

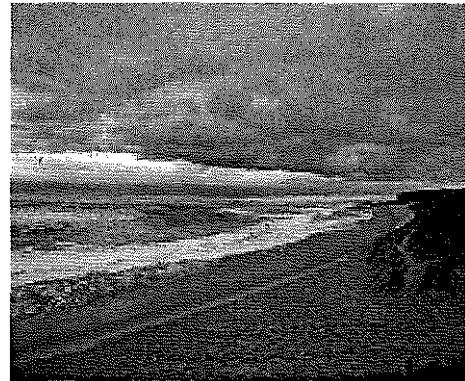
# essentialfacts

## **Improving the marine environment at Boags Rocks**

Sewage from the 1.5 million residents in Melbourne's south-eastern and eastern suburbs is treated at the Eastern Treatment Plant in Bangholme. The plant treats the sewage to secondary standard before releasing the remaining effluent into Bass Strait via a 56-kilometre pipeline at Boags Rocks, between Gunnamatta and St Andrews beaches.

Most sewage from the Mornington Peninsula is treated at South East Water's sewage treatment plants at Mount Martha, Boneo and Somers and this is also discharged at Boags Rocks.

Melbourne Water is committed to reducing the environmental impacts of the effluent on the marine environment and complying with the strict environmental standards set by EPA Victoria. We achieve this by ensuring our processes and equipment are continually upgraded and closely monitored.



## **Protecting the environment**

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When the Plant opened in 1975 it was a world leader in the secondary treatment of sewage. It has continually been improved since then to incorporate the latest technical equipment, Our commitment to protecting the environment extends to significant improvement projects planned for the Eastern Treatment Plant:

### **Ammonia reduction**

A major two-year CSIRO study examined the effect of treated effluent on the marine environment. The study found that ammonia levels and freshwater volumes were a detrimental impact on the marine environment at Boags Rocks, where the treated effluent is discharged.

Reducing the amount of ammonia in the effluent will reduce the toxicity of the effluent and help the marine ecology recover, and Melbourne Water is now well advanced with an \$84 million project to cut levels by 75%.



Melbourne Water is owned by the Victorian government. We manage Melbourne's water supply catchments, remove and treat most of Melbourne's sewage, and manage rivers and creeks and major drainage systems throughout the Port Phillip and Westernport catchment.

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This is a significant and complex project that involves upgrading each of the plant's aeration  
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The first stage of the project, which involves modifications to the existing tanks, will be completed by 2007. The construction of additional tanks will be completed in 2009.

## **Other Improvement programs**

Melbourne Water and South East Water are undertaking the following improvement activities at their treatment plants to improve the quality of discharge:

### *Eastern Treatment Plant*

- Investigating the benefits of upgrading the final effluent screens to reduce the risk of litter in the outfall discharge during high rainfall
- Investigating ways to minimise colour and odour in treated effluent
- Modernising the plant to use green energy to generate electricity at the plant
- Investigating the impacts of effluent discharge for different effluent volumes, quality and discharge points. This work will be included in the Victorian Government's Eastern Water Recycling Proposal to investigate the feasibility of transferring recycled water from the plant to the Latrobe Valley.

### *South East Water's Treatment Plants*

A number of upgrade works, at an estimated cost of \$36 million, are currently in the advanced planning and construction phases at the Boneo and Somers sewage treatment plants. The Mt. Martha treatment plant ammonia upgrade was completed in October 2005. These treatment plants discharge part of their effluent flow to Melbourne Water's South East Outfall pipeline. These projects will provide additional processing capacity to cater for 35% growth in flows expected in the next 10 years.

The projects are also required to improve effluent quality by providing a substantial reduction (over 90%) in ammonia concentration levels in the effluent discharged from the plants and to install the latest screening technology.

## **Our research and monitoring programs**

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We monitor every aspect of the sewage treatment process, from the moment the sewage arrives at the plant, to when it is discharged into Bass Strait. This ensures we meet with EPA Victoria's requirements and helps us to protect the environment.

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Melbourne Water is investing \$1.5 million over the next three years in our monitoring program  
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## *Raw sewage entering the Eastern Treatment Plant*

- The flow and quality of raw sewage is continually measured and sampled as it enters the Eastern Treatment Plant. The data is reported to EPA Victoria and assists in daily operational decision-making.

## *Quality of treated effluent prior to discharge*

- Samples of treated effluent are tested for physical and chemical parameters, immediately prior to discharge into the marine environment. Any non-compliance with EPA limits is reported to the EPA and results are published in Melbourne Water's annual report to the EPA.

## *Levels of effluent discharged*

- Monitoring of the daily volume of treated effluent discharged at Boags Rocks is carried out to ensure daily limits are not exceeded. Results are published on Melbourne Water's website and reported annually to EPA Victoria.

## Environmental monitoring

### *Toxicity testing of effluent*

- Testing of effluent is undertaken to regularly monitor toxicity. Previous studies showed ammonia to be the major contributor to effluent toxicity and this has been confirmed by subsequent testing. The testing is undertaken quarterly.

### *Long-term study on build up of contaminants*

- A long-term study to ensure that contaminants that may pose a risk to human health, via seafood, are not accumulating in the environment where the effluent is discharged commenced in September 2005. Samples of local mussels are collected from Boags Rocks at intervals of three to four years or more frequently if significant events occur that release contaminants into the environment. The aim is to build up a time series database that will assist in trend detection. Results from previous studies demonstrate compliance with food standards.

### *Absence or presence of algae on intertidal rock platforms*

- Intertidal rock platforms are considered to be the prominent habitat impacted by the discharge. Testing is undertaken to assess any change in occurrence of common macroalgae at sites including Boags Rocks, Boags Rocks East and Fingals Beach. Results are compared with established baselines.

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## *Underwater video surveys of subtidal reef*

- Qualitative evidence is required to ensure the discharge has had no significant impact on the subtidal reefs offshore from Boags Rocks. Diver-assisted underwater video footage along sections of the subtidal reef (14-18 m depth) is taken every three to four years and covers a 7km area either side of the discharge point. More frequent footage will be taken if significant change is occurring.

## Recreational water quality monitoring

EPA Victoria requires that recreational water quality be assessed through weekly *E. coli* monitoring at six shoreline points, including Gunnamatta Beach, St Andrews Beach and Boags Rocks. Testing is undertaken by a NATA (National Association of Testing Authorities) accredited independent laboratory, Water EcoScience. The results are published online (below),

Since February 2005, Melbourne Water has also been monitoring for *Enterococci*. *Enterococci* is recognised by the World Health Organization (WHO) as the most appropriate bacterial indicator for measuring faecal contamination. The results are published on the website as they become available.

Water quality monitoring is undertaken for environmental compliance. The results for 2005 found that the water quality meets EPA health-based water quality objectives. EPA Victoria analyses water quality data to gauge any potential risk to swimmers.

A major two-year CSIRO research project found that the effluent poses no threat to fish and shellfish in the area or people consuming fish from the area. As part of this project, a study by Monash University on the health effects of ocean outfalls, concluded that surfers were at no additional risk of contracting disease from surfing in the area compared with other beaches studied. Swimming is only recommended in the area patrolled by the Gunnamatta Surf Lifesaving Club. The Department of Human Services analysed the data from the Monash study and also concluded that the "current effluent outfall at Boags Rocks does not pose a risk to human health".

## Understanding water quality monitoring results

The nature of microorganisms means that numbers can vary significantly from sample to sample and from day to day. For this reason, assessment is not made on the basis of individual samples. Assessment over a period more accurately reflects the beach condition. Fluctuations in microorganisms can be the result of factors such as wind conditions and bird activity as well as changes that may occur to the sample after it has been collected.

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Assessment against National Health and Medical Research Council (NHMRC) Guidelines for Managing Risks in Recreational Water (June 2005)

In addition to the weekly compliance monitoring, Melbourne Water has also initiated a program to assess water quality against National Health and Medical Research Council (NHMRC) guidelines. This program involves sampling *E. coli* and *Enterococci* levels at 19 sites - 18 sites in the swim and surf zones and at a reference site 2 kms offshore. Testing is designed to monitor long term trends in water quality. Results will be made available in Melbourne Water's Social and Environment Report, which will be published in late 2006. The programs are managed by experienced water quality scientists.

## Aesthetic **monitoring**

### *Beach inspections at Gunnamatta*

- Melbourne Water employees and local community representatives undertake daily beach inspections at Gunnamatta during Summer and three to four times a week for the remainder of the year.
- Odour is also monitored to meet EPA Victoria licence and State Environment Protection Policies (SEPP) requirements. Log sheets are prepared and a statistical analysis is undertaken bi-monthly and reported to EPA Victoria.

## **Further information**

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More information on Melbourne Water's environmental performance report is available in Melbourne Water's 2004/05 Social and Environment Report. Copies are available on our website at [www.melbournewater.com.au](http://www.melbournewater.com.au)

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