 Chapter 4 describes the development of *Sydney Water's North Head Sewage Treatment Plant: Biosolids Handling and Transport Strategy* (the "Biosolids Strategy").

1.12 Chapter 5 considers issues raised in relation to the conduct of community consultation in the development of the Biosolids Strategy with a focus on issues related to:

- the options presented for community consultation, and
- the regulatory process for finalisation, implementation and review of the strategy.

1.13 Chapter 6 considers the impacts of Sydney Water's preferred option of short term traffic treatment in the Manly area combined with long term upgrading of the North Head Sewage Treatment Plant to introduce thermal drying of biosolids with a particular focus on:

- environmental impacts including the level of energy used,
- commercial opportunities for the re-use of biosolids,
- health impacts of drying technologies and the use of biosolids in agriculture and forestry applications, and
- continued road transport of the biosolids.

1.14 Chapter 7 provides an evaluation of the options for biosolids management presented for public consultation in relation to their relative abilities to provide decentralisation and devoluming of the system. The Chapter then examines the options raised in the consultation phase of the Biosolids Strategy's development and other options for the management of biosolids which were presented in evidence to the committee. It then evaluates whether the strategy is consistent with the consent conditions for the Northside Storage Tunnel.

Chapter 2 Implementation of the recommendations from previous reports on Sydney Water

One of the tasks of this inquiry is to evaluate the implementation of recommendations relating to the treatment of biosolids form previous parliamentary inquiries and reports on Sydney Water.

Previous parliamentary inquiries

2.1 The NSW Parliament has initiated a number of inquiries into the management of the NSW water supply and water quality. This committee considered relevant evidence regarding implementation of recommendations from the report of the Joint Select Committee on Sydney Water Board, April 1994, the report of the Select Committee on the Proposed Duplication of the North Head Sewerage Tunnel, December 1997, and this committee's report on the Northside Storage Tunnel – Scotts Creek Vent, December 2000.

2.2 In the report of the Joint Select Committee on the Water Board, part of recommendation 33 stated:

> From January 1995 the Board should not dump sludge to sea. In early 1995 the Board should publish a program in which it outlines how it will be able to overcome mechanical failures that may otherwise cause sludge to be dumped. The program should be part of a comprehensive sludge management program that accounts for the Board's beneficial reuse and other plans[5].

2.3 This recommendation arose from repeated mechanical failure of the sludge treatment works at Malabar STP in 1993, which caused Sydney Water to dispose of captured sludge in the ocean as an emergency measure. Sydney Water reports that it has not resorted to disposed of sludge in the ocean since the end of 1993 and has been re-using 95 per cent of the biosolids captured since 1996[6].

2.4 In its submission to this committee, Sydney Water drew attention to comments in this report (which are addressed below) regarding the Joint Select Committee's views that the beneficial reuse of sludge could include agricultural applications in preference to discharging into the ocean.

2.5 The report of the Select Committee on the Proposed Duplication of North Head Sewerage Tunnel contained no relevant recommendations for the treatment of biosolids although it suggested that Sydney Water engage with the private sector more to develop alternative technologies.

2.6 Sydney Water explains that it had undertaken considerable research into reuse and developing markets with other departments:

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5 Joint Select Committee upon the Sydney Water Board, Report, April 1994, p 123

6 Submission No 9, Sydney Water Corporation, p 90

> over the past 14 years to research fertiliser value and environmental impacts associated with biosolids land application. The research work has been conducted by NSW Agriculture, NSW State Forests and CSIRO. Overall, studies in both agriculture and forestry have shown biosolids to be an efficient and effective slow-release fertiliser which, when applied in accordance with the *Environmental Guidelines Use and Disposal of Biosolids Products*, have no known adverse impacts on the environment, community health or livestock[7].

Other reports on Sydney Water

2.7 In addition to relevant parliamentary inquiries, this committee examined the reports of the First and Second Waterways Advisory Panel from 1997 and 2000.

2.8 The First Waterways Advisory Panel report on sewage overflow abatement in Sydney Harbour did not directly discuss the treatment of biosolids. Nevertheless, the committee considers that one of the general recommendations of that report is relevant to the development of the Biosolids Strategy:

> That Sydney Water consult and involve the community and stakeholders as appropriate in undertaking actions and programs and reforms[8].

2.9 Sydney Water reports that a comprehensive consultation program was undertaken as part of the development of the Biosolids strategy. Issues regarding the effectiveness of this consultation process are discussed in further detail in Chapter 5.

2.10 The Second Report of the Waterways Advisory Panel from March 2000 reviewed Sydney Water's consultation process and remarked:

> Sydney Water can significantly improve the way in which it responds to the concerns of communities. It is clear to the Advisory Panel that Sydney Water remains an organisation that is largely driven by engineering objectives and finds it difficult to take the initiative in interacting with the community[9].

2.11 The Second Report of the Waterways Advisory Panel drew particular attention to the issue of the biosolids pipeline which was included in advertising by Sydney Water in relation to the Northside Storage Tunnel in 1997[10] (reproduced in Appendix 4) and the need for development of a biosolids strategy:

> The Corporation considers that a sludge pipeline in the NST would be premature and a waste of money….The Panel is highly critical of Sydney Water over this matter. Members believe that Sydney Water has clearly broken a promise to the community to construct such a conduit and that the promise was made to garner public support for the Tunnel proposal. Sydney Water should, in our view, be

7 Submission No 9, Sydney Water Corporation, p 90

8 Waterways Advisory Panel *Report to the NSW Government on the proposal by Sydney Water Corporation for Sewage Overflow Abatement in Sydney Harbour*, August 1997, p 17

9 Waterways Advisory Panel *Second Report to the NSW Government on the proposal by Sydney Water Corporation for Sewage Overflow Abatement in Sydney Harbour*, March 2000, p 8

10 Sydney Water advertisement, *The Manly Daily*, Saturday 1 November 1997, 8 November 1997, p 12

> required to accelerate the implementation of its sludge strategy which has been in development in one form or another for ten years. In the meantime, it is essential that Sydney Water address sludge truck movements in Manly. Sydney Water should develop and implement a means of reducing truck movement as soon as possible, if necessary in association with the private sector[11].

2.12 The Panel recommended that:

> a) Sydney Water be instructed to either seek a solution from the private sector or bring forward its own planning and environmental assessment so that implementation of a sludge strategy is commenced by 31 January 2001 and
>
> b) in the meantime, Sydney Water be instructed to develop and implement (with the private sector, if required) a strategy for reducing sludge truck movements in Manly as soon as possible[12].
>
> The Panel recommends that the Government establish a code of practice for community consultation by its agencies and the contractors and joint-venturers working for those agencies[13].

2.13 Issues regarding the effectiveness of community consultation are considered in detail in Chapter 5 where the committee also considers whole of government best practice guidelines for consultation.

2.14 Sydney Water has responded in detail to the recommendations a) and b) by stating in its submission to this committee, that the preferred long term option of drying biosolids at North Head STP would be implemented between 2004 and 2007. This would involve an eventually reduced number of trucks. In the short term, the traffic impacts of these vehicles will be reduced by the development of minor local traffic improvements in consultation with Manly Council. The submission also states the water reuse pipeline installed in the NST has brackets allowing for the future addition of a biosolids pipeline.[14].

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11 Waterways Advisory Panel *Second Report to the NSW Government on the proposal by Sydney Water Corporation for Sewage Overflow Abatement in Sydney Harbour*, March 2000, p 15

12 Waterways Advisory Panel *Second Report to the NSW Government on the proposal by Sydney Water Corporation for Sewage Overflow Abatement in Sydney Harbour*, March 2000, p 18

13 Waterways Advisory Panel *Second Report to the NSW Government on the proposal by Sydney Water Corporation for Sewage Overflow Abatement in Sydney Harbour*, March 2000, p 73

14 Submission No 9, Sydney Water Corporation, p 93, p 97

Chapter 3 Current sewage treatment processes and biosolids products

Sydney Water's sewage treatment system

3.1 Sydney Water Corporation is responsible for managing the water and wastewater treatment in the Sydney basin, serving a population of about 4 million people. Sydney Water owns 30 Sewage Treatment Plants (STPs) however about 80% of the sewage is processed at the three major ocean plants which are, in descending order of processing capacity, at Malabar, North Head and Bondi[15].

3.2 The current treatment processes at these three ocean STPs is described in the Biosolids Strategy as follows:

> **North Head STP**
>
> North Head Sewage Treatment Plant is located on Bluefish Road, on the northern headland of Manly. The plant serves the majority of suburbs between Sydney Harbour and Narrabeen in the north and Blacktown to the west. Currently, the total equivalent population for the North Head Sewage Treatment Plant catchment is approximately 1.2 million. Sewage is pumped from a depth of 60 metres from the NSOOS to the surface for treatment before being discharged to a deep-water ocean outfall 3.7 kilometres from the shoreline. The plant provides fine screening, grit removal and limited primary sedimentation.
>
> Typically, the plant removes 30% to 35% of incoming suspended solids. The average dry-weather flow is 310 megalitres per day and the peak wet-weather flow to the plant will be 1,400 megalitres per day following commissioning of the Northside Storage Tunnel. All biosolids currently removed from wastewater at this plant are recycled.
>
> Until April 1991, all sludge at North Head Sewage Treatment Plant was incinerated in one multiple-hearth incinerator and two fluidised-bed incinerators. The ash was taken to landfill. At that time, there were significant community concerns about the perceived health impacts of incineration, resulting in public pressure to shut down the incinerators. From January to March 1992 the incinerators were shut down for a trial of the N-Viro process (a patented alkaline amendment process used for stabilising sludge, in which the sludge was mixed with cement kiln dust and lime and then cured. The incinerators were permanently decommissioned following the trial. From 1992 until June 1995, all sludge was stabilised with cement kiln dust and lime, using the N-Viro process. In June 1995, the N-Viro process was replaced with the current RDP© process (alkaline stabilisation using lime and supplemental heat. Unlike the N-Viro operation, the RDP© processing and product storage is undertaken in a fully enclosed and scrubbed building.

15 http://www.sydneywater.com.au/html/Environment/sewage_trns.cfm accessed 22 October 2001

Malabar Sewage Treatment Plant

Malabar Sewage Treatment Plant is located on Fishermans Road, Malabar, and serves the majority of suburbs between the Parramatta and Georges rivers. Typically, the plant captures 55% of incoming suspended solids. Currently, the plant serves a total equivalent population of 1.8 million. The plant provides coarse screening, fine screening, grit removal and primary sedimentation. Ferric chloride is added to assist solids capture in the sedimentation tanks. The plant effluent is discharged 4.1 kilometres offshore via a deep-water ocean outfall into 80 metres water depth.

The average dry-weather flow is 480 megalitres per day and the peak wet-weather flow to the plant is 1200 megalitres per day. The sludge captured is anaerobically digested. To avoid disposal of sludge to the ocean a sludge dewatering plant was constructed in 1992. The plant dewaters and further stabilises digested sludge by adding lime, which is then transported off-site using custom-made trucks. All biosolids currently removed from wastewater at this plant are recycled.

Bondi Sewage Treatment Plant

Bondi Sewage Treatment Plant is located on Blair Street, Bondi, and serves the areas south of Port Jackson between the coast and Balmain. The catchment also serves the central business district of Sydney. Currently the plant serves a total equivalent population of 440,000. The plant provides coarse and fine screening, grit removal and primary sedimentation. The sludge captured is anaerobically digested prior to dewatering. Prior to March 1999, digested liquid sludge was transported in tankers from Bondi to Cronulla Sewage Treatment Plant for dewatering and storage prior to use in agriculture. After the installation of dewatering centrifuges, transfer of sludge to Cronulla ceased. The plant effluent is discharged 2.2 kilometres offshore via a deep-water ocean outfall. The average dry-weather flow is 130 megalitres per day and the peak wet weather flow to the plant is 700 megalitres per day. Typically, the plant removes 50% of incoming suspended solids. All biosolids currently removed from wastewater at this plant are recycled[16].

Biosolids

3.3 Biosolids are primarily an organic solid product produced by the sewage treatment process, previously referred to as sewage sludge. Solids become biosolids when they are treated for recycling.

3.4 Biosolids are classified according to the level of pathogens and contaminants they contain in accordance with the NSW Environment Protection Authority's *Environmental Guidelines: Use and Disposal of Biosolids Products* which were published in 1997. Presently there are no national regulations or guidelines that govern biosolids use in Australia.

[16] Biosolids Strategy, pp 2-3

Uses for biosolids

3.5 During the inquiry, the committee was informed that biosolids contain high levels of nutrients such as phosphorous and nitrogen which can be used in agricultural applications and in rehabilitation of land and mine sites. Mr Alex Walker, Managing Director of Sydney Water, told the committee that biosolids have been demonstrated to improve crop yields and animal production through the addition of plant nutrients and trace elements and through improving physical, chemical and biological properties of soils. Sydney Water has reused over 1.4 million tonnes of biosolids in this way in the last nine years[17].

3.6 In correspondence to the committee, Sydney Water explained that it would expect the nutrient levels of dried pellets at stability grade A to have similar levels to those found in the dewatered biosolids currently produced at STPs other than North Head (which have higher levels of calcium because of the addition of lime). These biosolids have average levels of 4.3% nitrogen, 3% phosphorus, 2.3% calcium as well as lower levels of other minerals[18].

Health and environmental risks from biosolids use

3.7 The application of biosolids for agricultural purposes could potentially create human health risks from remaining pathogens. Biosolids could also create potential damage to the environment, crops, livestock and human health if they contain excessive levels of contaminants such as heavy metals and pesticides or if they are applied inappropriately.

3.8 The NSW EPA's *Environmental Guidelines: Use and Disposal of Biosolids Products* set out the conditions under which biosolids can be used including limits on stability and level of contaminants. They also set out requirements for reducing the risk of movement of biosolids off site through such means as buffer zones around application sites.

Pathogens

3.9 There is some community concern internationally about the level of pathogens in biosolids. This has led to extreme difficulty with agricultural applications in Sweden and parts of Germany because supermarkets will not stock products treated with biosolids[19]. Traditional anaerobic digestion if incorrectly applied been claimed to have left a potential route for spreading of strains of E.Coli[20].

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17 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 3

18 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation to committee Chair, 15 October 2001

19 Sydney Water, *Sydney Water's Long-term Biosolids Market Strategy* , June 2000, App 5, p 20, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001

20 Sydney Water, *Sydney Water's Long-term Biosolids Market Strategy* , June 2000, App 5, p 15, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001

3.10 Sydney Water has told the committee that thermal drying eliminates a higher proportion of pathogens than other treatments[21]. It is apparent from their long-term biosolids marketing documents that the move to thermal drying is consistent with European trends to address concerns about pathogens[22]. In addition, biosolids are tested for a range of pathogens before use. The EPA's guidelines for their application have measures to reduce the likelihood of spreading pathogens.

Contaminants

3.11 The application of biosolids can also cause contamination of soil, waterways and the food chain with such heavy metals, organic compounds (such as DDT and PCB) and excessive levels of phosphorus and nitrates which may lead to algal blooms in waterways. These risks are managed by testing of biosolids for their contaminant grade and calculation of crop nitrogen requirements prior to application. Biosolids are classified according to the level of contaminants they contain as defined in the EPA's guidelines. The Contaminant acceptance concentration thresholds are defined in the following table:

Table 3.1: - Biosolids Contaminant Grades[23]

Contaminant	Grade A (mg/kg)	Grade B (mg/kg)	Grade C (mg/kg)	Grade D (mg/kg)	Grade E
Arsenic	20	20	20	30	
Cadmium	3	5	20	32	Anything
Chromium	100	250	500	600	
Copper	100	375	2,000	2,000	not
Lead	150	150	420	500	
Mercury	1	4	15	19	meeting
Nickel	60	125	270	300	
Selenium	5	8	50	90	Grade D
Zinc	200	700	2,500	3,500	
DDT/DDD/DDE	0.5	0.5	1.00	1.00	
Aldrin	0.02	0.2	0.5	1.00	
Dieldrin	0.02	0.2	0.5	1.00	
Chlordane	0.02	0.2	0.5	1.00	

21 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 3

22 Sydney Water, *Sydney Water's Long-term Biosolids Market Strategy* , June 2000, App 5, p 20, p 14, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001

23 NSW EPA's *Environmental Guidelines: Use and Disposal of Biosolids Products*, 1997, in Submission No 9, Sydney Water Corporation, p 8

Heptachlor	0.02	0.2	0.5	1.00	Anything not meeting Grade D
HCB	0.02	0.2	0.5	1.00	
Lindane	0.02	0.2	0.5	1.00	
BHC	0.02	0.2	0.5	1.00	
PCBs	0.3	0.3	1.00	1.00	

3.12 Sydney Water reports that it tests biosolids for stabilisation about once a week and that North Head biosolids were sampled for contaminants 93 times in the year 2000/2001[24]. Under current treatment practices, biosolids produced at North Head STP are generally at Grade B contaminant levels and those from Malabar and Bondi are at Grade C contaminant levels. These are all subject to restricted use[25].

3.13 The committee notes a report prepared as part of the Sydney Water's *Long-term Biosolids Market Strategy* on the experimental agricultural research undertaken by NSW Agriculture where extremely high levels of biosolids were applied to pastures[26]. This report included a consideration of water quality and the level of minerals including heavy metals which could enter the food chain through animals and crops. The committee notes evidence of Sydney Water that:

> Overall, studies in both agriculture and forestry have shown biosolids to be an efficient and effective slow-release fertiliser which, when applied in accordance with the *Environmental Guidelines: Use and Disposal of Biosolids Products*, have no known adverse impacts on the environment, community health or livestock[27].

3.14 This report included testing of water quality for a range of organic compounds that were not found in detectable concentrations.

3.15 Contaminants in biosolids may act as endocrine disruptors. The World Wildlife Fund of Canada has identified the following classes of chemical agents as possible endocrine disruptors: alkyphenols, androgens and anti-androgens, diethylstilbestrol, dioxins, oestrogens and anti-oestrogens, herbicides including organochlorines, pesticides, phenol, phthalate, flame retardants and pharmaceuticals[28]. The committee notes that this list is not all inclusive.

3.16 Sydney Water has stated that international research on endocrine disruptors currently involves consideration of some 87,000 chemicals and the possible effects on ecological and public health. Understanding of the chemicals of concern and their effects are still at the

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24 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation to committee Chair, 15 October 2001

25 Submission No 9, Sydney Water Corporation, p 71

26 Sydney Water *Sydney Water's Long- term Biosolids Market Strategy*, June 2000, app 5, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001

27 Submission No 9, Sydney Water Corporation, p 90

28 World Wildlife Fund Canada, http://wwf.acenetx.com/satellite/hormone-disruptors/science/edclist.html accessed 19 October 2001

fundamental stage of research. Routine monitoring is useful only when we have developed an understanding of the chemicals of concern.

3.17 In the United States of America, the Environment Protection Agency is developing an endocrine disruptor screening program. This includes sponsoring a wide ranging research program to examine the particular impacts of a broad range of chemicals on humans, fish and wildlife and to recommend appropriate regulatory action as a result[29].

3.18 When the committee asked Sydney Water whether routine testing was conducted for contaminants which may act as endocrine disruptors, Sydney Water stated:

> Sydney Water analyses biosolids in accordance with the Environment Protection Authority Guidelines. These guidelines establish the requirements for testing in terms of frequency and the parameters for which biosolids are tested. These include heavy metals, pesticides and pathogens. The Guidelines do not require testing biosolids for endocrine disruptors[30].

3.19 The committee believes that the NSW EPA should ensure that its guidelines meet international best practice for the detection of endocrine disruptors and other dangerous contaminants. More generally, the committee notes that the internal Sydney Water *Long-term Biosolids Strategy* states that that a key strategic direction is to:

> work towards achieving a regulatory framework that balances the risks and benefits of biosolids application and provides a comparable regulatory framework to that of competitor products [such as green waste][31].

3.20 The committee would be concerned if a risk management strategy led to a reduction in the stringency of contaminant or pathogen testing of biosolids.

Recommendation 1

The committee recommends that the EPA ensures its *Environmental Guidelines: Use and Disposal of Biosolids Products* meet world's best practice for the detection of endocrine disruptors and other dangerous contaminants.

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29 Environment Protection Agency *Endocrine Disruptor Screening Program: Report to Congress*, August 2000, http://www.epa.gov/scipoly/oscpendo/index.htm accessed 9 November 2001

30 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation to committee Chair, 15 October 2001

31 *Sydney Water's Long-term Biosolids Strategy* 1 September 1999, included with Submission 8, Mr David Barr MP, Member for Manly, p1, p 8

Chapter 4 Development of the Biosolids Strategy

Sydney Water developed the Biosolids Strategy in response to a requirement in the Modified Approval for the proposed Northside Storage Tunnel issued by the Minister for Urban Affairs and Planning on 31 August 1999. The approval condition required Sydney Water to:

> ensure that appropriate provision is made for securing a biosolids pipeline in the roof or wall of the tunnel…
>
> The proponent shall, by 31 August 2000, submit a Biosolid strategy for North Head Sewage Treatment Plant to the Director-General. The strategy shall include consideration of all feasible options for improved Biosolids management, the issue of Biosolids transportation by road, the need or otherwise for a Biosolids pipeline within the Tunnel and the timing of installation of any such pipeline[32].

4.1 Sydney Water stated that the Biosolids Strategy was developed in the context of the NSW Government's key 20 year plan for water management, the 1997 Waterways Package and its own WaterPlan 21, which presents a broad long term plan for sustainable water, wastewater and stormwater management in the Sydney region[33].

4.2 Sydney Water identified a number of short and long term options for biosolids handling which it researched in some detail, including undertaking a detailed investigation of available industrial estate for siting off site processing[34]. Sydney Water also commissioned a survey of the traffic impacts of heavy vehicles in the Manly area.

Public Consultation

4.3 Sydney Water reports that between May and July 2000 it consulted either directly or indirectly with around 4000 community members on the development of the Biosolids Strategy. A range of techniques was used, including:

- formal meetings with community groups and local and government authorities,
- shopping centre displays,
- newspaper advertisements,
- an information hotline,
- an attitudinal survey of 300 residents of Manly in relation to local traffic concerns, and

32 Biosolids Strategy, p 1

33 Submission No 9, Sydney Water Corporation, p 16

34 Biosolids Strategy, p 65, pp 16 ff

- distribution of 3,500 copies of a 12 page brochure called *Have your say: Major Ocean Plants Biosolids Handling and Transport Options Assessment and Community Comment*[35].

4.4 The *Have your say* document presented the following seven options for public consideration:

Table 4.1: Biosolids Handling and Transport Options[36]

Options at North Head		**Long Term Options with Improvements in Treatment Levels**	
Option A	local traffic improvement measures at North Head	Option E	improvement in treatment level at North Head, Bondi and Malabar and maintain existing biosolids processing
Option B	barging biosolids from North Head, Little Manly Point to White Bay, Rozelle	Option F	drying biosolids to reduce volume at North Head and Malabar. Sludge transfer via pipeline from Bondi to Malabar
Option C	on-site biosolids processing at North Head to reduce volume by 2004	Option G	transfer sludge off-site by pipeline from North Head, Bondi and Malabar to site at Bunnerong for processing and drying.
Option D	transfer sludge off-site by pipeline from North Head to site at Camellia (use Northside Storage Tunnel to Hunters Hill)		

4.5 The *Have your say* document provided a brief description of each of these options in less than 300 words for each option[37]. The last page of this brochure was a form inviting comments on preferred short and long-term options and any other issues.

4.6 Sydney Water reports that it received 293 submissions, 12 of which were from various local governments and nine from state government authorities[38].

4.7 A further 28 options were collected from the community consultation phase. There was a degree of commonality in these options and Sydney Water decided that two of these merited further consideration as part of the assessment process for long term options. These were:

- H – transferring sludge off-site by pipeline from North Head STP to Camellia and from Bondi and Malabar STPs to Bunnerong, and

- I – transferring sludge off-site by pipeline from North Head, Bondi and Malabar to Picton STP for processing and drying[39].

35 Submission No 9, Sydney Water Corporation, pp 113-115

36 Biosolids Strategy, p 28

37 Sydney Water, *Have your say: Major Ocean Plants Biosolids Handling and Transport Options Assessment and Community Comment*, June 2000, in Biosolids Strategy, Appx D and http://www.sydneywater.com.au

38 Submission No 9, Sydney Water Corporation p 115

39 Biosolids Strategy pp 79-87

4.8 Sydney Water then performed multi-criteria analysis of these 10 long-term options. Sydney Water stated that this process has the advantage of allowing a balanced consideration of all the relevant, often conflicting, criteria[40]. It produces a relative ranking of options. The following table shows the attributes of the 10 long-term options considered in this way.

Table 4.2: Options Evaluated using the Multi-criteria Analysis Approach[41]

Option	Site	Description
Option B1	North Head	Barging of alkaline stabilised biosolids from Little Manly Point to White Bay
	Malabar and Bondi	Drying on-site at Malabar and Bondi (alternatively Bondi transferred to Malabar for drying)
Option B2	North Head	Barging of dried pellets from Little Manly Point to White Bay
	Malabar and Bondi	Drying on-site (alternatively Bondi transferred to Malabar for drying), and truck transport to beneficial use markets
Option C	North Head	On-site treatment (anaerobic digestion followed by heat drying)to reduce volume, and truck transport to beneficial use markets
	Malabar and Bondi	Drying on-site (alternatively Bondi transferred to Malabar for drying), and truck transport to beneficial use markets
Option D2	North Head	Pipeline transfer of liquid sludge from North Head to Camellia for processing (anaerobic digestion followed by heat drying) and subsequent truck transport to beneficial use markets
	Malabar and Bondi	Drying on-site (alternatively Bondi transferred to Malabar for drying), and truck transport to beneficial use markets
Option E	North Head	On-site alkaline stabilisation (for future solids capture) and truck transport to beneficial use markets
	Bondi and Malabar	On-site anaerobic digestion at, and truck transport to beneficial use markets
Option F	North Head	On-site anaerobic digestion followed by heat drying and subsequent truck transport to beneficial use markets
	Malabar and Bondi	Drying on-site (alternatively Bondi transferred to Malabar for drying), and truck transport to beneficial use markets
Option G2	North Head	Pipeline transfer of liquid sludge from North Head to Bunnerong for processing (anaerobic digestion followed by heat drying) and subsequent truck transport to beneficial use markets
	Malabar	Pipeline transfer of liquid to Bunnerong for drying and subsequent truck transport to beneficial use markets
	Bondi	Pipeline transfer of liquid sludge to Bunnerong for drying and subsequent truck transport to beneficial use markets

40 Biosolids Strategy, p 90

41 Biosolids Strategy pp 88-89

Option H2	North Head	Pipeline transfer of liquid sludge from North Head to Camellia for processing (anaerobic digestion followed by heat drying) and subsequent truck transport to beneficial use markets
	Malabar	Pipeline transfer of liquid sludge from Malabar to Bunnerong for drying and subsequent truck transport to beneficial use markets
	Bondi	Pipeline transfer of liquid sludge from Bondi to Bunnerong for drying and subsequent truck transport to beneficial use markets
Option I2	North Head	Pipeline transfer of liquid sludge from North Head to Picton for processing (anaerobic digestion followed by heat drying) and subsequent truck transport to beneficial use markets
	Bondi	Pipeline transfer of liquid sludge from Bondi to Picton for drying and subsequent truck transport to beneficial use markets
	Malabar	Pipeline transfer of liquid sludge from Malabar to Picton for drying and subsequent truck transport to beneficial use markets

4.9 In addition seeking comments on the options, Sydney Water asked participants at formal meetings to nominate the principles against which options should be assessed. These "guiding principles" which were used as one of the key inputs for the criteria for assessing the various options. There were over 150 "guiding principles which Sydney Water classified into the following key principles:

- options must demonstrate net gain for the environment,
- options must be fully evaluated in terms of cost,
- options must demonstrate long term sustainability,
- options should improve ocean water quality and move towards ending ocean disposal of sewage,
- options must allow for flexibility to embrace new technologies,
- options should avoid potential (unseen) impacts (apply precautionary principle),
- options should incorporate future land use planning,
- options must include consultation, education, transparency and involvement,
- options should incorporate best practice,
- options should enhance reuse and decentralisation (interception),
- options should enhance the biosolid product and product marketability,
- options should choose sustainable transport modes – minimise trucking impacts, and maximise rail use,
- options should adopt sustainable operations,

- options should minimise local community impacts,
- options should minimise local impacts - Manly area,
- options should minimise local impacts – Malabar area,
- options should minimise local impacts – Bunnerong area, and
- options should consider short and long term solutions[42].

4.10 Sydney Water reports that these principles were considered along with issues raised by regulators and key stakeholders and the key strategic biosolids direction at an internal workshop of approximately 20 participants, with a range of areas of expertise. This workshop developed the primary and secondary assessment criteria and then assigned weightings to indicate the relative levels of importance in the assessment to the secondary criteria. Sydney Water stated that the weightings were chosen in order to "reflect as far as possible the frequency and intensity with which specific criteria were raised in the consultation process[43]".

Table 4.3: - Criteria and Weightings for secondary criteria used in the Decision Model[44]

Primary criteria	Secondary criteria	Relative Weights
Environment	**Energy Use** the applicable trucking, pumping and processing energy consumption described as megawatts per hour consumed in year	15
	Greenhouse Emissions the applicable trucking, pumping and drying greenhouse gas generation described as a carbon dioxide (CO_2) equivalent unit	15
	Green Power the anticipated recovery of energy that can be used to power on-site infrastructure or be returned to the electricity grid	5
	Threatened Species the existence of and potential impact upon threatened species, communities or populations	10
	Volume of Air to be Treated the anticipated volume of odorous gas described as a cubic metres per second unit. As such all options will require odour control infrastructure	20
	Truck Impacts (Vehicle Kilometres Travelled) VKT – anticipated number of vehicle movement kilometres travelled	10
	Restoration of Contaminated Sites while there are some risks involved in site restoration, this criteria recognises that a benefit will derive from the restoration to industrial use of a site that would otherwise be contaminated and not available for use	10
	Heritage the existence of and potential impact upon European and Indigenous heritage	10

42 Biosolids Strategy, p 43, all 150 guiding principles are at Appendix G of the Biosolids Strategy

43 Submission No 9, Sydney Water Corporation, p 134, Biosolids Strategy, p 93

44 adapted from Biosolids Strategy table 6.2, pp 92-93 and pp 93-94

	Chemical use the anticipated quantity of chemical used, as a tonnes per year unit	10
Economic / Commercial	**Transport Flexibility** whether a site has different modes of transport available	20
	Regulatory Approval Risk the risks for obtaining planning approval	20
	Market Flexibility the potential range of markets for particular products eg • dried pellet biosolids can be used in forestry, agriculture, fertiliser manufacture and as a fuel source • Alkaline amended biosolids are used in agriculture and land rehabilitation • Dewatered cake is used in agriculture	40
	Capital Cost	10
	Operating Cost	10
	Present Value Cost	20
Community	**Marginal Impact** the impact of the biosolids processing activity in the context of current and future zoning	20
	Buffer to Residential Areas the distance in metres to the nearest residential area	10
	Visual Impact the potential for visual impact (ie, site visibility). No landscape or building design details have been developed for the options. As such an assessment can only be made in the detailed environmental impact assessment phase	10
	Compatibility with decentralisation the ability of an option to assist with decentralising sewage processing	20
	Construction Impacts (duration of Construction) duration of construction which has been used to reflect the periods of disruption to local communities	10
	Trucking on Residential Roads the anticipated number of trucks on a local road	50
	Public Health public health risks associated with the grade of the biosolids product and the public health impact in the event of a spill, rupture from pipeline etc	20
Technology	**Quantity Flexibility** flexibility to receive increased quantities of sludge, which may be generated from future improvements in solids capture at an STP	10
	Technology Maturity the maturity of the use of technology within Australia and overseas	20
	Local Experience Sydney Water's experience with the technology	10
	System or Option Complexity the extent of multiple handling. This includes planning, staging and transport	20
	Operational Risks the operating risks such as a ruptured pipeline, barge spill, failure of drying equipment, pumping station failure, weather conditions affecting barge movements, train delays, etc.	20

Note: 1. The higher the relative weighting, the more importance is placed on this criterion

4.11 Sydney Water states that the project study team determined the attributes of each option. Where possible, quantitative measures such cost, product volumes, truck numbers were used, but for many of the criteria, only a subjective assessment could be made. In these instances, the options were usually scored on a relative basis, on a scale of 1 to 10[45].

4.12 The following table shows how the long term options compared against the secondary criteria:

Table 4.4: - Option attributes[46]

Attributes	Option	E	B2	B1	D2	F	G2	H2	I2
Energy use	Megawatts per hour per year	68,000	66,000	77,000	70,000	66,000	73,000	74,000	192,000
Greenhouse emissions	CO_2 Kg	61,000	60,000	69,000	68,000	60,000	66,000	67,000	173,000
Green power	Megawatts	2	0	0	0	0	0	0	0
Threatened species	Scale1	9	5	4	7	9	9	7	8
Air volume treated	M^3/second	166	230	250	230	220	257	257	257
Truck Impacts (VKT)	Km/year	83700	21000	54000	21000	21000	21000	21000	21000
Contaminated site restoration	Scale1	0	0	0	5	0	5	10	0
Heritage	Scale1	10	10	10	5	10	6	5	10
Chemical use	Tonnes per week	24	1	24.6	1	1	1	1	1
Transport flexibility	Scale1	5	7	7	8	5	10	10	7
Regulatory approval risk	Scale1	7	5	3	2	9	3	2	7
Market flexibility	Scale1	4	8	10	8	8	9	8	8
Capital cost	$m2	85	230	145	263	213	285	310	423
operating cost	$m2	29	24	29	24	23	24	26	26
Present Value	$m2	420	515	470	536	480	560	590	698
Current zoning	Scale1	10	7	7	6	10	2	2	2
Future zoning	Scale1	10	4	2	2	10	2	2	2
Buffer to residential	Metres	400	300	300	550	550	600	400	1000
Visual	Scale1	8	7	5	4	8	7	5	8
Public Health	Scale1	7	10	10	5	9	5	5	5
Compatibility with decentralisation	Scale1	8	6	7	4	6	3	3	2
Construction impacts	duration (months)	36	48	48	48	48	48	48	48

45 Biosolids Strategy p 92

46 copied from Biosolids Strategy, Table 6.3 p 95

Attributes	Option	E	B2	B1	D2	F	G2	H2	I2
Trucking on residential roads	movements	280	40	40	40	70	0	0	70
Quantity flexibility	Scale[1]	6	8	7	9	9	9	9	9
Technology maturity	Scale[1]	9	6	6	9	9	9	9	6
Local experience	Scale[1]	9	3	3	5	5	5	4	4
System/ option complexity	Scale[1]	9	6	4	6	8	4	3	4
Operational risks	Scale[1]	5	7	4	7	7	4	4	3

1. In relation to scale, options are graded qualitatively where 1= poor outcome and 10= best outcome
2. All costs are for planning purposes and are indicative only

4.13 These attributes were then ranked according the weightings assigned to the criteria. Although Option F is neither the cheapest nor most energy efficient option, it performed the best against all of the assessment criteria with these weightings.

4.14 In order to verify this result Sydney Water also undertook "sensitivity testing" of the model by applying different weightings to the primary criteria. Option F still received the highest ranking[47].

4.15 The Biosolids Strategy concluded by recommending two complementary preferred options for the treatment and transport of biosolids at North Head STP:

- a short term option of negotiating local traffic improvements with Manly Council to reduce the effects of biosolids trucks on local traffic, (Option A), and
- a long term of option of upgrading the North Head STP to introduce anaerobic digestion and on-site thermal drying of biosolids to create pellets for a variety of uses (Option F)[48].

4.16 As noted above, Option F also included proposals to introduce thermal drying at Malabar and Bondi STPs with an alternative of piping sludge from Bondi to Malabar for treatment. Although the detailed assessment of options included analysis of the effects of upgrading these plants, the Biosolids Strategy explicitly deferred making a decision on their future until further consultation had occurred[49].

4.17 Sydney Water then submitted the Biosolids Strategy to the Director General of DUAP by 31 August 2000. At a meeting of an Inter-Departmental Committee on 22 November 2000, DUAP told Sydney Water that it had no objections to the Strategy[50].

47 Biosolids Strategy, pp 97-98

48 Biosolids Strategy, p 107

49 Biosolids Strategy, p 107

50 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

Chapter 5 Public Consultation

Effectiveness of public consultation

5.1 One of the tasks of this inquiry was to determine the integrity of the consultation process undertaken by Sydney Water in developing the Biosolids Strategy. The committee received complaints that consultation was not handled in a way that fostered trust with the community. Problems reported to the committee included that:

- options which Sydney Water knew or should have known were not feasible were presented to the public without qualification,
- Sydney Water predetermined the outcome of the consultation phase,
- community views were not given sufficient weight in the finalisation of the Strategy,
- insufficient time was available for peak environment non-governmental groups, in particular, to prepare detailed technical responses, and
- ambiguities in the process for approval and scrutiny of the Strategy.

Process of public consultation

5.2 As noted in Chapter 4, Sydney Water reported that, between May and July 2000, it consulted either directly or indirectly with around 4000 community members on the development of the Biosolids Strategy. This consultation involved a variety of means ranging from shopping centre displays to formal meetings.

5.3 The committee acknowledges that this was a large and complex process of consultation.

Length of Public Consultation period

5.4 During the inquiry process, the committee heard concerns about the length of time available for public consultation. In a document tabled by Ms Kathryn Ridge, Executive Officer of the Nature Conservation Council of NSW Inc., at the committee hearing on 28 September 2001, the Nature Conservation Council claimed that Sydney Water's consultation period on the proposal was:

> exactly one month. Most environment and community organisations have monthly meetings. A consultative period limited to one month considerably reduces the ability of an environment or community groups to adequately discuss, investigate and prepare considered responses[51].

[51] Nature Conservation Council of NSW Inc, *Inquiry into Sydney Water's Biosolids Strategy*, tabled by Ms Kathryn Ridge 28 September 2001, p 2

5.5 By contrast, Sydney Water reports that it undertook a consultation phase for the Biosolids Strategy between 1 May and 14 July 2000 and that meetings with some key stakeholders began prior to this period and ended at a later date. For example, there was a briefing for the Manly Community Liaison Committee for the Northside Storage Tunnel on 13 April 2000, a combined meeting of key stakeholders from across the potentially affected areas on 10 July 2000 and a combined meeting of government agencies on 20 July 2000[52].

5.6 Sydney Water, however, also stated that most of the *Have your say* brochures were posted on 7 June 2000 which required members of the community to prepare a response by 14 July 2000[53]. If this is defined as the actual "public" consultation process, then only five weeks were provided for community input.

5.7 The committee believes that a consultation period should provide ample time for stakeholder to receive information taking into account the normal meeting cycle of community organisations. Ample time is needed for stakeholders to prepare considered responses to complex technical issues. The committee notes however that, if Sydney Water had allowed more time in preparing the Strategy, this would have pushed the preparation of the Strategy past the 31 August 2000 deadline and put Sydney Water in breach of the consent conditions for the Northside Storage Tunnel. Nevertheless, the committee considers it preferable to provide for an adequate consultation period.

Weighting given to public comments

5.8 Another concern raised regarding the public consultation process, was that information provided in the public comments was not given sufficient credence in developing the Strategy further and that it was unclear to the community how their views were used. In its submission Sydney Water stated that:

> the consultation process was designed to provide qualitative rather than quantitative information. The purpose of this approach was to avoid a "vote gathering exercise" on the issues and options. The current qualitative approach was adopted deliberately to avoid setting one community up against another[54].

5.9 Sydney Water also stated that formal meetings were used as a way of ascertaining the "guiding principles" for undertaking further analysis of options. These principles were used as input for developing the assessment criteria. These criteria were assigned weightings and used as the basis for assessing the selected long term options in multi-criteria analysis. When Sydney Water was asked about these "guiding principles", Ms Kirstie Allen, formerly Sydney Water's project manager for the Biosolids Strategy, responded:

> First of all, I think it is important to mention that the criteria were a reflection of the guiding principles that we extracted during our community consultation. We did not list those criteria; they were the issues that came from the community consultation. And we asked the community: Could you please tell us what are the guiding principles that Sydney Water should use in making a decision? Those

52 Submission No 9, Sydney Water Corporation, p 111 and Biosolids Strategy p 31

53 Biosolids Strategy, p 30

54 Submission No 9, Sydney Water Corporation, p 121

> guiding principles, you will see, are contained in appendices G and H of the biosolids strategy. We took those guiding principles and put them are under the various headings which are the secondary criteria, and then grouped them into the primary criteria, as Mr Walker said, environment, community, technical and commercial….If you were to look at page 92 of the strategy, the weightings are there. As you will see under "community", there was a heavy bias on trucking, 50 per cent was given, and there was a heavy bias on the marketability of the product. At the end of the day, having beneficial reuse of the product is important. So you will see that all of those weightings are there.
>
> We then put them through a multi-criteria analysis, and we came up with option F. We even did a sensitivity analysis, which Mr Walker spoke of. In that sensitivity analysis, which is shown on pages 97 and 98 of the strategy, we gave the criteria. Let us take, for example, community, a 70 per cent weighting, and the other criteria 10 per cent each. On that run-through, and even if we were to weight up the environmental, commercial or technical, at the end of the day we continue to come up with option F. So that is how the weightings and the sensitivity analysis were done[55].

5.10 From the information before it, the committee was unable to reach a clear understanding about which consultative meetings were used in the partially quantitative process of developing the "guiding principles" and subsequent weightings for assessment criteria. Sydney Water presented conflicting evidence about the number of consultative meetings held for this purpose, ranging from 17[56], 34[57] or the 47 meetings as detailed in the Biosolids Strategy [58]. It is unclear whether other groups such as government agencies also had input into developing the "guiding principles".

5.11 The committee was also unable to gain a clear view of the method for developing the assessment criteria and their relative weightings for the assessment of options. As noted in Chapter 4, these criteria were developed at a small workshop. In its submission, Sydney Water stated that:

> These guiding principles were used in combination with the issues raised by regulators and key stakeholders and Sydney Water's key strategic biosolids direction to develop the assessment criteria. An internal workshop of approximately 20 participants. with a range of areas of expertise developed the criteria based on the guiding principles[59].

5.12 Sydney Water further stated that weightings were assigned to the secondary criteria that:

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55 Evidence of Ms Kirstie Allen, Manager Infrastructure Policy, Premier's Department, 28 September 2001, pp 9-10

56 Submission No 9, Sydney Water Corporation, p 117

57 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 3

58 Biosolids Strategy pp 30-31

59 Submission No 9, Sydney Water Corporation, p 151

reflect as far as possible the frequency and intensity with which specific criteria were raised in the consultation process[60].

5.13 It is unclear whether this workshop or the project team was responsible for assigning these weightings and the precise method used.

5.14 The committee acknowledges that multi-criteria analysis is quite complex however for the purposes of public accountability, the process followed by Sydney Water needs to be articulated more clearly. The process has been heavily criticised by some witnesses. In particular, the Nature Conservation Council of NSW Inc. expressed concern that in developing the guiding principles, any views about decentralisation of the system or closing down of North Head Sewage Treatment Plant were classified under the heading "community or other" rather than "environment" despite more immediate connection with the latter category[61].

5.15 In correspondence to the committee, Ms Kathryn Ridge, Executive Officer of the Nature Conservation Council of NSW Inc., stated that the key problems with the process were that:

- there was no indication of the number of community members who supported particular options,
- the assessment criteria developed by Sydney Water were not related to the guiding principles extracted from the community consultations,
- the environmental criteria which were weighted were a standardised list of environmental factors rather than a response to the priorities identified in consultation, and
- most importantly, the rationale for the different weightings was not stated[62].

5.16 Ms Ridge tendered to the committee a discussion paper prepared for the Department of Urban Affairs and Planning (DUAP) which outlines steps for effective community consultation on large projects. This paper was commissioned as part of a review of plan-making in New South Wales[63]. The committee notes that this document was produced subsequent to the Sydney Water consultation process, however, its recommendations highlight what should be "best practice".

60 Submission No 9, Sydney Water Corporation, p 134

61 Evidence of Ms Kathryn Ridge, Executive Office of Nature Conservation Council of NSW Inc, 28 September 2001, p 42, correspondence from Ms Kathryn Ridge, 5 October 2001, p 3

62 Correspondence from Ms Kathryn Ridge, Executive Office of Nature Conservation Council of NSW Inc, 5 October 2001

63 Dr Lyn Carson and Dr Katherine Gelber, *Ideas of Community Consultation: a discussion on principles and procedures for making consultation work*, February 2001

5.17 Mr David Barr MP, Member for Manly, told the committee that where quantified information about community views was obtained through the survey of Manly residents, these views were used inappropriately to favour option D:

> the purported benefits of barging over trucking are based entirely on Sydney Water's misrepresentation of community views…. While truck movements are a community issue (73% concerned), the community has clearly indicated that pollution of local waterways is a higher priority (89% concerned). The challenge for Sydney Water is to find a solution which satisfies both these requirements, not to trade them off against each other. One solution clearly supported by the community (71%) is the transfer of biosolids by pipeline[64].

5.18 The committee notes these views and considers that the consultation process could have been handled better. Sydney Water needs to develop its consultative skills to ensure proper and effective community consultation.

Approval and Scrutiny of the Biosolids Strategy

5.19 In correspondence to the committee, Mr Alex Walker, Managing Director of Sydney Water, explained that implementation of the Strategy is likely to be subject to planning approval by the Minister for Urban Affairs and Planning and that, should the preferred option have a significant effect on the environment, an Environmental Impact Statement would be prepared. Mr Walker also stated that the Environment Protection Authority may also be involved as the Strategy's implementation relates to the licence for the NSOOS[65].

5.20 Mr David Barr MP, Member for Manly, expressed concern about lack of clarity on responsibility for the Strategy:

> The last point that I want to make is that there is no clarity on who signs off on all of this. Sydney Water seems to be a law unto itself. There is no whole-of-government approach. Many different agencies and government departments are involved, for instance New South Wales Agriculture, New South Wales Fisheries, the Department of Environment and Planning, the Department of Urban Affairs and Planning and so on. Each may have its own piecemeal input, but there is no overall, holistic approach to what Sydney Water is doing. I have written to the Minister for Urban Affairs and Planning, the Deputy Premier, and I have had two letters from him over time. These are part of my submission. The Deputy Premier, in his first letter to me, said that he would wait for this inquiry before going further and determining the issue of the northside sewerage tunnel itself. In the second letter he says:
>
> > Neither DUAP nor I have any specific statutory role in assessing and determining the strategy. However, DUAP will review the strategy in consultation with other key agencies.

64 Submission No 8, Mr David Barr MP, Member for Manly, p 11

65 Correspondence from Mr Alex Walker, Managing Director, Sydney Water, to committee Chair, 15 October 2001

> No-one seems to know who has final responsibility, other than Sydney Water doing these things[66].

5.21 Although it was a condition of the modified approval of the Northside Storage Tunnel that Sydney Water develop a Biosolids Strategy and present it to the Director General of the Department of Urban Affairs and Planning by 31 August 2000, it may be unclear where responsibility lies for monitoring implementation of the Strategy.

5.22 The committee expresses concern that a strategy of this type may be developed without clear communication of the ultimate authority for endorsing its direction.

Issues affecting options presented to the public

5.23 During the consultation phase, Sydney Water presented and sought comment on seven options for handling and treatment of biosolids.

5.24 The committee heard that there was a high level of community concern about the legitimacy of options presented. For example, the committee heard from Mr David Barr MP, Member for Manly, that:

> In the consultation process, no matter what gloss is put on it, the public of Manly and everywhere else were deceived by Sydney Water. They were deceived in that when Sydney Water went around doing its consultation in 2000, when it went to about 30 different areas and had community consultation, two of the options that Sydney Water presented to the public—that is, piping the sludge out to Bunnerong, or piping it to Camellia—were never really on the cards. One does not present to the public options that one knows, or reasonably ought to know, are not feasible or realistic. We know that neither of those options were[67].

5.25 Ms Kathryn Ridge, Executive Officer of the Nature Conservation Council of NSW Inc., also suggested in her evidence:

> We do not believe those options presented the full range of options open to Sydney Water and the community to consider and we do not believe they were presented in good faith to the committee—particularly the option involving Camellia as a processing facility[68].

5.26 More specifically, the committee received information suggesting that opposition by some agencies to Options B, D and G may have limited the influence of community consultation as outlined below.

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66 Evidence of Mr David Barr MP, Member for Manly, 28 September 2001, p 19. Similar points were raised by Mr Jim Hunter, Director of Service Planning and Commissioning, Manly Council in evidence 28 September 2001, p 26 and in Submission No 8 from Mr David Barr MP, Member for Manly, and Submission No 11 from Manly Council

67 Evidence of Mr David Barr MP, Member for Manly, 28 September 2001, p 18

68 Evidence of Ms Kathryn Ridge, Executive Officer of the Nature Conservation Council of NSW Inc., 28 September 2001, p 37

Factors affecting Option B

5.27 Correspondence from the Sydney Ports Authority dated 27 April 2000 to Sydney Water, states that the Ports Authority would be unlikely to support the barging of biosolids to White Bay (Option B)[69]. This was some months before the *Have your say* document was released for public consultation. In its submission to this inquiry, Sydney Ports Authority confirmed that White Bay has been zoned for ocean going trade cargoes and therefore could not support barging of biosolids[70]. The combination of these facts suggests that Option B may not have been tendered as a realistic option.

Factors affecting Option G

5.28 In the same correspondence from the Ports Authority to Sydney Water, the Ports Authority also expressed an interest in the purchase of some or all of Sydney Water's land at Bunnerong for port related uses. If this sale transpired, Option G would not be possible. The committee notes that although the Port Authority did not formally object to Option G until its formal response to public consultation, the correspondence cites a history of several years of discussions between the two authorities regarding the possibility of the Ports Authority acquiring this land[71]. The nature of the negotiations between Sydney Water and the Ports Authority may have also limited the influence of community consultation.

Factors affecting Option D

5.29 In response to consultation on Option D, both the Department of Urban Affairs and Planning and the Parramatta Rail Link Company objected to the use of the land owned by Sydney Water at Camellia in June and July 2000[72]. Both organisations objected on the basis that the site was included in the Parramatta Regional Environmental Plan as a site for mixed use development and it is important for the urban renewal associated with the consolidation of the Rosehill and Camellia train stations.

5.30 The Parramatta City Council also advised Sydney Water as early as November 1999 that any proposed waste processing at Camellia was unlikely to be permitted under the current zoning and was certainly incompatible with expected uses in the Regional Environmental Plan[73].

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69 Correspondence from Mr John Hayes, General Manager Property and Planning, Sydney Ports Corporation to Ms K Allen, Project Manager, Sydney Water, 27 April 2000, in Biosolids Strategy, Appendix I

70 Submission No 5, Sydney Ports Authority

71 Correspondence from Mr John Hayes, General Manager Property and Planning, Sydney Ports Corporation to Ms K Allen, Project Manager, Sydney Water, 10 July 2000, in the Biosolids Strategy, Appendix I

72 Correspondence from Mr Sam Haddad, Executive Director, Department of Urban Affairs and Planning to Mr Ron Quill General Manager Asset Solutions, Sydney Water, 7 July 2000 and Correspondence from Mr Peter Katz, Project Director, Parramatta Rail Link Company, to Sydney Water, 27 June 2000, in the Biosolids Strategy, Appendix I

73 Correspondence to Sydney Water from Mr Terry Barnes, General Manager. Parramatta City Council, 24 November 1999, in the Biosolids Strategy, Appendix I

5.31 The committee notes that the Parramatta Rail Link project is a major piece of proposed infrastructure development which Sydney Water could reasonably be expected to have been aware of during the development of the Biosolids Strategy.

5.32 In his submission to the committee, Mr David Barr MP provided information to the committee from Sydney Water's internal documents indicating that as early as May 1998 the organisation considered the Camellia site unsuitable for the processing of biosolids from all three major ocean STPs because of the difficulty of transporting sludge from Bondi and Malabar and that a site in the Botany area was preferred[74].

5.33 In evidence, when asked whether they were aware of the difficulties with pursuing the barging option, Ms Kirstie Allen, the formerly the Biosolids Strategy Project Manager for Sydney Water, stated:

> No. That option what was equally as tangible an option as the option of going to Bunnerong or the pipeline in the tunnel. We did not know that the Sydney Ports Corporation had those views until we conducted the consultation, so these options were presented as tangible, realistic options and then the consultation led us to understand that there were issues either from the community or from the Sydney Ports Corporation that they had real concerns about[75].

5.34 When Ms Allen was asked whether or not Sydney Water should have anticipated this issue, she stated:

> Possibly, but the Bunnerong option is our land. It is Sydney Water's land. It is a realistic option, so why not pursue it in the community consultation forum[76]?

5.35 While it is understood that consultation with government agencies must commence before community consultation, the committee considers that only options that have a realistic possibility of implementation should be presented to the community. Sydney Water should have resolved any planning issues prior to presenting options as viable solutions to the community for comment. The committee considers that this is a serious flaw in the consultation process.

5.36 Sydney Water has an inconsistent history of communication with the community as is demonstrated by recommendations of previous inquiries into Sydney Water projects. For example the Second Report of the Waterways Advisory Panel states:

> The community now has a well-founded suspicion of Sydney Water and its way of delaying and changing decisions.... Sydney Water must be made to keep to its bargain with the community and the Government and cannot delay ameliorating

74 Submission No 8, Mr David Barr MP, Member for Manly, p 7, Sydney Water Executive Management Paper *Upgrading Major Ocean STPs: Progress Report*, p 5

75 Evidence of Ms Kirstie Allen, Manager Infrastructure Policy Premier's Department, 28 September 2001, p 9

76 Evidence of Ms Kirstie Allen, Manager Infrastructure Policy Premier's Department, 28 September 2001, p 9

the effects of sludge truck movements in Manly until its sludge strategy is finally developed[77].

5.37 A key recommendation of the DUAP paper on community consultation is that agencies should involve the community as early as possible in the planning process as way of fostering ownership and support for the final product[78].

5.38 The committee notes that Sydney Water did involve the community at the same time or shortly after involving government authorities. The committee considers it preferable that, for the longer term relationship with the community, Sydney Water should develop a more soundly based appreciation of options prior to presenting them to the community as equally feasible.

Decision making within Sydney Water

5.39 According to Sydney Water's Executive Management Committee papers from a meeting on 19 May 1998, there was support for off site processing within Sydney Water[79]. The papers indicated that Sydney Water was considering in detail its options for the disposal of biosolids in similar terms to the Biosolids Strategy. It was concluded that off-site processing is not significantly more expensive than further on-site options and therefore recommended off-site processing.

5.40 It is unclear what the Board of Sydney Water decided in response to this recommendation however on 22 June 1998, the Sydney Water Executive considered a paper entitled *Upgrading of Major Ocean Plants*, discussing the need to upgrade all three ocean STPs to full primary treatment. This paper refers to an existing budget allocation of $650 million of capital for implementation of the recommendations by 2005-2010. This paper not only recommended upgrading all three ocean STPs rather than establishing new plants but also recommended centralising biosolids treatment at a site in Botany industrial area such as Bunnerong. The paper estimated that this option had a net present value of $550 million and, although it was not the least cost option, it was consistent with Sydney Water's commitments to eliminate biosolids trucking in the Manly area[80]. The minutes of this meeting noted these proposals and requested that a full cost benefit analysis be undertaken so that a final decision could be made. No further Executive papers on this direct topic were provided to the committee.

5.41 By contrast, in *Sydney Water's Long Term Biosolids Strategy,* dated September 1999, there is a focus on market opportunities for biosolids products and the selection of thermal drying as

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77 Waterways Advisory Panel *Second Report to the NSW Government on the Proposal by the Sydney Water Corporation for Sewage Overflow Abatement in Sydney Harbour*, March 2000, pp 61-62

78 Dr Lyn Carson and Dr Katherine Gelber, *Ideas of Community Consultation: a discussion on principles and procedures for making consultation work*, February 2001, p 9

79 Appended to Submission No 8, Mr David Barr MP, Member for Manly and Submission No 11, Mr Jim Hunter, Director of Service Planning and Commissioning, Manly Council

80 *Upgrading of Major Ocean Plants paper*, Sydney Water Executive Paper, 15 May 1998, appended to Submission No 8, Mr David Barr MP, Member for Manly, p 6, p 9

the preferred technology to produce Grade A biosolids products[81]. The indicative costs included are based on upgrading the existing ocean STPs rather than new off-site options. This foreshadowed the conclusions about the preferred product of the final Biosolids Strategy well before the options had been considered in public consultation or the detailed analysis phases of developing the strategy had been initiated.

5.42 The committee was advised that the recommendation of the June 1998 documents has caused some consternation within affected communities when compared to the results of the final Biosolids Strategy. The committee noted a statement by Manly Council that it:

> believes Sydney Water has moved away from the vision and the principles enunciated in the 1997 Waterways Package, particularly in relation to decentralisation, recycling and reuse and lessening impacts on land, air and community. Council is concerned that the options assessment paper produced by Sydney Water Corporation in June 2000 is flawed in its objectivity and there must be serious questions that the outcome of the consultation process differs so markedly from the recommendations made by professional staff within Sydney Water to the Executive on 22 June 1998[82].

5.43 When asked to explain the decision making process that followed the June 1998 meeting, Dr Judi Hansen, General Manager, Environment and Innovation, Sydney Water Corporation explained:

> That information was presented to the Sydney Water executive at the time. The information was considered and additional studies were requested prior to the executive making a final decision. Since that time, of course, we have done extensive community consultation and some additional technological evaluation which, subsequently, resulted in a different preferred option[83].

5.44 The Chair of the committee then asked:

> Was it a political decision to jettison those recommendations? Obviously something major happened in that one year, because the decision was changed.

5.45 Mr Alex Walker, Managing Director, Sydney Water, responded by stating:

> That was the period in which there was consultation relating to the northside tunnel project and the provision of a sludge transfer pipeline in that tunnel. I repeat what I said in my statement: There was never a decision taken by either the executive or the board of Sydney Water to provide a sludge transfer pipeline from North Head to a remote site[84].

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81 *Sydney Water's Long Term Biosolids Strategy*, September 1999, appended to Submission No 8, Mr David Barr MP, Member for Manly, p 4

82 Submission No 11, Mr Jim Hunter, Director of Service Planning and Commissioning, Manly Council, p 12

83 Evidence of Dr Judi Hansen, General Manager, Environment and Innovation, Sydney Water Corporation, 28 September 2001, p 5

84 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 5

5.46 To clarify the authoritative status of the Executive papers, Mr Walker explained the lines of governance within Sydney Water:

> Decision making in Sydney Water is the subject of very carefully prescribed delegations. Essentially all authority to make decisions resides with the board, and the board has delegated authorities to me as managing director and as a board member to operate the organisation and to approve certain projects and capital works, provided they satisfy the necessary planning requirements of the State—but with delegated limits. The executive management committee—whose documents you quoted from earlier—is essentially a vehicle for planning strategy development. It comprises the general managers and me, as chairman. We use it as a way of bringing together ideas about the future of the organisation, filtering those ideas and coming up with recommendations for the board. In the end if no decision is taken by the board on a matter as significant as this, there is no decision[85].

5.47 In correspondence to Sydney Water, the committee asked, whether the resale value of Sydney Water's property at Camellia influenced the decision not to proceed with the option of using the site as a replacement treatment plant or simply for biosolids treatment. Sydney Water did not provide any information about its intentions in relation to this property. Sydney Water did not wish to disclose the current market value of the land, but it stated that in March 2000 it was valued at between $12 million and $15 million[86].

5.48 The committee notes that there was a major change in the internal views of Sydney Water between the middle of 1998 and the middle 1999. It may be that Sydney Water was unaware of planning concerns with the off-site options until the community consultation phase of the Biosolids Strategy. This change in view was confirmed with Sydney Water's apology to the community in mid-1999 about the mistake of promising to include a biosolids pipeline in the NST.

Conclusion

5.49 On the basis of the evidence before it, the committee considers that public consultation was not handled in an acceptable way that fostered trust with the community.

5.50 The committee expressed concern that Sydney Water presented some options to the public that were not feasible.

85 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 12

86 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 15 and correspondence form Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

Recommendation 2

The committee recommends that Sydney Water make greater efforts to engage the community effectively in consultation and demonstrate that community concerns are reflected in the outcomes through:

- only including those options which are realistic and genuine,
- identifying any known factors adversely affecting options outlined in those proposals, and
- using public consultation periods of at least three months for major projects to allow for an in depth consideration of issues and preparation of comprehensive submissions by expert community groups.

Recommendation 3

The committee recommends that Sydney Water liaise with government agencies more thoroughly prior to undertaking public consultation to ensure that planning issues of concern to other government agencies in relation to options are made clear to the public.

Recommendation 4

The committee recommends that an interdepartmental government committee consisting of Sydney Water, DUAP, EPA, NSW Health and Department of Local Government meet at least six monthly for five years, to review and monitor implementation of the Biosolids Strategy and make recommendations to the Minister for Energy.

Chapter 6 Sydney Water's preferred option for biosolids handling and transport

One of the terms of reference for this inquiry requires examination of the scope the selected options provide for decentralisation and devoluming of the sewage system. In the Biosolids Strategy, Sydney Water identified two complementary preferred options for the treatment and transport of biosolids at North Head STP:

- a short term option of negotiating local traffic improvements with Manly Council to reduce the effects of biosolids trucks on local traffic (Option A), and
- a long term of option of upgrading the North Head STP to introduce anaerobic digestion and on-site thermal drying of biosolids to create pellets for a variety of uses (Option F)[87].

Option F also included proposals to introduce thermal drying at Malabar and Bondi STPs with an alternative of piping sludge from Bondi to Malabar for treatment. Although the detailed assessment of options included analysis of the effects of upgrading these plants, the Biosolids Strategy explicitly deferred making a decision on their future until further consultation had occurred.

This Chapter evaluates these preferred options in terms of decentralisation and devoluming of the system. It provides an examination the effects of anaerobic digestion and thermal drying technology in relation to devoluming of biosolids products and possible applications and market opportunities for biosolids.

Benefits of the Preferred Options

Devoluming of biosolids

6.1 Sydney Water currently captures between 30 and 35% of the biosolids from the wastewater stream at North Head STP. Grade A stabilised biosolids are produced through an advanced alkaline process of adding lime and heat to dewatered raw sludge[88].

6.2 This process produces relatively high volumes of biosolid products because of the addition of lime. The delivery of lime requires extra vehicle movements which has fuelled the already high level of community concern in relation to heavy vehicle movements in Manly.

6.3 The preferred long term option in the Biosolids Strategy's involves upgrading the North Head STP to full primary treatment level so that 65% of wastewater solids are captured.

87 Biosolids Strategy, p 107

88 Evidence of Mr Paul Coffey, Director, Resource Recovery Management Pty Ltd, 28 September 2001, p 32, Biosolids Strategy p 14

6.4 The captured solids would then undergo anaerobic digestion to reduce their volume, and stabilise them and then be further reduced in volume by thermal heating. The end product is dried pellets of significantly less volume than the current biosolids product which are expected to be odourless and mostly pathogen free. As a result, significantly fewer vehicle movements to transport these products to markets for beneficial reuse would be required.

6.5 The committee was informed that the preferred options would deliver significant environmental and community benefits at comparatively low cost as well as allow for some commercial return on beneficial re-use of captured biosolids. For instance, Mr Paul Coffey, Director, Resource Recovery Management, told the committee:

> I am asked what is the proposed outcome for 2021 and, generally, the capture rate is 65 per cent, which is a significant improvement. Digesting and drying and 4.8 truck movements a day represents, in my view, an improved solids capture in effluent and an improved environmental performance that I think is really quite significant. It will also result in a reduced impact on the community because of the reduction in transport and truck movements and a reduction in odour. There is also a reduced operational cost per dry solid tonne of captured biosolids, which is a definite plus[89].

6.6 Mr Coffey provided the committee with a comparative analysis of the masses of biosolids that would be produced using treatments recommended in the preferred long term option compared to the current process of alkaline treatment of raw sludge. This analysis, represented in Table 6.1**,** shows the relative masses of biosolids produced each day by the available processes in the years 2000, 2006 and 2021 assuming that the North Head STP would be upgraded in 2006[90]. Sydney Water told the committee that the upgrade to North Head would be completed in 2007[91].

6.7 This information indicates that the combined use of anaerobic digestion and thermal drying would significantly reduce the volume of the biosolids captured. When Mr Coffey's projection is converted to a five day week, this would mean only 4.8 truck movements per day (assuming a 30 tonne payload) would be required to transport the biosolids products in 2021 instead of 30.5 movements required if the current process continued to be use[92].

89 Evidence of Mr Paul Coffey, Director, Resource Recovery Management Pty Ltd, 28 September 2001, p 35

90 Correspondence from Mr Paul Coffey, Director, Resource Recovery Management Pty Ltd, 11 October 2001, in response to questions placed on notice by the committee, p 3

91 Evidence of Dr Judi Hansen, General Manager, Environment and Innovation, Sydney Water Corporation, 28 September 2001, p 10

92 Correspondence from Mr Paul Coffey, Director, Resource Recovery Management Pty Ltd, 11 October 2001, in response to questions placed on notice by the committee, p 5

Table 6.1: Biosolids treatment processes

Process Description	Biosolids tonnes/day (7days/week)		
	2000	2006	2021
Raw Solids in Sedimentation Tanks (DST/day)	31	65	75
Dewatered Primary solids (product tonnes/day) at 28% TDS (Stabilisation Grade C)	110	232	268
Alkaline Stabilisation of raw primary sludge to Grade A (10% lime. Addition) – the current process	121	255	295
Digested Solids – stage 1 of preferred option		40	47
Dewatered Primary solids (product tonnes/day) at 25% TDS (Grade B stabilisaton)		160	188
Alkaline Stabilised Grade A (10% lime Addition)		176	207
Digested Dried biosolids at 92% TDS Grade A		43	51

Note: DST = Dry Solid Tonnes

6.8 As explained, a key feature of the proposal is to capture a higher proportion of the biosolids from the waste stream than is currently captured. The committee considers that these processes would contribute to significant devoluming of the entire system should they be implemented at all three major ocean STPs.

Commercial benefits

6.9 Sydney Water has made considerable efforts to plan for long term reliable markets for beneficial reuse of biosolids products. In its planning, Sydney Water proposes to diversify the reuse markets from a focus on agriculture and composting to an increased reliance on forestry and land rehabilitation and to include energy recovery for the first time.

6.10 A key component in this strategy is the proposed move to producing predominantly Grade A stabilised and contaminant biosolids instead of the current mix with lower graded products. This would enable them to be used with fewer restrictions. Producing dried products would also significantly reduce storage requirements as a result of expected volume reduction[93].

6.11 In evidence, Mr Alex Walker, Managing Director Sydney Water, stated that there has been a high level of acceptance of biosolids products by farmers in the past decade, and that

93 Sydney Water, *Sydney Water's Long Term Biosolids Strategy* 1 September 1999, included with Submission No 8, Mr David Barr MP, Member for Manly, pp 5-6

demand has outstripped supply[94]. The committee received evidence of a number of concerns from other countries about the use of biosolids products[95].

6.12 In its long term planning documents Sydney Water identified the following risks:

> These include lack of market and contractor diversification, concerns regarding pathogens in sludge, lack of storage sites, and in some cases (such as North Head), pressure to eliminate or transfer impacts associated with biosolids management. The future operating environment is expected to bring increased challenges to the business. These challenges include a predicted 70% increase in sludge capture by 2021, the need to produce "pathogen free" products, competition from green waste and other organic products, and the need to maintain a cost competitive program.[96].

6.13 The commercial risk of selling processed biosolids may exist through resistance based on price. This resistance has the effect of limiting the likely commercial return from biosolids products. In evidence before the committee, Mr Paul Coffey indicated that there was some market resistance to paying for the full productivity benefits of biosolids:

> We have the same problem with compost and green waste. The chemical companies have clearly explained to farmers that the first thing you do is kilos of nitrogen. If you work it out on NPK[97], on specific nutrient value, it is probably worth $5 or $6 a tonne. On my estimate, if you work it out on productivity it is probably worth a damn sight more. The problem is that we still have not come over this hill of people seeing it as a waste product and farmers saying that they are really providing a respite for Sydney Water to dispose of a waste product. Sydney Water now gets a couple of dollars a tonne for it, which is a contribution. It is part of this whole change in our philosophy. We now have to change from this idea of waste and start looking at these things as a resource, and treat them as the correct resource[98].

6.14 The committee heard that estimates of the amount recoverable from the sale of the dried pellets range from $10 to $50 per dry tonne although this varies on the transport costs. Sydney Water estimates that the production costs are in the order of $300 to $400 per dry tonne at North Head STP but these costs would be higher at smaller plants[99].

6.15 The committee notes that the focus of this planning work is to create a market for biosolids products to secure reliable demand and reduce the likelihood of sludge disposal in

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94 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 3

95 *Sydney Water's Long-term Biosolids Market Strategy*, June 2000, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc., 28 September 2001, App 5, p 6

96 Sydney Water, *Sydney Water's Long Term Biosolids Strategy* 1 September 1999, included with Submission No 8, Mr David Barr MP, Member for Manly, p 1

97 Nitrogen per kilogram

98 Evidence of Mr Paul Coffey, 28 September 2001, p 35

99 Correspondence from Mr Paul Coffey to committee Chair, 11 October 2001 in response to questions on notice from the hearing, Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

landfill. The committee considers that although profit from this market is exceedingly unlikely, the marketability of biosolids products is important to securing reliable end uses.

Local impacts of biosolids treatment at North Head

6.16 Possible local impacts of the proposed upgrading of the North Head STP include increased odour, noise, visual amenity of the upgraded plant and disruption to local environment caused by construction work.

Construction issues

6.17 The Biosolids Strategy proposes placing the anaerobic digesters in the ground to reduce their visual impact. The impacts on the community of noise associated with construction is expected to be minimal as there is a buffer between the plant and residential areas of 800 metres.

6.18 The Strategy estimated that construction work could take two years. This work may interfere with the endangered colony of long nosed bandicoots present on the site although this situation was managed during the construction of the Northside Storage Tunnel by relocation and appropriate fencing. Sydney Water expects similar management techniques could be used for this proposal[100].

Air quality

6.19 The Biosolids Strategy explains that anaerobic digestion does not generally release odours and that odours produced by heat drying would be controlled by enclosing the dryers in a ventilated and odour scrubbed building[101]. The Strategy estimates that 21 cubic metres per second of odorous gas would require treatment. While the end product would be low in odour, some odour control would be required in storage[102].

6.20 In response to questions about plans for emissions control at the upgraded plant, Sydney Water informed the committee that these would be designed to meet international air quality standards and any specific requirements of the EPA[103]. The committee notes that in its submission to this inquiry, Sydney Water was able to demonstrate that the emissions performance of some existing thermal drying systems, such as one in Subiaco, in suburban Perth, is well within local emissions limits for a range of gases, heavy metals and odour[104].

100 Biosolids Strategy pp 53-55

101 Biosolids Strategy p 54

102 Biosolids Strategy, p 61

103 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation to committee Chair, 15 October 2001

104 Submission No 9, Sydney Water Corporation, Appendix A, pp 5-12

Transport of biosolids from North Head STP

6.21 The Biosolids Strategy recommends continued road transport of treated biosolids from North Head STP. In its submission Sydney Water stated that:

> The traffic route used by the biosolids trucks is the best possible route for transportation of biosolids from North Head and was selected in consultation with Manly Council[105].

6.22 In his submission to the inquiry, Mr David Barr MP, Member for Manly, summarises the Manly community's concern about the road transport option:

> The trucking of biosolids from North Head was a short term strategy following the closure of the incineration plant. At the time the Water Board stated that this strategy was expected to be in place for between one and five years. Nine years later it is still in place and likely to be institutionalised by further investment in biosolids processing at North Head[106].

6.23 Mr Jim Hunter, Director of Service Planning and Commissioning for Manly Council, stated that Manly Council was concerned at the prospect of continued carriage of biosolids in trucks particularly given expected levels of development in the area[107].

6.24 Continued road transport of biosolids caused a high level of concern among groups in the Manly community due to Sydney Water's previous undertaking to remove the sludge trucks from the roads of Manly. On 1 and 8 November 1997 Sydney Water advertised in the *Manly Daily* explaining the benefits of the Northside Storage Tunnel. The project was said to include funding of "$50 million to take biosolids away from North Head rather than rely on trucks[108]". (A copy of this advertisement is attached at Appendix 1.) This allocation was also referred to in the Environmental Impact Statement for the project with a note that it would eliminate 75-80 truck movements per week currently associated with sewage sludge disposal[109].

6.25 In May 1999, well before the finalisation of the Biosolids Strategy, Sydney Water retracted this apparent commitment and informed the community that it had made a mistake. In evidence before the committee, Mr Alex Walker, Managing Director, Sydney Water, stated:

> No decisions were taken by the board of directors or the Sydney Water executive management committee to transport sludge via a pipeline in the Northside Storage Tunnel to Camellia for off-site processing. It was an idea that was given serious and active consideration but no decision was ever taken. On 14 May 1999 Sydney Water formally and publicly apologised to the Manly community for incorrectly

105 Biosolids Strategy, p 79

106 Submission No 8, Mr David Barr MP, Member for Manly, p 5

107 Evidence of Mr Jim Hunter, Director of Service Planning and Commissioning, Manly Council, 28 September 2001, p 27

108 Sydney Water advertisement, *The Manly Daily*, Saturday 1 November 1997, 8 November 1997, p 12

109 Sydney Water Corporation, *Environmental Impact Statement for Northside Storage Tunnel*, September 1997, p 241

> publicising the intention to install a pipeline to transport sludge to Camellia for off-site treatment[110].

6.26 Mr Paul Coffey has pointed out that the impact of the biosolids trucks should be considered in the context of a high volume local traffic environment:

> The actual vehicle movements should also be considered in the context of the total heavy vehicle movements on the Manly roads used by the biosolids transport trucks. My recollection from a 1991 transport study was that there were in excess of 10,000 vehicle movements/day including approximately 700 heavy vehicle movements/day on Darley road and several thousand on Spit Road[111].

6.27 As part of developing the Biosolids Strategy, Sydney Water commissioned a study of heavy vehicle impacts which found that heavy vehicles carrying biosolids had a minimal impact on traffic flow and removing these vehicles would have no discernible benefit on the network. Completion of the Northside Storage Tunnel would remove 80% of heavy vehicles generated by the plant at the time the survey was undertaken[112].

6.28 In evidence to the committee, Mr David Barr MP expressed concern about the quality of Sydney Water's vehicle number projections. He quoted the following passage from the Biosolids Strategy:

> During the week of the traffic survey, the sewage treatment plant generated a total of 35 biosolid truck trips, with the peak number on any one day being 10 trips (that is 5 trucks), while the average was 6 trips (3 trucks)[113]

6.29 In evidence to the committee, Mr Barr expressed concern that this is inconsistent with the Strategy's long term projection that the implementation of thermal drying would halve the number of vehicle movements to 30 trips (15 trucks) a week. He also quoted the following passage from the Biosolids Strategy[114]:

> truck movements at North Head would be halved to 30 movements per week (2 to 3 trucks per day), even when treatment levels at the plant are improved[115].

6.30 By contrast, in its submission to this inquiry Sydney Water stated that:

> Sydney Water has up to 30 biosolids trucks operating at North Head Sewage Treatment Plant each week. This equates to 60 biosolids truck movements each week on Darley Road.[116].

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110 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 4

111 Correspondence from Mr Paul Coffey, Director Resource Recovery Management Pty Ltd, to committee Chair, 11 October 2001

112 Biosolids Strategy Appendix B, p 3

113 Biosolids Strategy, p 21

114 Submission No 8, Mr David Barr MP, Member for Manly, p 5

115 Biosolids Strategy, p x

116 Submission No 9, Sydney Water Corporation, p 74

6.31 This statement is inconsistent with the vehicle numbers presented in the Biosolids Strategy as the current situation.

6.32 Sydney Water considers that there is sufficient evidence to establish that vehicle trip numbers would be lowered despite an increase in the rate of biosolids captured and that the impact of these vehicles will be further reduced by the fact that they would be carrying less odorous products.

6.33 The committee recognises that although the number of truck movements would be significantly lowered it notes the inconsistency in Sydney Water's information and that the published traffic survey results may have distorted community perceptions.

6.34 The possibility of leakage or odour from biosolids vehicles was also raised as a matter of concern. Mr David Barr MP, Member for Manly, told the committee that currently caustic odours can be emitted from trucks carrying lime amended biosolids[117]. In correspondence Sydney Water explained odour containment mechanisms for biosolids transport:

> To prevent leakage of biosolids from truck tailgates, transport companies are required to place watertight seals around the edge of the tailgate and to have additional locking mechanisms installed to the trailers, other than the normal tailgate locking claws.
>
> Trucks transporting biosolids from Manly have mechanically operated steel lids, which cover the biosolids load and seal down on the top rail of the trailers. This effectively reduces the risk of odour escape. A proposal has been agreed to by the Manly community to trial the replacement of some steel lids with water proof poly tarpaulins, which will cover the load and also seal over the top edge of the trailers. The purpose of this trial is to assess the effectiveness of reducing odour escape using the waterproof tarpaulins compared with the steel lids[118].

Devoluming by increased level of biosolids capture

6.35 The proposed upgrading of North Head STP to full primary treatment will devolume the amount of effluent discharged into the ocean outfall. Sydney Water has estimated after the implementation of the proposed upgrades at North Head STP, the plant would be discharging 35 to 40 dry tonnes per day of uncaptured solids into the deep ocean outfalls in 2021[119]. Sydney Water states that there are no plans to upgrade to secondary or tertiary treatment levels[120]. An upgrade would not only capture higher levels of solids (tertiary treatment could capture 90-95%) but could also remove inorganic compounds and substances such as nitrogen and phosphorus which are potentially damaging to marine environments.

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117 Evidence of Mr David Barr MP, Member for Manly, 28 September, p 18

118 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

119 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

120 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

6.36 Sydney Water has advised that there is no need to upgrade the North Head STP beyond full primary treatment as:

> The deep water ocean outfall has provided dramatic improvement in beach water quality. Current environmental monitoring indicates that upgrading the plant to tertiary treatment for the purpose of discharging through the deep water ocean outfall would have little measurable public health or environmental improvement[121].

6.37 An internal Sydney Water executive paper, acquired by Mr David Barr MP, Member for Manly, under Freedom of Information legislation discusses the need for upgrading all three ocean STPs to full primary levels of treatment in order to remove the large quantities of floatable grease and other solids which could lead to failures on the ocean outfalls. The paper notes that if the deep water outfalls were taken offline for cleaning for several months, as had been envisaged in the design phase for these systems, there would be political pressure to introduce secondary treatment as the public was now unwilling to accept beach pollution. This paper considered that secondary treatment was unnecessary and states:

> In addition to the political ramifications, such an event (closure of the outfalls) would be an indictment of the current level of treatment, which in the public and politicians' mind is primary treatment. The public, regulators, and politicians would probably push for secondary treatment, which would result in an estimated $1.5 billion upgrade for the three major plants. This amount would be $850 million more than the currently envisioned $650 million for full primary treatment. Full primary treatment, in conjunction with the deep-water outfalls would fully protect the marine ecosystem and beach bathing. In that light, a push to full secondary treatment would be a waste of nearly $850 million[122].

6.38 Sydney Water advised the committee that upgrading North Head STP alone to tertiary treatment in addition to full primary would cost more than $250 million and result in increased truck movements in the area during construction[123]. The currently proposed upgrading to full primary treatment would lead to increased heavy vehicle movements for the two years required to undertake construction work. According to Sydney Water's own community survey of Manly residents, there was both a high level of support for treating sewage at a higher level than at present as well as significant concern about pollution of waterways[124].

6.39 While, the committee appreciates that further upgrading of treatment to secondary or tertiary levels is not provided in the current program of works in WaterPlan 21, the

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121 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

122 Executive Management committee paper *Need for Upgrading Major Ocean STPs* 16 June 1998 appended Submission No 8, Mr David Barr MP, Member for Manly, pp 1-2

123 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

124 Biosolids Strategy, Appendix A, p 16, p 4

committee is aware that Sydney Water is currently reviewing WaterPlan 21 and considers that further upgrading should be considered as part of this process[125].

6.40 Accordingly, the committee is concerned that such a high volume of waste will continue to be discharged so far into the future and considers that the system could be further devolumed by capturing a higher level of biosolids than the 65% planned in the current Biosolids Strategy.

6.41 A goal of WaterPlan 21, Sydney Water's long term strategic water management plan, is to reduce reliance on discharging treated waste water to the ocean[126].

Conclusion

6.42 The committee finds that the preferred options will contribute to some devoluming of the system by increasing the level of solids captured by the treatment process. In the longer term, the preferred process should reduce the already relatively low local traffic impacts of transporting biosolids although community concerns should be recognised and managed carefully.

6.43 The committee considers that the preferred options will not contribute to decentralisation of the system because it maintains the current situation of reliance on the major ocean STPs. However unlike the off site processing options at Bunnerong, Camellia or Picton discussed in following chapter, it will not centralise the system any further.

Recommendation 5

The committee recommends that Sydney Water and Manly Council maintain an ongoing dialogue to discuss local traffic concerns in Manly.

Recommendation 6

The committee recommends that Sydney Water revises its long term planning to include provision for upgrading urgently to full primary treatment to increase capture of biosolids from the current 30-35% to 65% and then to full tertiary treatment to capture 95% of biosolids at the major ocean STPs.

125 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

126 Sydney Water, Waterplan21 – Update 2000, *http://www.sydneywater.com.au*

Chapter 7 Evaluation of options for treatment and transport of Biosolids

7.1 This Chapter considers the options for the treatment of biosolids presented to the public by Sydney Water, those raised by the public in the community consultation phase and those raised in evidence before this inquiry.

7.2 The key questions are:

- Did Sydney Water sufficiently consider all biosolids treatment and transport options?
- Would any of these other options have contributed to a more ecologically sustainable or cost effective system than the preferred options?

7.3 This Chapter will also consider whether the development of the strategy was consistent with the consent condition for the NST.

Application of evaluation criteria

7.4 As noted in Chapter 4, during the initial public consultation stage the community was presented with the following seven options in the *Have your say* document:

- A – Local Traffic improvements
- B – Barging to White Bay
- C – On site processing at North Head
- D – Transfer of sludge through pipeline to Camellia
- E – Improvement in treatment levels at all plants with existing biosolids processing
- F – Improvements at all plants plus biosolids drying on site – pipeline Bondi to Malabar
- G – Improvements at STPs and a pipeline to Bunnerong[127].

7.5 A further 28 options were collected from the community consultation phase. Although there was a degree of commonality in these options, Sydney Water developed two of them for detailed investigation:

127 Sydney Water Corporation, *Have your say: Major Ocean Plants Biosolids Handling and Transport Options Assessment and Community Comment*, June 2000

- H – transferring sludge off-site by pipeline from North Head STP to Camellia and from Bondi and Malabar STPs to Bunnerong, and

- I – transferring sludge off-site by pipeline from North Head, Bondi and Malabar to Picton STP for processing and drying[128].

7.6 The table below shows a summary of some of the key attributes of the options Sydney Water evaluated in detail. Option F is the Strategy's preferred option.

Table 7.1: Option attributes[129]

Attributes	Option	E	B2	B1	D2	F	G2	H2	I2
Energy use	Megawatts per hour per year	68,000	66,000	77,000	70,000	**66,000**	73,000	74,000	192,000
Greenhouse emissions	CO2 Kg	61,000	60,000	69,000	68,000	**60,000**	66,000	67,000	173,000
Air volume treated	M^3/second	166	230	250	230	**220**	257	257	257
Truck Impacts (VKT)	Km/year	83700	21000	54000	21000	**21000**	21000	21000	21000
Capital cost	$m[1]	85	230	145	263	**213**	285	310	423
operating cost	$m[1]	29	24	29	24	**23**	24	26	26
Present Value	$m[1]	420	515	470	536	**480**	560	590	698
Current zoning	Scale[2]	10	7	7	6	**10**	2	2	2
Future zoning	Scale[2]	10	4	2	2	**10**	2	2	2
compatibility w decentralisat'n	Scale[2]	8	6	7	4	**6**	3	3	2
construction impacts	duration (months)	36	48	48	48	**48**	48	48	48
trucking on residential roads	movements	280	40	40	40	**70**	0	0	70

1. All costs are for planning purposes and are indicative only
2. In relation to scale, options are graded qualitatively where 1= poor outcome and 10= best outcome

7.7 In summary, the options assessed included the following elements:

- on site treatment with continued use of road transport

- on site treatment with the use of barges and rail transport from North Head only

- the use of pipelines to a variety of other sites for treatment

- the development of new treatment sites at Camellia and/or Bunnerong for the treatment of some or all of the biosolids from the three ocean STPs and

- upgrading of Picton STP to treat all of the biosolids from the three ocean STPs.

128 Biosolids Strategy pp 79-87

129 extracted from Biosolids Strategy, Table 6.3 p 95

7.8 A comparison of the options indicates that the amount of energy needed varies little between most of the options except for Option I2 which also produced by far the highest greenhouse gas emissions. This may be due to this option requiring pumping of sludge for very long distances. Capital costs varied considerably but operational costs were roughly the same.

Transport considerations

7.9 The various biosolids transport related considerations in the options presented included road transport, barging from North Head with rail, and pipelines to off-site treatment.

7.10 As noted in the previous chapter, Sydney Water's preferred option involves continued use of heavy vehicles to carry dried biosolids and that the introduction of thermal drying could more than counterbalance the expected growth in volume.

7.11 This recommendation has caused a high level of concern among groups in the Manly community due to Sydney Water's previous undertaking to remove the sludge trucks from the roads of Manly as discussed in Chapter 6.

7.12 There is some concern about the risks that the use of vehicles pose to the local environment such as the endangered long nose bandicoot population on North Head and, although relatively minor, the risk of death, injury or spillage associated with road crashes is likely to be higher than for alternative transport modes such as barges and rail[130].

Barging

7.13 A number of submissions argued that barging was far safer and more environmentally friendly than road transport and, if thermal drying is introduced, there would be a smaller number of trips required[131]. The committee heard no evidence about the impact of a possible spill of dried pellets on the marine environment.

7.14 The committee notes that Sydney Water has not ruled out barging of dried pellets as part of Option F in the longer term despite the regulatory approval issues discussed in Chapter 5. In response to a question on this topic Sydney Water stated:

> The barging of dried pellets may provide the opportunity to eliminate trucking with a greatly reduced level of impact compared to barging alkaline stabilised biosolids (including reduced barge number and reduced wharf infrastructure requirements)[132].

7.15 Additional infrastructure costs for the use of barging with option F would be in the order of $20 million[133].

130 Submission No 17, Coalition for Economic Advancement p 13

131 Submissions No 16, Pyrmont Raw Materials and No 17, Coalition for Economic Advancement

132 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

133 Biosolids Strategy, p 104

7.16 The committee considers that in isolation, the major benefit of barging from the North Head STP is that community expectations regarding the removal of biosolids trucks from local roads would be satisfied.

7.17 The committee considers that this option should not be held out to the Manly community as a longer term solution if it is not feasible.

Pipeline transport

7.18 The major alternative to vehicular modes of transport is the construction of a pipeline for the transportation of either raw or stabilised biosolids off-site for treatment.

7.19 The various pipelines under consideration in the various options are:

- from North Head to Camellia (15.3 km from Hunters Hill to Camellia and 15 km for the NST), – Option D
- Bondi to Malabar (10 km) – Option F
- from North Head, Bondi and Malabar to Bunnerong, (24 km) – Option G
- to Bunnerong and then to Picton for processing (24 km and 65 km[134]) – Option I

7.20 All of these pipelines, except the existing 15 km Northside Storage Tunnel, would require significant construction work and some disruption to other communities. The pipeline from North Head to Bunnerong would also need to cross Sydney Harbour at some point.

7.21 Potential issues with the use of pipelines include disruption due to construction work and the risks to public health because of pump failure or leakage, particularly in the pipelines crossing Sydney Harbour. However, once constructed, there appears to be relatively little energy differences between the options compared to other modes.

7.22 The committee heard conflicting evidence about the energy efficiency, feasibility and safety of the use of such pipelines. For instance Mr Paul Coffey, Director Resource Recovery Management, told the committee:

> I guess I would only say that I would have concerns when there is high-pressure pumping. We talk about environmentally sustainable development, so why do we want to move everything around a place three or four times and reprocess it? When you are pumping, you are moving 99 per cent water. If you are moving the solids, so that you are only moving the solids from one place to another, and if you have a failure, what are your options? Do you still build a full-scale processing plant because two pumps fail or because a pipeline fails? There are a lot of other risks that are associated with pumping.
>
> Pumping is a well-proven and a well-used technology. There are places in America where they pump for three, four or five kilometres and possibly up to 12 kilometres, and I have no objection to that at all, but if you have to have a pipeline

134 Biosolids Strategy, pp 56-76.

> under the harbour and then through the streets of Bondi all the way to Malabar, I think it becomes a little bit difficult. Again, you have to build a treatment plant at the other end to process the biosolids from liquid. From the liquid stage you have to get it thickened and then de-watered, then discharge your effluent—presumably back to Malabar so that the loading at Malabar goes quite dramatically, and then you take the solids out at Bunnerong. I can tell you that from a contractor's point of view, in the early 1990s my eyes used to water when I looked at Bunnerong because it is a great opportunity—really fantastic. Get it all there together and treat it in one place and make major bucks, but from Sydney Water's point of view I think it has a lot of problems, especially from North Head. Maybe from Bondi to Malabar is not so unrealistic. Malabar is probably definitely not unrealistic because it is quite a lot closer.[135]

7.23 Sydney Water commissioned a life cycle assessment of biosolids processing options which compared the impacts of moving processing off-site to Bunnerong to upgrading treatment at the three major ocean outfall plants to full primary treatment. It found that if thermal drying was not used, the centralised option of off-site treatment used only marginally less energy than the decentralised option of the three major ocean STPs with the energy required for pumping biosolids to Bunnerong roughly balanced by centralising the de-watering function. Furthermore this study found:

> the most significant contributor to the energy consumption of the decentralised option is the fuel for the diesel trucks transporting biosolids and lime. Trucking represents 27% of the total energy consumed by the biosolids handling processes at the three major ocean plants. This suggests one of the best ways to improve the energy efficiency and environmental performance of biosolids handling is to reduce trucking distances (to) the sewage treatment plants[136].

7.24 The committee notes the potential engineering difficulties associated with construction and use of long pipelines. When the energy consumption of transporting biosolids is taken in isolation, however, the committee notes the comparatively energy intensive nature of trucking biosolids long distances to end use markets as a consequence of centralisation of biosolids handling at the major ocean STPs.

Processing considerations

7.25 The issue of biosolids transport is closely related to the issues of locating the handling and treatment of biosolids. The main options consider on-site treatment at the major ocean STPs and off-site treatment at Bunnerong, Camellia and Picton.

7.26 As noted in Chapter 5 there are significant regulatory approval issues associated with developing new sewage treatment plants at Bunnerong and Camellia. There is also a high likelihood of planning approval difficulties with development at Picton[137].

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135 Evidence of Mr Paul Coffey, Director, Resource Recovery Management, 28 September 2001, pp33-34

136 G. Peters, Dr S Lundie, *Life Cycle Assessment of Biosolids Processing Options*, February 2000, p 18, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc., 28 September 2001

137 Biosolids Strategy, p 77

7.27 Off-site options also have relatively high construction costs although the operation costs are broadly similar to the on-site options. The operation costs in options D2, G2, H2 and I2 are high because thermal drying is the only treatment technology used. Despite the length of pipeline required, Sydney Water estimated that truck kilometres travelled is also very high for Option I. The committee expressed concern that this conclusion seems hard to support on the available evidence.

7.28 In addition the committee heard that there would be significantly higher environmental risks associated with the use of the Camellia site in particular because effluent would be discharged into the Parramatta River rather than the deep ocean outfalls[138]. The committee notes evidence suggesting that any actions that could compromise the water quality of the Parramatta River would be reversal of a decade of investment in improving this problem[139].

7.29 By contrast, the apparent benefits of the on-site options are that they would only impose incremental rather than radical changes to the existing situation with smaller impact on additional communities.

7.30 The Manly representative groups however have indicated that there is a high level of concern with further entrenching the use of the ocean STPs for the longer term. For instance Manly Council has stated that:

> Sydney Water obviously finds the options involving the off-site pipeline transfer of biosolids to Bunnerong or Camellia from the major plants too difficult and would result in a range of new community impacts and issues. Manly Council would argue that the right solution is not necessarily the easiest solution and that it is the role of Government to consider all the issues, but to make decisions on behalf of all their constituents.
>
> The easy option of just loading up the existing sites with more and more infrastructure with the consequential amenity and possible health and other social consequences seems to be Sydney Water's line of least resistance approach. It is expansion and entrenchment by increment[140].

7.31 The committee notes that Sydney Water selected options because they met a range of background assumptions. For example, the Biosolids Strategy states that while the production of both dried pellets and alkaline amended products were considered for off-site locations, the multi-criteria assessment was based on the production of dried pellets alone:

> because the production of dried pellets is more strongly aligned with Sydney Water's strategic market objectives and the guiding principles than the production of high volume alkaline amended product. While the cost of off-site drying of all products is dearer than a product mix, preliminary multi-criteria analysis showed a clear preference for the off –site options that involve drying of all the products[141].

138 Evidence of Mr Paul Coffey, Director, Resource Recovery Management, 28 September 2001, p 33

139 Evidence of Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001, p 40

140 Submission No 11, Mr Jim Hunter, Director of Service Planning and Commissioning, Manly Council p 8

141 Biosolids Strategy, p 92

7.32 Only options E and B1 involved the continued production of alkaline amended biosolids products at North Head. Because on-site options involved upgrading existing infrastructure, this selection of off-site options involving the use of more expensive thermal drying technology alone is likely to have distorted the costs in favour of continued on-site treatment so that Option F is the cheapest option involving production of dried pellets.

7.33 To achieve decentralisation and devoluming of the system, the off-site options do not improve the current situation of relying on three major ocean STPs. In fact they reverse the current situation by further concentrating the processing of sewage treatment.

Other options for treating and handling biosolids

7.34 During the inquiry, issues were raised suggesting that Sydney Water took a very narrow view in considering options for the Biosolids Strategy and that some other options could have delivered more sustainable results.

7.35 For instance, MS Kathryn Ridge, Executive Officer of the Nature Conservation Council of NSW Inc., suggested that Sydney Water has not considered all the options available to it:

> Future directions that are emerging internationally for the treatment of waste water show that decentralised approaches stack up very competitively in terms of cost and they also provide far more opportunities for re-use and recovery. We believe Sydney Water has not availed itself of all the information available in the marketplace. It usually offers—as it does its submission to this inquiry—the excuse that those options have not been fully trialled and tested. That response has been a consistent Sydney Water response since 1994 to decentralisation options. There is a number of technologies and proponents who are quite prepared to work with Sydney Water on trial facilities for maximising the re-use potential of waste water.[142]

7.36 As noted in Chapter 4, the community consultation phase provided Sydney Water with 28 further options for dealing with biosolids. Of these the following six were considered to have insufficiently tested technology for inclusion in detailed analysis. These options were:

- vermiculture
- raw sludge drying
- gasification (pyrolysis)
- introduction of *Effective Micro-organisms* into the sewage stream near the source
- thermal hydrolysis and

142 Evidence of Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001,p 38

- Haine and Abigan Group Industrial Chemical Ecological Recovery Project (ICER)[143]

7.37 The committee notes that certain thermal drying devices such as the Subiaco installation may be powered by the energy produced when biosolids pellets are burned through a process of pyrolysis, or gasification. The process considered in the Biosolids Strategy's recommended option is to use the methane produced by the anaerobic digesters as a power source for the drying. At the time of preparing the Biosolids Strategy, Sydney Water considered that pyrolysis still unproven technology and deferred any decision about recommending its use until further information was available[144].

7.38 The committee heard that Manly Council in particular is concerned that Sydney Water may have a long term plan to dispose of biosolids by burning the pellets at the North Head STP. This concern appears to be based on Sydney Water's long term market objective of using 10% of biosolids for energy recovery and a statement in the *Have your say* public consultation document that dried pellets could be used for this purpose[145].

7.39 In response to questions on this issue, Sydney Water stated that there are no plans to burn pellets for electricity at the North Head site[146]. However the committee notes that Sydney Water's internal *Long Term Biosolids Marketing Strategy* refers to gasification "as a way of getting incineration without the planning problems[147]".

7.40 Sydney Water is undertaking a large scale trial of vermiculture at the St Mary's STP with an expectation of processing 10,000 tonnes of biosolids into 5,000 tonnes of high grade fertiliser each year[148]. The volume reduction of 50% would be lower than that expected from the preferred option of thermal drying of digested sludge and the trial will only deal with 10% of the projected biosolids treated at North Head.

7.41 The option of introducing *Effective Micro-organisms* into the sewerage system near the entry point would commence digestion of sewage before it reached the STP. This option would have the additional benefit of devoluming the wastewater stream before it reaches the plant[149].

7.42 The committee notes that Environmental Solutions International wrote to Sydney Water as part of developing the strategy contains costings for introduction of pyrolysis through ENERSLUDGE™ which it claims are cheaper than introducing thermal drying. This

143 Biosolids Strategy pp 79-87

144 Biosolids Strategy, p 85

145 Submission No 11, Mr Jim Hunter, Director Service Planning and Commissioning, Manly Council, p 9, p 11

146 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation to committee Chair, 15 October 2001

147 Sydney Water *Sydney Water's Long-term Biosolids Market Strategy* , June 2000, App 5, p 25, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001

148 *Splash*, Sydney Water newsletter, issue 9, volume 8, 22 May 2000, tabled by Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001.

149 Biosolids Strategy, p 80

proposal has the advantage of using lower temperatures and effectively immobilising heavy metal contaminants in inert ash which can be used as building materials[150].

7.43 The ICER project, which also produces inert building materials was discounted because Sydney Water considered it to be inconsistent with long term marketing strategy[151]. Nevertheless the committee considered this option should be kept under review.

7.44 The committee is concerned that the development of detailed options was limited to the production of dried pellets through thermal drying, in light of Sydney Water's biosolids market strategy rather than developing a mix of new and emerging technologies and products.

Decentralisation

7.45 As noted in Chapter 5, options which were dependent on not using the North Head STP or requiring decentralisation were not pursued in developing the Biosolids Strategy as Sydney Water stated that these options were not consistent with long term planning documents such as WaterPlan 21.

7.46 Sydney Water also did not undertake a multi-criteria analysis of any options involving North Head alone even though the Strategy did not make recommendations in regard to the long term direction of the other two plants. This has the effect of reducing the ability of the public to distinguish the relative impacts of the various options on the North Head STP alone. This is particularly important when considering potential traffic impacts in the Manly area as it is difficult to separate the traffic impacts on the local roads surrounding the three plants in the available analysis.

7.47 A concern raised by submissions to this inquiry was the lack of consideration given by Sydney Water to proposals for decentralisation of the system in developing the Strategy. For instance Mr David Barr MP, Member for Manly, told the committee that:

> Sydney Water offered a narrow range of large-scale engineering options, which failed to accommodate newer technologies more favourable to decentralised processing.[152].

7.48 The committee received submissions supporting decentralisation of the sewerage system. The Property Owners Association and the Nature Conservation Council of NSW Inc. suggested that the reliance on the ocean outfalls should be replaced by a series of local treatment plants which treated and reused water on a local basis[153].

7.49 Other submissions such as that from Manly Council and Blander and Blander Communications also supported decentralisation[154]. Suggested benefits of this approach

150 Biosolids Strategy Appendix J

151 Biosolids Strategy, p 87

152 Submission No 8, Mr David Barr MP, Member for Manly, p 7

153 Submission No 14, Property Owners Association of NSW Inc., evidence of Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW Inc, 28 September 2001,p 37

154 Submission No 3, Mr Fernando Blander, Submission No 11, Manly Council

include the provision of smaller infrastructure, less sewage treated at each plant, local re-use opportunities and reduced quantities of treated sewage discharged to the ocean. Decentralisation of the sewerage system would assist in delivering WaterPlan 21's stated objective of decreasing reliance on discharging treated waste water to the ocean.

7.50 Sydney Water does not consider new options for decentralisation to be consistent with WaterPlan 21 which:

> is Sydney Water's 20 year vision for sustainable wastewater management across the entire Sydney region. The plan commits Sydney Water to the location of the major plants and significant improvements of the plants[155].

7.51 Over 80% of the total sewage flow in Sydney is treated at the three major ocean plants and that the remaining 20% is treated at 27 decentralised local or regional plants[156].

7.52 There is evidence that decentralisation options would have high capital and operating costs. For instance Paul Coffey said in a submission to the inquiry:

> The centralisation at the major ocean plants provides economies of scale with significantly improved operational efficiencies that can not be achieved at small treatment plants. Development of these plants is able to utilise existing infrastructure…. smaller treatment plants become extremely inefficient in regards to the management of biosolids eg Penrith and Shellharbour STPs biosolids management costs are three times cost/tonne as North Head[157].

7.53 The Ministry of Energy and Utilities also provided a list of disadvantages to decentralising the system including the high cost of dismantling the existing system and the lack of suitable sites available for new treatment plants:

> Decentralisation proposals also ignore the environmental problems of locating such plants close to communities and that, unless long pipelines are constructed to coastal areas, discharges of wastewater will inevitably occur to estuaries and/or inland streams. It is simply not feasible for the massive volume of wastewater arising from sewage processing to be re-used unless Sydney Water is able to develop major new markets for the product. This has proven extremely difficult in the context of the existing industrial base in Sydney and negative community attitudes towards re-use of "grey" water. Clearly, the development of such markets or other avenues of wastewater re-use would have to be in place before decentralised plants could be constructed[158].

7.54 Sydney Water also contended that decentralised treatment plants would have detrimental environmental impacts:

> If new treatment plants discharge to the harbour environment, bays and estuaries, water quality will be impacted because of daily freshwater discharges to saline aquatic systems….Decentralised treatment plants will only achieve extensive reuse

155 Biosolids Strategy p 80, Option 3 and cf Option 4

156 Submission No 9, Sydney Water Corporation, p 22

157 Submission No 8, Mr Paul Coffey, Director, Resource Recovery Management Pty Ltd, p 8

158 Submission No 12, Ministry for Energy and Utilities

> if indirect potable reuse or dual reticulation is considered and energy use and greenhouse gas production is much higher for decentralised treatment than centralised treatment…. Decentralisation would be very disruptive to the community, as land would have to be resumed to construct the treatment plants[159].

7.55 The only costings presented to the committee on the impact of decentralised proposals, were from information prepared by Sydney Water in 1995. This information assumed that up to half of the treated water would still be discharged into the ocean even if 25 new local plants were built upstream from North Head. These initial projections estimated that capital and operating costs would be far higher for decentralised options than for upgrading North Head STP[160]. In light of the limited evidence presented on the cost and feasibility of decentralisation, the committee was unable to reach a conclusion.

7.56 A full life cycle assessment of this option and any estimates of resulting reductions in demand from reuse of some water was not available to the committee. There is research available to suggest that work on localised water reuse is feasible over the long term which would have significant effects on future water demand[161].

7.57 Sydney Water has stated that rather than decentralising the sewerage system, the best process is to devolume the system through recycling and demand management initiatives[162]. Although there are limitations on recycling to obtain potable water (which is unable to be re-used for human consumption because of existing health restrictions), Sydney Water currently re-uses 30 million litres a day for industrial and irrigation applications and plans to increase this in the future[163].

7.58 These options, however, have not been progressed very far in the case of the North Head plant. Although Sydney Water has installed a water reuse pipe[164] in the Northside Storage tunnel, Sydney Water stated that the volume of the water return pipe would cope with was only 2 megalitres a day which is less than 1% of the average daily sewage flow to North Head STP[165]. Clearly this would not contribute significantly to reducing the amount of wastewater released in the ocean even after the level of captured biosolids is doubled.

7.59 The committee notes that Sydney Water is working on demand management strategies to reduce domestic demand although these need to be supplemented by technological change. The Property Owners Association has pointed out that the 1.5 million people living in strata title properties do not have water meters and therefore no way to measure their level

159 Submission No 9, Sydney Water Corporation, p 45

160 Submission No 9, Sydney Water Corporation, p 46

161 email from Peter Coombes, tabled by Mr David Barr MP, Member for Manly, 28 September 2001

162 Submission No 9, Sydney Water Corporation, p 45

163 Submission No 9, Sydney Water Corporation, p 50

164 It is important to distinguish between the water reuse pipe for the transport of recycled water which has been fitted to the Northside Storage Tunnel and the proposed biosolids pipe for which only facility has been made.

165 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001, Response to Question on Notice from the committee, No 2

of water use[166]. They suggest that water meters be developed for such residents so that demand can measured and managed in the future.

7.60 The committee considers in order to meet WaterPlan 21's target of reducing reliance on outfalls with the current number of STPs, it will also be necessary to intercept the flow of wastewater before it reaches the North Head STP.

7.61 The committee notes that WaterPlan 21 is under review[167]. Sydney Water has stated that this review is considering the implications of projected population growth and working to develop more sustainable water servicing options for greenfield areas[168].

7.62 The committee considers it appropriate for Sydney Water to use this review as an opportunity to investigate environmentally sustainable options for reducing the volume of effluent discharged from the ocean outfalls through interception, recycling and reducing demand.

Other options for biosolids management

7.63 The committee heard evidence that it would be possible to construct a pipeline to send sewage to inland areas for treatment. This option would have the advantage of processing the biosolids products close to where they would be used. Mr Joseph Bertony, a consulting engineer, stated that new pumping technology would make this project cheaper to install and operate than previously estimated. He stated that such a project would recover its costs in twenty years however he could not provide the committee with more costings[169].

7.64 The committee received other evidence that such a pipeline would be expensive, costing in the order of $4.7 billion, and would require a prohibitively high amounts of energy to operate to pump uphill over a rise of 1200 metres.[170] Another disadvantage is that construction of treatment plants would be required at the other end of the pipeline at significant cost and if sludge was drawn off at various points along the pipeline these points would also require at least a solids de-watering plant to convert the liquid sludge into a solid product and possibly stabilisation treatment[171]. The committee does not consider this a viable option on the basis of available evidence.

166 Submission No 14, Property Owners Association

167 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

168 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

169 Evidence of Mr Joseph Bertony, Consulting Engineer, September 28 2001, p 45

170 Evidence of Dr Judi Hansen, General Manager, Environment and Innovation, Sydney Water Corporation, September 28 2001, p 15

171 Sydney Water Executive meeting paper 17 June 1998 *Upgrading Major Ocean STPs*, p9, appended to submission No 8, Mr David Barr, MP, Member for Manly

Conclusions

7.65 The committee considers it likely that the upgrading of current ocean STPs as described in option F would be of lower cost and environmental and community impact than the development of new centralised treatment plants and associated pipelines at Camellia, Bunnerong or Picton. However the preferred biosolids end product may have driven the selection of technologies in the Biosolids Strategy and this should not have been the main consideration.

7.66 On balance the committee considers that it is not feasible to develop several new local catchment water treatment works in the short term. Strategies to develop markets for recycled water at this stage however should continue to be investigated and international trends in biosolids management to progress towards decentralisation should be monitored.

Is the Biosolids Strategy consistent with the NST consent conditions?

7.67 As mentioned in Chapter 4 Sydney Water developed the Biosolids Strategy in response to a requirement in the Modified Approval for the proposed Northside Storage Tunnel issued by the Minister for Urban Affairs and Planning on 31 August 1999. The approval condition required Sydney Water to:

> Ensure that appropriate provision is made for securing a biosolids pipeline in the roof or wall of the tunnel
>
> The proponent shall by 31 August 2000, submit a Biosolid strategy for North Head Sewage Treatment Plant to the Director-General. The strategy shall include consideration of all feasible options for improved Biosolids management, the issue of Biosolids transportation by road, the need or otherwise for a Biosolids pipeline within the Tunnel and the timing of installation of any such pipeline[172].

7.68 As noted above, the committee considers that Sydney Water has not adequately considered all of the available options and, in particular, did not develop in sufficient detail options which considered broader ecological issues such as decentralisation and local water recycling or suggested newer technologies which may have some beneficial uses.

7.69 The committee notes that the process of developing the Biosolids strategy was focussed on consistency with pre-existing internal marketing documents that recommended thermal drying to produce biosolids pellets. Options to upgrade the North Head STP beyond full primary treatment were not considered as they would not fit into the current long term strategic direction and capital works program in WaterPlan 21.

7.70 The committee notes that Sydney Water did investigate the issue of biosolids transportation by road by commissioning a traffic study and attitude survey of Manly residents in developing the strategy. The committee largely agrees with Sydney Water's conclusion that the contribution to congestion is minor but it notes that the community's expectations were disappointed by the continued use of road transport.

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[172] quoted in Biosolids Strategy, p 1

7.71 In their submission to this inquiry Sydney Water stated that it had made provision for a biosolids pipeline:

> Sydney Water is making provision for securing a biosolids pipeline in the roof or wall of the tunnel. The water reuse pipeline has been installed in the tunnel with brackets that allow for the addition of a pipeline for transporting biosolids[173].

7.72 The committee asked Sydney Water to clarify the provision that had been made for the biosolids pipeline at the time of commissioning the NST. Sydney Water stated:

> Space has been left clear on the crown of the tunnel for the installation of a biosolids pipeline in the future if required. Other facilities in the tunnel such as the recycle water pipeline, communications cable, local water distribution pipelines and instrumentation have been placed so an not to compromise this space[174].

7.73 The Strategy does not explicitly recommend the use or otherwise of a biosolids pipeline within the NST. The committee infers that as options D, G and H involving transferral of sewage to Camellia for processing would require the use of such a pipeline, the fact that the Biosolids Strategy did not prefer these options means that Sydney Water is recommending against the need for the pipeline. The committee is concerned that this is not made more clear in the Biosolids Strategy itself.

7.74 In evidence before the committee, Mr Alex Walker was asked about the likelihood that the biosolids pipe would be installed. In response to questions on this topic Mr Alex Walker stated:

> The strategy that we have established does not provide for the pipe. I do not propose to speculate in the long term[175].

7.75 Later he stated:

> This strategy will serve Sydney Water's and the community's needs for the significant long term. The matter of the tunnel is really not all that relevant now. The tunnel in fact only extends from North Head to Hunters Hill, and there is no provision for any pipeline beyond that to a further remote suburban site[176].

7.76 As noted above, Sydney Water is currently reviewing WaterPlan 21. In view of this proposed move to incorporate more ecologically sustainable measures in the future planning documents, the committee considers that in the longer term it is still possible that a biosolids pipeline may be required. The committee suggests that the arrangements within the northside storage tunnel not be altered in such a way as to prevent this option in the future.

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173 Submission No 9, Sydney Water Corporation, p 97

174 Correspondence from Mr Alex Walker, Managing Director, Sydney Water Corporation, to committee Chair, 15 October 2001

175 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 8

176 Evidence of Mr Alex Walker, Managing Director, Sydney Water Corporation, 28 September 2001, p 8

Recommendation 7

The committee recommends that Sydney Water continues to consider carefully new sustainable technologies including undertaking research trials where appropriate with a view to long term implementation.

Recommendation 8

The committee recommends that Sydney Water investigate any alternative technologies for biosolids management which will result in less impact on local communities and reduce the number of truck movements required to transport biosolids products.

Recommendation 9

The committee recommends in its review of WaterPlan 21 Sydney Water take the opportunity to investigate environmentally sustainable options for reducing the volume of effluent discharged from the ocean outfalls through interception, recycling and reducing demand.

Recommendation 10

The committee recommends that Sydney Water retain the facility for the biosolids pipeline within the NST so that the possibility of adding a biosolids transfer pipeline in the future is not compromised.

Statement of Dissent: Government Members

The processes involved in this Inquiry raise a number of important issues about the current operations of General Purpose Standing Committees. The Inquiry began in August 2000 with a reporting date of 4 December 2000, but has dragged out only a few days short of a full year. Despite the argument that Manly residents had great concerns about the matters included in the terms of reference, only 17 submissions were received, mainly from government agencies and organisations far removed from Manly. The committee saw fit to hold only a half day hearing, and only four of the six groups of witnesses had made submissions.

The question has to be asked whether the parliamentary resources devoted to the report have been justified by the level of public interest.

The 10 recommendations arising out of this Inquiry would, if adopted, bring few if any benefits to water consumers and the community. They relate neither to changes in service delivery nor to new processes, but rather to detailed aspects of the undertaking of specific tasks by Sydney Water.

Government members were pleased with the many changes made to the Chair's draft report, including the deletion or substantial amendment of a large number of proposed recommendations. Division remained only on two recommendations, as recorded in the minutes.

We believe that an interdepartmental committee involving five agencies meeting six-monthly for five years would duplicate the detailed planning and environmental assessment processes which already occur under NSW planning legislation.

We reject the recommendation relating to urgent upgrading of biosolid capture, which is insufficiently discussed in the report. Quite apart from the fact that the EPA has not identified any environmental drivers to bring such upgrades forward, an upgrade to tertiary treatment would incur additional capital costs of over $250 million for North Head alone, increase operating costs and energy consumption, and require several hectares of additional land.

Appendix 1

Sydney Water advertisement

Northside Storage Tunnel

SYDNEY WATER'S NEW STORAGE TUNNEL IS PART OF A PLAN. LET'S TAKE A LOOK AT THE BIGGER PICTURE.

You've probably heard about Sydney Water's proposed new storage tunnel from Lane Cove to North Head. Or to give it its full name, the Northside Storage Tunnel.

This is not a one-off project. Far from it. It's part of WaterPlan 21, which is Sydney Water's twenty year $3 billion program to improve our waterways. And as a bonus, if we start this part of the plan now, we can even have the tunnel ready, and the Harbour cleaner by mid 2000.

A plan that's been checked by experts.

WaterPlan 21 is a fully integrated program which has been reviewed and assessed by experts, including the CSIRO. Naturally, individual projects which make up WaterPlan 21 have been -and will be- the subject of Environmental Impact Statements.

How the whole of Sydney benefits.

The plan covers the rivers, the beaches and ocean, recycling water and biosolids and reducing wet weather sewage overflows to protect the waterways. There is even an opportunity to avoid building any new dams for Sydney through water recycling.

The storage tunnel's place in WaterPlan 21 is to address the problem of wet weather sewage overflows. It's an integrated solution to Sydney's long-standing wet weather problems. The old sewer system was designed to overflow during and after wet weather, rather than back up into homes. But overflows are no longer acceptable and this is the prime reason for the Northside Storage Tunnel.

It means that instead of untreated waste water overflowing in wet weather straight into the harbour, it is stored and then taken to North Head to be treated and safely discharged.

Some things the tunnel isn't.

At this point, we should point out what the tunnel isn't. It's not a second sewerage pipe, nor a doubling of the Northern Sewer System. It has a completely different purpose and function.

It will, however, improve the environmental effectiveness of the Northern Sewer System. The design of the tunnel will also let us maximise recycling along its length in the future with a resultant reduction of flow through North Head.

How the people of Manly benefit.

The tunnel, as part of Waterplan 21, has some key benefits for the people of Manly. It will mean reduced reliance on ocean discharge. It will mean cleaner beaches in the Harbour, notably Clontarf and Reef.

It will bring higher levels of beneficial re-use of biosolids. It could mean an increasingly cleaner Sydney Harbour. It will mean fewer trucks moving through Manly. It will do all this, without special levies and taxes and still keep the bills you pay affordable.

A cleaner Manly Lagoon.

The tunnel will allow us to close and remove the Sewer Pumping Station at Shelly Beach. The plan's overhaul of the sewer network to avoid leaks will result in a far cleaner Manly Lagoon.

Together with Manly Council and the NSW Government, the plan also allocates a significant amount of money in the coming years to deal with stormwater pollution.

Last but by no means least, the strategic partnership between Sydney Water and Manly Council means the environmental levy you now pay to Manly Council will achieve even greater environmental benefits.

Our answers to your concerns.

People have been asking us questions about both WaterPlan 21 and the tunnel. For example, does the storage tunnel mean more waste water being discharged from North Head? The answer is yes, but only by 2% annually. And remember, that 2% is currently going into the harbour untreated as wet weather overflows. There will be no increase in dry weather flows.

Another question has been, isn't $375 million rather a lot for a tunnel? In fact, the storage tunnel itself will cost less than $290 million, and will be built by the private sector in alliance with Sydney Water.

$375 million buys a lot more than a tunnel.

The rest of the money is being spent on other environmental benefits. These include $50 million to take biosolids away from North Head, rather than using trucks. As well, recycling pipes for water will be installed. The storage tunnel is flexible and can run both ways which is important for increased recycling in the future. And $35 million will be spent on dealing with problems and overflows at Shelly Beach, Manly Lagoon, South Willoughby and Tarban Creek.

The tunnel gives us the opportunity to do this work now, and at a lower cost.

Protecting Little Manly Point.

A lot of people's concerns have been centred on the impact of the proposed works on Little Manly Point. The storage tunnel will have minimal environmental and social impact on Little Manly Point. It will be limited to a portal in the side wall at the existing wharf and a short, fully enclosed loading conveyor.

The park will stay open to the public, and no spoil will be kept on site. The conveyor will be covered to muffle the noise and contain dust. Barge loadings will be restricted to daylight hours and the barges will use existing moorings. No anchoring which could damage marine life will take place.

Caring for our flora and fauna.

Specialists from the Australian Museum have carried out site specific terrestrial flora and fauna impact assessments of the proposed works at Little Manly Point.

Following their advice, we do not expect any significant impact on threatened flora and fauna. However, evidence suggests that the Long-nosed Bandicoot forages close to the proposed works, and all necessary steps will be taken to protect them.

What's the future of North Head?

Another question we're frequently asked: does building the tunnel mean North Head will never be closed? Well, there are three ways North Head could be downgraded in the long term.

The first way is by re-using treated waste water in every home. This means treating waste water to drinkable standards, and putting it back into our main reservoirs. Does this meet our health and safety standards? WaterPlan 21 has a 'Water Factory' at Quakers Hill which has a ten to fifteen year plan to establish exactly that. Until that work has been done, and until health authorities and the community accepts the idea, North Head cannot be downgraded.

Some solutions aren't practical.

The second way is by transferring the flow elsewhere. This would entail major engineering works (far larger than for the tunnel), and could still require ocean discharge or treatment to drinking water standards.

And finally, we could develop even more decentralised sewerage treatment plants. These would be built in almost every Sydney suburb, and they would discharge into local creeks and waterways. Frankly, the costs involved would be major: environmental and social as well as financial.

Examining every option.

All of which begs the question: can't we use the waste water somewhere else? Sydney Water has investigated every option, from pumping it over the mountains to using it in irrigation. Pumping over the mountains would call for a major power source, and that would most likely mean a coal-fired power station, with increases in greenhouse gas emissions.

Apart from that, even were the water highly treated, research shows the volume of water released inland would have a negative effect on the environment. In comparison the Environment Protection Authority has done research which shows that the ocean outfall are working effectively and Beachwatch confirms the beaches are safe for swimming.

Another option is to put in a dual water supply service to every home and building, so that treated waste water can be used separately from drinking water. To do this, we would have to dig up nearly every street in Sydney, at a cost of about $5000 per home. It is neither practical nor cost-effective.

To sum up.

Sydney Water would like you to consider the new storage tunnel as part of a far bigger picture. We'd like you to know that we take our responsibilities to the community and the environment very seriously indeed.

We want you to appreciate that WaterPlan 21 is an ambitious and responsible plan to bring very real benefits to everybody in Sydney, and any short term disruption will be well worth it in the long term.

Sydney WATER

Good enough to bottle. Too good to waste.

12 THE MANLY DAILY, Saturday, November 1, 1997

CUMBERLAND CLASSIFIEDS 131

Appendix 2

Submissions

Submissions to Inquiry

No	Author
1	ROLFE Mr Michael (Vaucluse Progress Association)
2	RICHARDS Mr Leslie
3	BLANDER Mr Fernando (Blander & Blander Communications)
4	SHEPHERD Mr Paul (City of Botany Bay Council)
5	MARTIN Mr G J (Sydney Ports Authority)
6	KATZ Mr Peter (Parramatta Rail Link)
7	COFFEY Mr Paul (Resource Recovery Management Pty Ltd)
8	BARR Mr David
9	WALKER Mr Alex (Sydney Water)
10	SMITH Mr Barry (Hunters Hill Council)
11	HUNTER Mr J W (Manly Council)
12	McALOON Ms Jane (Ministry of Energy and Utilities)
13	GIBSON Dr Trevor (NSW Agriculture)
14	KELENY Mr G P (Property Owners Association of NSW Inc)
15	JESSUP Mr Graham (Sustainable Energy Development Authority (SEDA))
16	WATSON Mr Bill (Pyrmont Raw Materials Pty Ltd & Asteam Logistics Pty Ltd)
17	WILMOT Mr Stuart (Coalition for Economic Advancement)

Appendix 3

Witnesses at Hearings

Witnesses at Hearings

1	WALKER Mr Alex (Sydney Water Corporation) HANSEN Dr Judi ALLEN Ms Kirstie
2	BARR MP Mr David (Independent Member for Manly)
3	BERTONY Mr Joseph (Pumping Systems Technologies Pty Ltd)
4	COFFEY Mr Paul (Resource Recovery Management Pty Ltd)
5	HUNTER Mr Jim (Manly Council)
6	RIDGE Ms Kathryn (Nature Conservation Council of NSW Inc)

Appendix 4

Minutes of the Proceedings

Minutes No. 38

Friday 18 August 2000
At Parliament House at 3.30 pm

1. Members Present

Mr R Jones (in the Chair)
Ms Burnswoods
Mr Jobling
Mr Johnson
Mr M Jones
Mr Ryan (Bull)
Mr Tsang (Dyer)

2. Correspondence

The Chair tabled four items of correspondence received.

Letter from the Hons Richard Jones MLC, Richard Bull MLC and John Jobling MLC, to Director, dated 7 August 2000, requesting that the Committee meet to discuss a proposed inquiry into Sydney Water's biosolids strategy.

Letter from the Hons Richard Jones MLC, Richard Bull MLC and John Jobling MLC, to Director, dated 11 August 2000, withdrawing their request of 7 August 2000, and requesting that the Committee meet to discuss a proposed inquiry into Sydney Water's biosolids strategy.

Memo from the Hon John Jobling MLC, Opposition Whip, to Director, dated 14 August 2000, advising that the Hon John Ryan MLC will be representing the Hon Richard Bull MLC for the duration of the Committee's inquiry into Sydney Water's biosolids strategy.

Letter from the Hon Peter Primrose MLC, to Director, dated 16 August 2000, advising that the Hon Henry Tsang MLC will be representing the Hon Ron Dyer MLC for the Committee's deliberative meeting on 18 August 2000.

3. Inquiry into Sydney Water's biosolids strategy

Mr Jobling moved:

> That General Purpose Standing Committee No 5 inquire into and report on Sydney Water's biosolids strategy, and in particular:
>
> 1. (a) evaluate the options presented for public consultation;
> (b) examine the scope the selected options provide for decentralisation and devoluming of the system
> (c) examine the consultation process to determine its integrity;
> (d) evaluate the implementation of recommendations relating to the treatment of biosolids from previous parliamentary inquiries and reports on Sydney Water;
> (e) evaluate whether the biosolids strategy is consistent with the consent conditions imposed on the Northside Storage Tunnel by the Department of Urban Affairs and Planning; and
> (f) consider Sydney Water's options for a biosolids strategy for North Head.

2. That the Committee present a report by 4 December 2000.

Debate ensued.

Mr Tsang moved: that the Committee defer consideration of the motion of Mr Jobling until after 31 August 2000.

Debate ensued.

Question of Mr Tsang put.

Question of Mr Tsang resolved in the negative.

Original question of Mr Jobling put.

Original question of Mr Jobling resolved in the affirmative.

Resolved, on the motion of Mr Jobling, that Sydney Water be requested to provide the Committee by 1 September 2000, with a copy of the "Biosolids Management Strategy" that is required to be provided by Sydney Water to the Department of Urban Affairs and Planning by 31 August 2000.

Resolved, on the motion of Mr Tsang, that the Department of Urban Affairs and Planning be requested to provide the Committee with any response it makes to the "Biosolids Management Strategy".

Resolved, on the motion of Mr Ryan, that the Committee defer consideration of advertising of the terms of reference for the inquiry and calling for submissions until a later date.

Mr M Jones moved: the Minister be requested to defer the commissioning of the Northside Storage Tunnel pending the report of this Committee.

Debate ensued.

Question put.

Question resolved in the negative.

Resolved, on the motion of Mr Jobling, that the Chair issue a media release announcing the terms of reference of the inquiry and advising that the Committee is awaiting the provision by Sydney Water of its "Biosolids Management Strategy" to the Department of Urban Affairs and Planning before progressing the inquiry.

4. Adjournment

The meeting adjourned at 4.35 pm *sine die*.

Anna McNicol
Director

Minutes No. 43

Friday 17 November 2000
Greenway Room, Level 7, Parliament House at 1.00 pm

1. Members Present

Mr R Jones (in the Chair)
Ms Burnswoods
Mr Colless
Mr Dyer
Ms Fazio (Johnson)
Mr Jobling
Mr M Jones

2. Statement by the Deputy Chair

Mr Dyer expressed concern that he had not been adequately consulted in relation to the Committee's meeting today.

3. Confirmation of minutes

Resolved, on the motion of Mr Burnswoods that the minutes of meeting No. 38 be confirmed.

4. Correspondence

The Chair tabled 9 items of correspondence received.

Proposed inquiry into feral and other animal control

Letter from Hon Malcolm Jones MLC, Hon Richard Jones MLC and Hon John Jobling MLC to Senior Project Officer, received 13 October 2000, requesting a meeting of the Committee to consider proposed inquiry into feral and other animal control in areas managed by National Parks and Wildlife Services.

Inquiry into Sydney Water's Biosolids Strategy

Letter from Sue Holliday, Director-General, Department of Urban Affairs and Planning, to Chair, dated 24 August 2000, advising that it will forward the Department's response to the Sydney Water Biosolids Strategy.

E-mail from Hon Peter Primrose MLC, Government Whip, to Director, dated 5 September 2000, advising that the Hon Andy Manson MLC will proxy for the Hon Ron Dyer MLC on the Biosolids inquiry and that the Hon Amanda Fazio will proxy for the Hon Jan Burnswoods from 8 September until further notice.

Letter from David Barr MP, Member for Manly, to Chair, dated 6 September 2000, drawing attention to various issues concerning the Sydney Water Biosoilds Strategy.

Letter from Jim Hunter, Director, Service Planning and Commissioning, Manly Council, to Chair, dated 6 September 2000, addressing shortcomings in Sydney Water's current operation.

Letter from Hon Andrew Refshauge MP, Deputy Premier, Minister for Urban Affairs and Planning, Minister for Aboriginal Affairs, Minister for Housing, to Chair, dated 5 September 2000, notifying of the Department of Urban Affairs and Planning cooperation with the inquiry.

Facsimile from John Laurie, Chairman, Pyrmont Raw Materials, to Secretariat, dated 12 September 2000, requesting details on the Biosolids Strategy inquiry.

Letter from Hon John Jobling MLC, Opposition Whip, to Senior Project Officer, dated 16 November 2000, advising that the Hon Richard Colless MLC will appear as substantive member on GPSC 5 in place of Hon John Ryan MLC for the inquiry into Sydney Water's Biosolids strategy, received 16 November 2000.

E-mail from Hon Peter Primrose MLC, Government Whip, to Senior Project Officer, dated 17 November 2000, advising that, the Hon Ron Dyer MLC, the Hon John Johnson MLC and the Hon Jan Burnswoods MLC will remain as substantive members for the Government on GPSC No. 5. For the meeting on Friday 17 November 2000, the Hon Amanda Fazio MLC will act as proxy for the Hon John Johnson MLC. For the meeting on Monday 20 November, the Hon Ian West MLC will act as proxy for the Hon Ron Dyer MLC.

4. Inquiry into Oil Spills in Sydney Harbour

Resolved, on the motion of Mr Dyer: That the Committee present a final report to the House by Monday 2 April 2001.

Resolved, on the motion of Ms Burnswoods: That the Committee issue a media release announcing its resumption of the inquiry.

5. Inquiry into Sydney Water's Biosolids Strategy

Resolved, on the motion of Mr Dyer: That the reporting date for the inquiry be extended from Monday 4 December 2000 to Friday 29 June 2001.

Resolved, on the motion of Mr Dyer: That the Committee advertise a call for submissions on the terms of reference in February 2001.

6. Proposed inquiry into feral and other animal control in areas managed by National Parks and Wildlife Services

Resolved, on the motion of Mr Jobling: That the Committee consider the matter and the appropriate terms of reference at its first meeting in February 2001.

7. Adjournment

The meeting adjourned at 2.00 pm until 1.30pm on Monday 20 November 2000 in Room 1108.

Warren Cahill
Clerk Assistant – Committees &
Usher of the Black Rod

Minutes No. 53

Wednesday 30 May 2001
Greenway Room, Level 7, Parliament House at 2.00 pm

1. Members Present

Mr R Jones (in the Chair)
Ms Burnswoods
Mr Jobling
Mr Johnson
Mr M Jones
Ms Saffin (Dyer)

2. Apologies

Mr Colless

3. Confirmation of minutes

Resolved, on the motion of Mr Jobling, that the minutes of meetings 50, 51 and 52 be confirmed.

4. proposed terms of reference concerning feral animals

The Committee deliberated.

Mr Jobling moved that the Committee adopt the following terms of reference:

> That General Purpose Standing Committee No 5 inquire into and report upon:
>
> 1) the damage caused by feral animals including wild dogs and cats to native flora and fauna;
>
> 2) the current and future threat of feral animals to native flora and fauna in NSW with specific reference to NSW National Parks;
>
> 3) the adequacy of current practices and resources for feral animal control carried out by the authorities;
>
> 4) improvements for current practices, and alternative solutions for feral animal control; and
>
> 5) any other relevant matters.

The Committee deliberated.

Resolved, on the motion of Ms Burnswoods, that the question be amended by the deletion of paragraphs 1 – 3 and their replacement with the following:

> 1) the damage caused by feral animals to the environment across all land tenures;
>
> 2) the current and future threat of feral animals to native flora and fauna across all land tenures,

including national parks, private land holdings, other publicly owned land etc;

3) the adequacy of current practices and resources for feral animal control;

Resolved, on the motion of Mr M Jones, that the Committee adopt the amended terms of reference as follows:

That General Purpose Standing Committee No 5 inquire into and report upon:

1) the damage caused by feral animals to the environment across all land tenures;

2) the current and future threat of feral animals to native flora and fauna across all land tenures, including national parks, private land holdings, other publicly owned land etc;

3) the adequacy of current practices and resources for feral animal control;

4) improvements for current practices, and alternative solutions for feral animal control; and

5) any other relevant matters.

5. Proposed revised timetable for current inquiries

The Committee deliberated.

Resolved, on the motion of Ms Burnswoods, that the reporting date for the inquiry into the M5 East ventilation stack be extended to 5 September 201, although the Committee would endeavour to report upon this inquiry by late June / early July if possible.

Resolved, on the motion of Ms Burnswoods, that one day of hearings in relation to the inquiry into Sydney Water's Biosolids Strategy be held before 26 July, and that the reporting date for this inquiry be extended to 16 October 2001.

Resolved, on the motion of Mr M Jones, that advertisements calling for submissions in relation to the inquiry into feral animals be placed in metropolitan and rural newspapers during June, with a closing date for submissions of 31 August 2001.

Resolved, on the motion of Mr M Jones, that the reporting date for the inquiry into feral animals be 26 February 2002.

6. Adjournment

The Committee adjourned at 2.30 pm sine die.

David Blunt
Committee Director

Minutes No. 63

Friday 28 September 2001
At Parliament House (Room 814/815) at 9:30am

5. Members present

Mr R Jones (Chair)
Ms Burnswoods
Mr Colless
Mr Costa
Mr Jobling
Mr M Jones
Ms Saffin

6. Inquiry into Sydney Water's Biosolids Strategy

2.1 HEARING

Resolved, on motion of Mr R Jones, that: in accordance with the Resolution of the Legislative Council of 11 October 1994 the Committee authorises the sound broadcasting and television broadcasting of its public proceedings held today.

The media and the public were admitted.

Mr Alex Walker, Managing Director, Sydney Water Corporation, Dr Judi Hansen, General Manager, Environment and Innovation, Sydney Water Corporation and Ms Kirstie Allen, Manager, Infrastructure Policy, Premier's Department were sworn and examined.

Evidence concluded and the witnesses withdrew.

Mr David Barr MP, Member for Manly, was examined.

Mr Barr tendered three documents to support his evidence.

Resolved, on motion of Ms Burnswoods, that: the Committee accept the documents.

Evidence concluded and the witness withdrew.

Mr Jim Hunter, Director of Service Planning and Commissioning, Manly Council, was sworn and examined.

Evidence concluded and the witness withdrew.

Mr Paul Coffey, Director, Resource Recovery Management Pty Ltd, was sworn and examined.

Evidence concluded and the witness withdrew.

Ms Kathryn Ridge, Executive Officer, Nature Conservation Council of New South Wales, was admitted and affirmed.

Ms Ridge tendered a document to support her evidence.

Resolved, on motion of Mr Colless, that: the Committee accept the document.

Ms Ridge tendered a further four documents to support her evidence.

Resolved, on motion of Mr Costa, that: the Committee accept the documents.

Evidence concluded and the witness withdrew.

Mr Joseph Bertony, Consulting Engineer, Pumping Systems Technologies, was admitted and affirmed.

Evidence concluded and the witness withdrew.

Hearing concluded, the media and the public withdrew.

The Committee deliberated

The Committee agreed to seek a draft report by 18 October 2001.

3. General business

The Committee agreed to combine an aerial inspection for the TransGrid Land Clearing and Feral Animals inquiries in February 2002.

4. Adjournment

The meeting adjourned at 1:30pm, *sine die.*

Steven Carr
Director

Minutes No. 64

Tuesday 23 October 2001
At Parliament House (Room 1108) at 6:30pm

1. Members present

Mr R Jones (Chair)
Ms Burnswoods
Mr Colless
Mr Costa
Dr Pezzutti (Mr Jobling)
Mr M Jones
Ms Saffin

The Chair advised that Dr Pezzutti is a substitute member for Mr Jobling for the purpose of today's meeting.

2. Confirmation of minutes

Resolved, on the motion of Dr Pezzutti that: the minutes of meetings number 62 and 63 be confirmed.

3. Tabled documents

3.1 SUBMISSIONS

The Chair tabled 17 submissions to the inquiry into Sydney Water's Biosolids Strategy:

1 Mr Michael Rolfe (Vaucluse Progress Association)
2 Mr Leslie Richards
3 Mr Fernando Blander (Blander & Blander Communications)
4 Mr Paul Shepherd (City Of Botany Bay Council)
5 Mr G J Martin (Sydney Ports Authority)
6 Mr Peter Katz (Parramatta Rail Link)
7 Mr Paul Coffey (Resource Recovery Management Pty Ltd)
8 Mr David Barr MP (Member for Manly)
9 Mr Alex Walker (Sydney Water)
10 Mr Barry Smith (Hunters Hill Council)
11 Mr J W Hunter (Manly Council)
12 Ms Jane McAloon (Ministry Of Energy And Utilities)
13 Dr Trevor Gibson (Nsw Agriculture)
14 Mr G P Keleny (Property Owners Association Of Nsw Inc)
15 Mr Graham Jessup (Sustainable Energy Development Authority
16 Mr Bill Watson (Pyrmont Raw Materials Pty Ltd & Asteam Logistics)
17 Mr Stuart Wilmot (Coalition for Economic Advancement)

Resolved, on the motion of Mr Colless that: the submissions be made public.

3.2 CORRESPONDENCE RECEIVED

Letter from Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW, dated 28 September 2001, raising the previous membership of the Hon Michael Costa on the Board of Sydney Water.

Letter from Kathryn Ridge, Executive Officer, Nature Conservation Council of NSW, dated 5 October 2001, providing responses to questions on notice and further information to the committee.

Letter from Mr David Barr MP, Member for Manly, dated 10 October 2001, raising the previous membership of the Hon Michael Costa on the Board of Sydney Water.

Letter from Mr Paul Coffey, Director, Resource Recovery Management Pty Ltd, dated 11 October 2001, providing responses to questions on notice.

Letter from Mr Alex Walker, Managing Director, Sydney Water, dated 15 October 2001, providing responses to questions on notice.

Letter from the Hon John Jobling MLC, Opposition Whip, to Committee Clerk, dated 23 October 2001, informing that the Hon Dr Brian Pezzutti MLC will replace the Hon John Jobling MLC for the purpose of the meeting of General Purpose Standing Committee No 5 on 23 October 2001.

Resolved, on the motion of Mr Colless that: the Chair write to Ms Ridge, Mr Coffey and Mr Walker, thanking them for their letters and responses to questions on notice.

Resolved, on the motion of Dr Pezzutti that: the Chair write to Ms Ridge and Mr Barr, notifying them that issues raised in their correspondence have been discussed by the committee and that the final report will reflect the matters brought to the committee's attention.

4. Inquiry into Sydney Water's Biosolids Strategy

Resolved, on motion of Mr Colless that: the reporting date for the inquiry into Sydney Water's Biosolids Strategy be extended to 30 November 2001.

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6. Adjournment

The meeting adjourned at 7:35pm.

Rob Stefanic
A/Director

Minutes No. 65

Friday 16 November 2001
At Parliament House (Room 1136) at 10.00am

1. Members present

Mr R Jones (Chair)
Ms Burnswoods
Mr Costa
Mr Jobling
Mr M Jones
Mr West (Ms Saffin)

The Chair advised that Mr West is a substitute member for Ms Saffin for the purpose of today's meeting.

2. Apologies

Mr Colless

3. Confirmation of minutes

Resolved, on the motion of Mr Jobling that: the minutes of meeting number 64 be confirmed.

4. Inquiry into Sydney Water's Biosolids Strategy

The Chair submitted his draft report entitled "Sydney Water's Biosolids Strategy" which, having been circulated to each member of the committee, was accepted as being read.

The committee proceeded to consider the draft report.

Chapter 1 read

The committee deliberated.

Resolved, on motion of Mr Costa: that paragraph 1.3 be amended by deleting the word "facilitate" and instead inserting, "seek".

Resolved, on motion of Mr M Jones: that Chapter 1 be adopted, as amended.

Chapter 2 read.

Resolved, on motion of Mr West: that Chapter 2 be adopted, as amended.

Chapter 3 read.

Resolved, on motion of Ms Burnswoods: that paragraphs 3.7-3.9 be deleted and re-inserted after paragraph 7.37.

Resolved, on motion of Mr Costa: that paragraph 3.12 (now 3.9) be amended by deleting all words and instead inserting:

> There is some community concern internationally about the level of pathogens in biosolids. This has led to extreme difficulty with agricultural applications in Sweden and parts of Germany because supermarkets will not stock products treated with biosolids. Traditional anaerobic digestion if incorrectly applied can leave a potential route for spreading of strains of E.Coli.

Resolved, on motion of Mr M Jones: that paragraph 3.16 (now 3.13) be amended by deleting the last sentence and instead inserting:

> The committee notes evidence of Sydney Water that:

Resolved, on motion of Ms Burnswoods: that paragraph 3.18 (now 3.15) be deleted.

Resolved, on motion of Mr Costa: that paragraph 3.19 (now 3.15) be amended by deleting all words before "alkyphenols" and instead inserting:

> Contaminants in biosolids may act as endocrine disruptors. The World Wildlife Fund of Canada has identified the following classes of chemical agents as possible endocrine disruptors:

Resolved, on motion of Mr Costa: that paragraph 3.19 (now 3.15) be further amended by inserting at the end the words: "The committee notes that this list is not all inclusive"

Resolved, on motion of Ms Burnswoods: that the following paragraph be inserted after paragraph 3.19 (now 3.15):

> Sydney Water has stated that international research on endocrine disruptors currently involves consideration of some 87,000 chemicals and the possible effects on ecological and public health. Understanding of the chemicals of concern and their effects are still at the fundamental stage of research. Routine monitoring is useful only when we have developed an understanding of the chemicals of concern.

Resolved, on motion of Mr Costa: that paragraph 3.20 (now 3.16) be amended by deleting the words "well advanced on work to develop" and instead inserting the word "developing".

Resolved, on motion of Ms Burnswoods: that paragraph 3.21 (now 3.17) be amended by deleting all words after "Water" (in line 2), and instead inserting:

> stated:
>
> > Sydney Water analyses biosolids in accordance with the Environment Protection Authority Guidelines. These guidelines establish the requirements for testing in terms of frequency and the parameters for which biosolids are tested. These include heavy metals, pesticides and pathogens. The Guidelines do not require testing biosolids for endocrine disruptors.

Resolved, on motion of Mr Costa: that paragraph 3.22 (now 3.18) be amended by deleting all words and instead inserting:

> The committee believes that the NSW EPA should ensure that its guidelines meet international best practice for the detection of endocrine disruptors and other dangerous contaminants.

Resolved, on motion of Ms Burnswoods: that paragraph 3.23 (now 3.19) be amended by deleting the words:

> that meeting long term goals for marketing will require a focussed effort in "regulator management" and

Resolved, on motion of Mr Costa: that paragraph 3.24 (now 3.20) be amended by deleting the words 'this "regulator management"'.

Resolved, on motion of Mr Jobling: that Recommendation 1 be deleted.

Resolved, on motion of Mr M Jones: that Recommendation 2 (now Recommendation 1) be amended by deleting all words after "that" and instead inserting:

> the EPA ensures its Environmental Guidelines: Use and Disposal of Biosolids Products meet world's best practice for the detection of endocrine disruptors and other dangerous contaminants.

Resolved, on motion of Mr M Jones: that Recommendation 3 (now Recommendation 2) be deleted.

Resolved, on motion of Mr West: that Chapter 3 be adopted, as amended.

Chapter 4 read

Resolved, on motion of Mr Jobling: that Chapter 4 be adopted.

Chapter 5 read

Resolved, on motion of Ms Burnswoods: that paragraph 5.1, line 1, be amended by deleting the word "key".

Resolved, on motion of Ms Burnswoods: that paragraph 5.1, line 3 be amended by deleting the words "was informed" and instead inserting "received complaints".

Resolved, on motion of Mr Costa: that paragraph 5.7 be amended by deleting all words and instead inserting:

> The committee believes that a consultation period should provide ample time for stakeholders to receive information taking into account the normal meeting cycle of community organisations. Ample time is needed for stakeholders to prepare considered responses to complex technical issues. The committee notes however that, if Sydney Water had allowed more time in preparing the Strategy, this would have pushed the preparation of the Strategy past the 31 August 2000 deadline and put Sydney Water in breach of the consent conditions for the Northside Storage Tunnel. Nevertheless, the committee considers it preferable to provide for an adequate consultation period.

Resolved, on motion of Mr Jobling: that paragraph 5.14 be amended by deleting all words after the second sentence.

Resolved, on motion of Mr Jobling: that paragraph 5.15 be deleted and all words be inserted at the end of paragraph 5.14.

Resolved, on motion of Mr Costa: that paragraph 5.17 (now 5.16) be amended by deleting the words "provided the committee with" and instead inserting "tendered".

Resolved, on motion of Ms Burnswoods: that paragraph 5.18 (now 5.17) be deleted.

Resolved, on motion of Mr Jobling: that paragraph 5.20 (now 5.18) be amended by deleting all words and instead inserting:

> The committee notes these views and considers that the consultation process could have been handled better. Sydney Water needs to develop its consultative skills to ensure proper and effective community consultation.

Resolved, on motion of Mr Jobling: that paragraph 5.21 (now 5.19) be deleted and re-inserted after paragraph 5.22.

Resolved, on motion of Ms Burnswoods: that paragraph 5.22 (now 5.19) be amended be deleting all words in the first 2 lines and instead inserting:

> Mr David Barr MP expressed concern about lack of clarity on responsibility for the Strategy:

Resolved, on motion of Mr Costa: that paragraph 5.23 (now 5.20) be deleted and re-inserted after the heading "Approval and Scrutiny of the Biosolids Strategy".

Resolved, on motion of Mr Jobling: that paragraph 5.24 (now 5.21) be amended by deleting all words after the first sentence.

Resolved, on motion of Mr Costa: that paragraphs 5.25 (now 5.21) and 5.26 (now 5.22) be deleted.

The committee deliberated.

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6. Adjournment

The meeting adjourned at 12.35pm until 10.00am Monday 26 November 2001.

Rob Stefanic
A/Director

Minutes No. 66

Monday 26 November 2001
At Parliament House (Room 1136) at 10.00am

1. Members present

Mr R Jones (Chair)
Ms Burnswoods
Mr Jobling
Mr M Jones
Ms Saffin

2. Apologies

Mr Colless

3. Confirmation of minutes

Resolved, on the motion of Mr Jobling that: the minutes of meeting number 65 be confirmed.

4. Inquiry into Sydney Water's Biosolids Strategy

The committee continued consideration of the draft report.

The meeting adjourned at 10.40 am until 11.15 am.

The committee deliberated.

Resolved, on motion of Mr Jobling: that paragraph 5.39 (now 5.37) be amended by deleting all words and instead inserting:

> While it is understood that consultation with government agencies must commence before community consultation, the committee considers that only options that have a realistic possibility of implementation should be presented to the community. Sydney Water should have resolved any planning issues prior to presenting options as viable solutions to the community for comment. The committee considers that this is a serious flaw in the consultation process.

Resolved, on motion of Mr Jobling: that paragraph 5.46 (now 5.44) be amended by deleting all words and instead inserting:

> The committee was advised that the recommendation of the June 1998 documents has caused some consternation within affected communities when compared to the results of the final Biosolids Strategy. The committee noted a statement by Manly Council stated that it:

Resolved, on motion of Mr Jobling: that the following paragraph be inserted before 5.48 (now 5.46):

> The Chair of the committee then asked:

> Was it a political decision to jettison those recommendations? Obviously something major happened in that one year, because the decision was changed.

Resolved, on motion of Mr Jobling: that paragraph 5.46 (now 5.47) be amended by deleting the first sentence.

Resolved, on motion of Mr Jobling: that paragraph 5.48 (now 5.49) be deleted.

Resolved, on motion of Ms Burnswoods: that paragraph 5.52 (now 5.50) be amended by deleting the last sentence.

Resolved, on motion of Mr Jobling: that paragraphs 5.53 to 5.54 (now 5.51-5.52) be amended by deleting all words and instead inserting:

> On the basis of the evidence before it, the committee considers that public consultation was not handled in an acceptable way that fostered trust with the community
>
> The committee expressed concern that Sydney Water presented some options to the public that were not feasible.

Resolved, on motion of Mr M Jones: that Recommendation 4 (now Recommendation 2) be deleted.

Resolved, on motion of Mr M Jones: that Recommendation 5 (now Recommendation 2) be amended by deleting the first bullet point and inserting instead:

- only including those options which are realistic and genuine, and
- identifying any known factors adversely affecting options outlined in those proposals, and

Resolved, on motion of Mr Jobling: that Recommendation 6 (now Recommendation 3) be amended by inserting after the word "issues", the words "of concern to other government agencies".

Mr Jones moved: That Recommendation 7 be amended by deleting the words "at least quarterly" and inserting instead "six monthly for five years".

Question put

The committee divided.

Ayes	Nos
Mr Jobling	Ms Burnswoods
Mr M Jones	Ms Saffin
Mr R Jones	

Question resolved in the affirmative.

Resolved, on motion of Mr Jobling: that Chapter 5 be adopted, as amended.

Chapter 6 read.

Resolved, on motion of Ms Saffin: that paragraph 6.11 be amended by deleting all words after the first sentence and instead inserting:

> The committee received evidence of a number of concerns from other countries about the use of biosolids products.

Resolved, on motion of Mr Jobling: that paragraph 6.22 be amended by deleting all words and instead inserting:

> In his submission to the inquiry, Mr David Barr MP summarises the Manly community's concern about the road transport option:

Resolved, on motion of Mr Jobling: that paragraphs 6.28 and 6.29 be amended by inserting the words "In evidence to the committee" at the beginning.

Resolved, on motion of Ms Burnswoods: that paragraph 6.37 be amended by deleting the words "The committee has considered" and inserting after the abbreviation MP, the words "under Freedom of Information legislation".

Resolved, on motion of Ms Saffin: that paragraph 6.38 be deleted.

Resolved, on motion of Mr M Jones: that Recommendation 8 (now Recommendation 5) be amended by deleting all words and instead inserting:

> The committee recommends that Sydney Water and Manly Council maintain an ongoing dialogue to discuss local traffic concerns in Manly.

Ms Burnswoods moved: That Recommendation 9 be deleted.

Question put

The committee divided.

Ayes	Nos
Ms Burnswoods	Mr Jobling
Ms Saffin	Mr M Jones
	Mr R Jones

Question resolved in the negative.

Resolved, on motion of Mr Jobling: that Chapter 6 be adopted, as amended.

Chapter 7 read

Resolved, on motion of Mr Jobling: that paragraph 7.24 be amended by deleting the word "recognises" in the second sentence and inserting the word "notes".

Resolved, on motion of Mr Jobling: that paragraph 7.27 be amended by inserting at the beginning of the third sentence the words: "The committee expresses concern that"

Resolved, on motion of Mr Jobling: that paragraph 7.40 (now 7.43)be amended by deleting the second sentence and instead inserting:

> Nevertheless the committee considered this option should be kept under review.

Resolved, on motion of Ms Burnswoods: that paragraph 7.41 (now 7.44) be amended by deleting all words after "drying" and instead inserting:

> in light of Sydney Water's biosolids market strategy rather than developing a mix of new and emerging technologies and products.

Resolved, on motion of Mr Jobling: that paragraph 7.44 (now 7.47) be amended by deleting the word "key".

Resolved, on motion of Ms Burnswoods: that paragraph 7.45 (now 7.48) be amended by deleting all words up to "decentralisation" in the first sentence and instead inserting "The committee received submissions supporting".

Resolved, on motion of Ms Burnswoods: that paragraph 7.52 (now 7.55) be amended by deleting inserting at the end:

> In light of the limited evidence presented on the cost and feasibility of decentralisation, the committee was unable to reach a conclusion.

Resolved, on motion of Mr Jobling: that paragraph 7.53 (now 7.56) be amended by deleting the word "significant" in the second sentence and all words after the second sentence.

Resolved, on motion of Ms Burnswoods: that paragraph 7.56 (now 7.59) be amended by deleting all words in the first sentence and instead inserting:

> The committee notes that Sydney Water is working on demand management strategies to reduce domestic demand although these need to be supplemented by technological change.

Resolved, on motion of Ms Burnswoods: that paragraph 7.57 (now 7.60) be amended by deleting all words and instead inserting:

> The committee considers that in order to meet WaterPlan 21's target of reducing reliance on outfalls with the current number of STPs, it will also be necessary to intercept the flow of wastewater before it reaches the North Head STP.

Resolved, on motion of Ms Burnswoods: that paragraph 7.67 (now 7.70) be amended by deleting all words after "minor" and instead inserting:

> but it notes that although it is concerned about the energy impacts of this option and that the community's expectations were disappointed by the continued use of road transport.

Resolved, on motion of Mr Jobling: that Recommendation 12 (now Recommendation 9) be amended by deleting the first three lines up to the word "opportunity" and instead inserting:

> The committee recommends in its review of WaterPlan 21, Sydney Water take the

Resolved, on motion of Mr Jobling: that Chapter 7 be adopted.

Resolved, on the motion of Ms Burnswoods: that dissenting statements relating to the report be provided to the Committee Secretariat no later than close of business Wednesday 28 November 2001.

Resolved, on the motion of Mr Jobling: that the report as amended, be the report of the Committee and that it be signed by the Chairman and presented to the House.

Resolved, on the motion of Mr Jobling: that pursuant to the provisions of section 4 of the *Parliamentary Papers (Supplementary Provisions) Act 1975* and under the authority of Standing Order 252, the Committee authorises the Clerk of the Committee to publish the report, submissions, corrected transcript, and related documents and material with the exception of documents identified as "private and confidential" or "not publicly available".

5. Adjournment

The meeting adjourned at 1.15pm.

Rob Stefanic
A/Director