



# Burwood Beach Wastewater Treatment Works Information Sheet

## About Burwood Beach Wastewater Treatment Works

The Burwood Beach Wastewater Treatment Works (WWTW) treats sewage from approximately 190,000 people from Newcastle and parts of Lake Macquarie. In order to meet the needs of a growing population over the next 30 years, Hunter Water is considering options for the future of Burwood Beach WWTW.

Key aims for the future of Burwood Beach WWTW include:

- Continuing to safeguard the health of our community
- Ensuring affordability for all Hunter Water customers
- Respecting our waterways by ensuring future releases have minimal impact on water quality.

Hunter Water is seeking **community feedback** on four options for Burwood Beach WWTW. All four options address public health concerns, while each has different social, financial and environmental impacts and benefits. Community feedback on the four options will help Hunter Water to achieve a balance of impacts and benefits that aligns with community values.

The four options being considered involve potential changes to the way the Burwood Beach WWTW will manage two end products of wastewater treatment: **treated effluent** and **biosolids**.

### What is treated effluent?

**Treated effluent** is the liquid component of wastewater released after treatment. Treated effluent contains Nitrogen.

**Nitrogen** is essential to life and as a gas it makes up about 78% of the air we breathe. Nitrogen can stimulate plant growth but in large amounts can contribute to algal blooms and be harmful in waterways. A biological treatment process can remove Nitrogen from treated effluent and convert it to its harmless gas form.

### What are biosolids?

**Biosolids** are the solid components that remain after the waste water treatment process. The biosolids released at Burwood Beach WWTW are 99% water. If biosolids are reused for landfill or fertiliser, they undergo further treatment to remove excess water.

At present, approximately 48 million litres (or 19 Olympic swimming pools) of treated effluent and 2 million litres (less than one Olympic swimming pool) of biosolids are released into the ocean each day from Burwood Beach WWTW.

The options being considered for future works at Burwood Beach WWTW are summarised over the page.

Existing Burwood Beach Waste Water Treatment Works and outfall pipe location



1.5 km outfall pipe









Approximately 22 metres below the ocean surface

## Summary of future options

The four options for Burwood Beach WWTW vary in terms of:

- Concentrations of nitrogen in the treated effluent
- Whether biosolids continue to be released to the ocean or are reused on land (potentially in agriculture or mine rehabilitation).

These options are summarised below.

Option	Nitrogen concentration of treated effluent	Management of biosolids
1	Current nitrogen concentrations <b>maintained</b> 	Released to <b>ocean</b> 
2	Current nitrogen concentrations <b>maintained</b> 	Reused on <b>land</b> 
3	Nitrogen concentrations <b>reduced</b> 	Released to <b>ocean</b> 
4	Nitrogen concentrations <b>reduced</b> 	Reused on <b>land</b> 

The following statements apply to all four options:

- All options will meet standards for public health. No option will compromise our current Beachwatch Ratings which rank Newcastle's beaches as the cleanest in NSW.
- The preferred option will be subject to an Environmental Impact Assessment and approval process. Compliance with the NSW Environment Protection Authority (EPA) requirements will be achieved.
- The ocean outfall location will not change, but the content of releases will vary between the options.
- Associated infrastructure will fit within the existing fenced area of the site.
- Odour and noise emissions will meet the relevant guidelines.
- Another project, to provide disinfection as an additional treatment process, is also being implemented at Burwood Beach WWTW.

Key differences between the four options are described on the next page.

## Benefits and impacts of the various options

Various benefits and impacts of the four options are shown in the table below. This includes potential impacts/benefits on water quality, cost, energy use, and other considerations.

**Explanatory notes** are shown on the next page.

Option	Environmental Factors						Social Factors	Cost Factors	
	Option Description	Expected Impacts/Benefits to Marine Environment <sup>a</sup>	Biosolids Reused on Land <sup>b</sup>	Annual Power Consumption <sup>b c</sup>	Annual Energy Recovered <sup>b</sup>	Annual Greenhouse Gas Emissions <sup>b d</sup>	Truck Movements to/from Site (per week) <sup>b</sup>	Whole of Life Cost <sup>e</sup>	Indicative Annual Increase to each Customer's Bill <sup>f</sup>
1	<b>Current nitrogen concentrations maintained</b>	Nitrogen concentrations will remain higher up to 600 metres from the ocean outfall (versus up to 500 metres at present)	0 tonnes per year (0%)	6,400 MWh	0 MWh	14,300 tonnes CO <sub>2</sub> -e	0	\$110 million	\$11-18 per year
	<b>Biosolids released to ocean</b>	Small changes to the seabed will occur up to 30 metres away from the ocean outfall (versus up to 20 metres at present)							
2	<b>Current nitrogen concentrations maintained</b>	Nitrogen concentrations will remain higher up to 600 metres from the ocean outfall (versus up to 500 metres at present)	13,000 tonnes per year (100%)	3,600 MWh	2,700 MWh	11,900 tonnes CO <sub>2</sub> -e	12	\$180 million	\$24-31 per year
	<b>Biosolids reused on land</b>	The seabed around the ocean outfall will return to more natural conditions							
3	<b>Nitrogen concentrations reduced</b>	Nitrogen concentrations will remain higher up to 100 metres from the ocean outfall (versus up to 500 metres at present)	0 tonnes per year (0%)	10,000 MWh	0 MWh	13,800 tonnes CO <sub>2</sub> -e	0	\$150 million	\$19-27 per year
	<b>Biosolids released to ocean</b>	Small changes to the seabed will occur up to 30 metres away from the ocean outfall (versus up to 20 metres at present)							
4	<b>Nitrogen concentrations reduced</b>	Nitrogen concentrations will remain higher up to 100 metres from the ocean outfall (versus up to 500 metres at present)	16,000 tonnes per year (100%)	13,800 MWh	0 MWh <sup>g</sup>	17,300 tonnes CO <sub>2</sub> -e	15	\$200 million	\$30-39 per year
	<b>Biosolids reused on land</b>	The seabed around the ocean outfall will return to more natural conditions							



## Explanatory notes

- a** Indicative impacts/benefits to the marine environment are based on predicted 2039/40 flows.
- b** Estimated figures for secondary treatment (eg changes to nitrogen concentrations) and biosolids handling processes based on predicted 2039/40 flows. Other considerations affect these figures. However they are excluded here, as they will be the same for each option.
- c** Power consumption figures show the net consumption from the grid. This does not include the power demand satisfied by energy recovered through power generation on site.
- d** Greenhouse gas figures are based on estimates of direct emissions of methane and nitrous oxide from the effluent and biosolids treatment processes (including biosolids release to ocean) and indirect emissions associated with power consumption, chemical consumption and biosolids transport. Estimates have been converted to an equivalent CO<sub>2</sub> value so they can be compared (expressed as -e).
- e** Estimated costs and indicative bill impacts for secondary treatment (eg changes to nitrogen concentrations), disinfection and biosolids handling processes only. Other considerations will affect costs and impacts on bills, however, they are excluded as they will be the same for each option and therefore are not important considerations in selecting the preferred option.
- f** The average annual bill per household for Hunter Water services is currently around \$1,110. Over the period of the current price path (2013/14 to 2016/17) it is expected that this cost will increase by approximately \$10 per year. The bill increases for each option shown in the table indicate the additional ongoing cost per annum that would be incurred if Option 1, 2, 3 or 4 is included in the current capital program. Costings are shown in 2013/14 dollar values.  
  
*Please note, the formal process of developing prices for Hunter Water services is the periodic price review undertaken by the Independent Pricing and Regulatory Tribunal (IPART). This is a complex process that involves the presentation and review of past and future expenditure, efficiency adjustments, asset write-downs, demand projections, rate of return targets and affordability assessments. Estimating the impact of a single project is not part of the IPART price review process.*
- g** Energy recovery is possible for this option, pending final selection of the treatment technology.

For further information please contact Hunter Water's Customer Service Centre

**P** 1300 657 657

**E** [burwoodprojectteam@hunterwater.com.au](mailto:burwoodprojectteam@hunterwater.com.au)

You may also be interested in attending the **Community Open Day** at Burwood Beach WWTW on **Saturday 15 March**, where you can see the facility up close and discuss its future with Hunter Water staff. To register your interest please call **1300 657 657** email [burwoodprojectteam@hunterwater.com.au](mailto:burwoodprojectteam@hunterwater.com.au) or visit [www.hunterwater.com.au/burwoodupgrade](http://www.hunterwater.com.au/burwoodupgrade)