

# FACT SHEET

## Hampton Park Resource Recovery Precinct

### Background

During most of 2011, SITA Australia has been refining and upgrading all the processes essential to manage community waste deposited at its Hampton Park Resource Recovery Precinct. Unprecedented and lengthy rain periods have triggered anaerobic activity within the waste, causing early generation of landfill gas that is not usually experienced until the landfill cell is completely filled and capped.

Since identifying the change in anaerobic activity, SITA has engaged with various parties, to assist and provide advice on alternative initiatives for addressing the issue of increased landfill gas.

SITA has now implemented a range of initiatives and recommendations including reducing the active waste cell, altering established waste filling and capping practices, installing additional gas collection wells and gas fired generators and installing Australia's first landfill odour neutraliser system of its kind. These changes in operational practice are not only providing innovative solutions to current facility issues, they are also providing a committed response to the changing urban environment in which the Hampton Park Resource Recovery Precinct is located.

### Landfill Operations

In late September 2011, SITA made the decision to sacrifice the remaining waste void of approximately 40,000 cubic metres in the north-western section of Cell 8 (refer to map page 4). Until then, this section of the landfill was where community waste was deposited and where the increase in anaerobic activity had been experienced. To fill the void, SITA commenced depositing soil, known as clean-fill, which will make sure the area reaches the approved contour. Dependent upon the weather, the clean-fill operation is expected to be complete by the middle of December 2011, allowing final cell capping works to be undertaken during late December 2011.

Additionally a specialist contractor, Lining Victoria is currently on site welding the 1 mm Linear Low Density Polyethylene plastic to cap a further 15,000 square metre area (approximate) in the south-western portion of cell 8 which has reached the approved contour. Although this process can be hampered by both wind and rain, it is expected that the lining of the cell will be complete by mid-November 2011.

Currently, community waste is being deposited in eastern half of Cell 8 (refer to map page 4). A unique horizontal gas well extraction system is being progressively installed and operated during the waste filling process. For further information, see **Gas Management** below.

Meanwhile, SITA has commenced development of its newest fully engineered cell in the next area east of cell 8 (refer to map page 4). Again, the design will apply the innovative operational solutions being progressively sourced and developed by SITA.

## Gas Management

Earlier this year, SITA progressively installed an additional 14 landfill gas collection wells in the active waste cell. Through regular performance monitoring, it was identified that some of the wells were found to have pockets of perched leachate (water) in the pipes which did not allow gas extraction to operate at its full capacity. To respond to this issue SITA contracted the services of a specialist company which provides a system that can both pump leachate and extract gas from the cell.

Now that the north-western section of Cell 8 is being clean-filled and prepared for capping, SITA has installed a further 11 vertical gas wells to the sections of the area where final waste heights have been reached. This brings the total of gas wells in the western half of Cell 8 to 19. It is planned to install additional gas wells in this area before the end of the year.

To ensure statutory environmental and community obligations continue to be met, SITA is now installing horizontal gas wells into the current waste deposits. Rather than drilling vertical wells into waste that has commenced anaerobic activity, SITA will place horizontal gas wells on top of fresh waste at 20 metre lateral spacings each four to six metre rise in the waste. To date, nine wells have been installed and connected to the gas collection system and it is expected that up to 12 wells will ultimately be installed in the current lift. In the future, it is planned to install horizontal wells in a similar fashion in every second waste lift as the eastern half of the Cell 8 is filled.

Once extracted, landfill gas is fed into generators located on site to create electricity. LMS Energy, SITA's landfill gas specialist contractor, currently has four generators on site that convert landfill gas and contribute enough electricity to the network to supply power to some 3,500 homes. LMS is planning to install two further generators, taking its capacity to 6.6MW by the end of December 2011. This will increase delivery of power to the network for approximately 6,500 homes. Planning is currently in place for an additional two generators to be commissioned by 2015.

## Odour Neutraliser Curtain

As well as redefining operational processes, SITA has been actively seeking complementary methods to respond to community issues. In September, SITA investigated the use of a **Subtractive Odor Control™** System which is manufactured by US based Benzaco Scientific.

Benzaco Scientific has many operational sites in the United States using Subtractive Odor Control technology. Although never implemented in Australia, analysis of air samples provided by Benzaco Scientific of before and after treatment show reductions in odour intensity of 90% plus. Comparative tests on other vapour phase odor control technologies showed reductions of 40 to 60%.

The system operates by dispersing biodegradable, non-toxic essential oils in a high pressure water misting plume. The plume captures odour molecules creating a chemical reaction whereby the odour is neutralised and eliminated.

The equipment used for this system is approximately 800m long and has been placed around the outside of the active cell. The odour neutraliser will be operated in conjunction with the on site weather station ensuring that the appropriate areas of the system are activated and utilised in direct response to prevailing weather conditions.

Just six weeks after investigating the system, installation of the odour curtain is now complete and the pumping station and water supply have been connected. The system was finally commissioned on 27 October 2011, with air quality and odour assessments being undertaken prior to and since installation of the odour neutraliser curtain.

## Electric Nose Check

To make sure these innovative changes to operational practice are providing the expected solutions, SITA has commissioned E-Nose Pty Ltd to undertake a trial series of air quality and odour intensity assessments before and after commissioning of the odour neutraliser curtain. E-Nose design and build chemical sensor array devices to monitor, identify and measure smells and other airborne chemicals continuously and in real time.

The devices consist of arrays of robust and fast acting chemical sensors, supplemented by patented electronics and software. Chemicals in the air are detected by the sensor arrays, registering complex odour 'images' in real time. A record is then sent to a computer where the 'image' is identified and quantified. This information will provide SITA with better intelligence on the types and patterns of emissions affecting the local area and the ability to develop proactive improvements.

E-Noses are currently being used to monitor abattoirs, water treatment plants, chicken farms, petrochemical and alumina processing sites and also utilised in research, including lung cancer studies.

## Stay in touch

As a leader in the provision of resource recovery, recycling and waste management solutions, SITA's approach is based on acting locally and understanding local challenges. We encourage you to learn more about us.

If you want to report an environmental issue, contact the **SITA Environmental Hotline**,  
a FREECALL 24/7 service  
**1800 ENV REP**  
**1800 368 737**

If you want us to visit your group or organisation, or you would like your question answered, send an email to

**[vic\\_communityenquiries@sita.com.au](mailto:vic_communityenquiries@sita.com.au)**

If you want to learn more about how SITA Australia is developing sustainable waste management practices, log on to

**[www.sita.com.au](http://www.sita.com.au)**

Our natural resources are not infinite and we must work together to protect and nurture them while helping to solve one of the major environmental problems that threaten the planet - the sustainable and ethical management of our waste.

