



Sydney Olympic Park is home to Australia's largest urban parkland, where a thriving ecosystem of more than 400 native plants and countless species of animals can be found. To preserve this biodiversity, Sydney Olympic Park Authority strives to operate and develop the precinct according to principles of ecologically sustainable development, which are incorporated in its legislative and corporate charter.

The Authority formally adopted a revised set of Environmental Guidelines in June 2008. These guidelines outline broad sustainability principles for the Authority and include more specific objectives, actions and performance outcomes. The aim is to ensure the Park's future as a modern new township and a premier major events precinct with biologically diverse parklands.

#### **Sustainable development**

Master Plan 2030 sets out a long-term vision for the sustainable development of the Park. Under the Plan, all developments must embody a best-practice approach to environmental sustainability principles.

For example, developments must connect with the Park's recycled water system, comply with Australian building codes and achieve a Green Building Council rating. These principles ensure the Park is developed in an environmentally responsible manner and meet the NSW State Plan objective of creating an *'Environment for Living'*.

#### **Environmental performance**

The Environmental Guidelines identify eight key environmental sustainability issues, which form the basis for environmental management and reporting.



Waterbird refuge

### Water conservation

Sydney Olympic Park has a locally integrated approach to water conservation based on stormwater reuse, wastewater reprocessing and water demand reduction.

The Authority completed the installation of an additional recycled water distribution network in 2007–08, enabling additional parkland areas and buildings in the Australia Centre, Sydney Olympic Park Hockey Centre and Sydney Olympic Park Aquatic and Athletics Centres to connect to the recycled water supply.

The water use breakdown at Sydney Olympic Park in 2007–08 is detailed below.

Total water consumed	434,160 kL
Reclaimed stormwater consumed	270,000 kL
Recycled WRAMS water consumed	155,124 kL
Potable SWC water consumed	9.036 kL

### Energy conservation

The Authority has implemented a broad range of energy reduction and energy generation initiatives, including natural lighting and natural ventilation in buildings, energy-efficient lighting and air conditioning systems, and the installation of renewable (photovoltaic) electricity generation systems throughout the Park.

The Park's solar generation program includes the 'towers of power' – 19 photovoltaic lighting towers lining Olympic Boulevard.

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Each tower has a generating capacity of 23 kilowatt hours (kWh) per day, equivalent to the amount of energy used to power a small house. Power is fed into the main grid during the day and drawn from the grid at night. When all towers are operating they can produce 130,000–160,000 kWh of energy each year, equivalent to their estimated annual energy consumption. The Park also has a small solar power

generation station and a number of independent solar pump and lighting units in remote areas.

The energy conservation program is supported by the purchase of 'green power' for 25 percent of all electricity use, the introduction of energy demand minimisation strategies, and periodic energy audits to monitor performance. During 2007–08, green power purchases by the Authority avoided 1,971 tonnes of greenhouse gas emissions.

### Material selection

The Environmental Guidelines for the Park and the Master Plan 2030 reaffirmed the Authority's commitment to sustainable materials selection, which avoids or reduces harmful toxic materials and impacts on the environment.

The Environmental Guidelines recommend:

- considering whole-of-life impacts on the environment when selecting materials for development and operations
- prioritising the selection of natural non-toxic materials such as natural fibre insulation, and non-toxic paints, glues, varnishes, polishes, solvents and cleaning products
- maximising the use of recycled and recyclable materials in developments and operations, including for consumer packaging
- encouraging material reuse for major event overlay (design for disassembly and reuse)
- eliminating the use of chlorine-, fluorine- and hydrogen-based carbon gases, and promoting the use of non-ozone depleting, non-greenhouse warming gas refrigerants in construction, major events and other operations
- minimising the need for the chemical control of weeds, pests and diseases.

The Master Plan 2030 recommends:

- sourcing Australian hardwood timber from certified sustainably managed plantations
- prioritising low emission fibreboard
- minimising fibreboard chlorine-based products (including PVC)
- prohibiting the use of imported rainforest timber and copper chrome and arsenic treated timber for any purpose.

### **Waste management**

The Authority aims to minimise waste from all new developments and activities, maximise the use of recycled materials and promote a reduction in the amount of solid waste going into landfill.

### **Waste and recycling**

During 2007–08:

- 524 tonnes of public domain waste was generated, of which 88% or 461 tonnes was recycled
- 668 tonnes of office waste was generated, of which 587 tonnes was recycled
- 340 tonnes of waste from landscape maintenance works was generated, of which 118 tonnes was recycled
- 46 tonnes of waste from other public domain maintenance operations was generated, of which 45 tonnes was recycled
- 2.56 tonnes of paper waste was recycled from the security bins at 7 Figtree Drive.

The Authority used 219 toner cartridges during the year. All used cartridges were collected by the NSW Cancer Council, which then sold them to a toner recycling company. The proceeds of sale were retained by the Cancer Council.

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A trade-in was agreed for the rollout of 150 staff and operational computers, reducing the cost of the project and saving on labour charges. All other obsolete computer equipment was sold at auction.

### **Leachate management**

The Authority has developed a new Remediated Lands

Operational Plan, which has been submitted to the NSW Department of Environment and Climate Change for approval. The Plan sets out how the Park's 10 remediated landfills will be managed to protect the environment and ensure public safety.

The majority of waste liquid (leachate) generated by these landfills is pumped to a commercial waste treatment facility close to the Park for treatment. During 2007–08, some 53,170 kilolitres of leachate was treated.

Leachate from the site of a former gas works facility at Wilson Park is treated in bioremediation ponds where bacteria degrade hydrocarbons to water and carbon dioxide. In 2007–08, contaminated groundwater containing 53 kilograms of benzene, toluene, ethylbenzene and xylene and 31 kilograms of poly-aromatic hydrocarbons was treated in the bioremediation ponds.

### **Transport**

The considerable investment in public transport infrastructure at the Park has minimised private vehicle use and resulted in a reduction in greenhouse gas emissions and air pollution.

In 2007–08, following negotiations with the Ministry of Transport, the Authority secured the introduction of new bus services from Chatswood and Hurstville to the Park during peak periods, and an increase in the frequency of bus services from Strathfield and Lidcombe to the Park. These improved services are valuable resources that support the Park's growing working, residential and student populations.

The Authority also worked with CityRail towards increasing the frequency of the rail service connecting Lidcombe and Sydney Olympic Park.

### Pollution control

In 2007–08, the Authority maintained its strong focus on environmental awareness and due diligence to minimise any environmental impacts associated with air, noise, light and water related to ongoing projects. There were no significant issues relating to the Authority's activities during the reporting period.

A lighting audit was conducted across the parklands to identify any ecologically sensitive areas subject to light spill. Lighting needs, design and orientation are being reviewed where light spill was identified.

### Biodiversity

The Authority developed a new Biodiversity Management Plan in 2007–08. The Plan consolidates various legal requirements and policies applicable to biodiversity conservation at the Park, guides implementation of management actions, and establishes conservation measures and reporting mechanisms.

Biodiversity management and enhancement activities during 2007–08 included:

- ongoing habitat and weed management activities by teams of trained landscape and bush regeneration contractors
- botanical surveys of Coastal Saltmarsh and Sydney Turpentine Ironbark Forest endangered ecological communities (conducted every five years)
- planting of approximately 4,700 plants grown from seed collected in the remnant forest of Newington Nature Reserve
- rehabilitation of two constructed ponds, designed as breeding habitats for the endangered Green and Golden Bell Frog
- rehabilitation of approximately 3,000 square metres of banks at Haslams Creek to encourage the self-regeneration of coastal saltmarsh, an endangered ecological community
- installation of a new tidal gate at the Waterbird Refuge to allow tidal waters from Homebush Bay to enter the wetlands each day. This has enhanced the exposed mudflats and the surrounding endangered saltmarsh plant community. Increasing numbers of waterbirds have been observed feeding and roosting in the shallows and mudflats
- installation of a rock-ramp fishway at the lower end of Boundary Creek, above Lake Belvedere, to provide a habitat for native fish (see case study on page 23).

### Mosquito management

The Authority's program of mosquito management continued under the direction of the Department of Medical Entomology. Aerial treatments were applied to Newington Nature Reserve wetlands on five occasions, and ground-based treatments were applied in the Badu Mangrove wetlands on three occasions. Both types of treatment used a bacterial larvicide. The larvicide was successful in reducing larval densities in these two areas.

### Public open space

The Park includes more than 500 hectares of public open space, including 425 hectares of diverse parklands and spaces for organised and unorganised sport and recreation; wetlands and woodlands that provide habitats for protected fauna species and plant communities; and significant heritage buildings and landscapes.

The Authority's primary reference document for public open space management is the Parklands Plan of Management, which guides its future development, management and use.

The Authority continues to develop new facilities and programs to cater for the growing demands of a local and regional population, while managing the significant increase in parkland visits to ensure safe use and

enjoyment. The Authority's aims are to provide a quality experience for visitors and protect the natural and cultural heritage values of the site.

In 2007–08, 515 short-term licences were issued for restricted activities in the parklands.

### Raising environmental awareness

The Authority holds training programs and workshops to raise environmental awareness among contractors, students and visitors. Some of these activities are described below.

- More than 130 contractors participated in ecology induction training in 2007–08. The training is provided to those working in environmentally sensitive areas and is followed up with onsite meetings and discussions and regular newsletters, audits and inspections.
- Three Wetlands Education and Training (WET) workshops were held during the year and attracted 160 environmental professionals who have an interest in or are responsible for the management of wetlands.
- Twenty-one specialised technical tours and workshops were conducted for a variety of local and international professional delegations.

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- The majority of these tours and workshops focused on particular environmental management and sustainability issues and included site tours of relevant parklands precincts.
- Approximately 19,000 school students undertook hands-on environmental excursions to meet curriculum requirements in the key learning areas of science, biology, geography and human society in its environment.
- Parklands tours and interpretive programs were conducted throughout the year, providing visitors with information about the Park's environment.
- The Waterbird Refuge tidal gate was officially opened in early February as part of World Wetlands Day celebrations.
- The Bird Discovery Centre, operated by Birds Australia, opened in May 2008. It provides visitors with information, courses and displays on bird conservation.
- Volunteers from the Cumberland Bird Observers Club, Frog and Tadpole Study Group and Australian Herpetological Society continue to assist with ecological monitoring programs.
- Authority staff served as members on regional natural resource management committees on weed, biodiversity, catchment management and Parramatta River estuary management.
- Authority staff gave professional talks at various environmental conferences and seminars.

#### Environmental compliance

The Authority holds a number of environmental and scientific licences and permits. There were no instances of non-compliance with these licences during 2007–08.

#### Environmental incidences

Dead fish were found in waterways in both the Boundary Creek and Haslams Creek systems during 4–26 February 2008. More than 100 dead fish were found on six separate occasions; smaller numbers of dead fish were found intermittently throughout this period.

These incidents were reported to the NSW Department of Environment and Climate Change and the NSW Department of Primary Industries. Fish, water and sediment samples were taken to investigate possible causes of the fish deaths.

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Based on sampling results, it was determined that the fish died due to low levels of dissolved oxygen, possibly exacerbated by high turbidity and/or high faecal coliform levels. These conditions

often occur after heavy rain when large amounts of organic matter and sediment are washed into waterways. The fish deaths closely followed heavy and extended rainfall within the catchment that generated high volumes of urban runoff.

Management of two noxious aquatic weeds is continuing.

#### Noise complaints

There were no significant issues related to noise emissions from the Park during 2007–08. This was achieved through a number of measures that were conditioned with respective event approvals. These measures included:

- a documented Noise Management Plan for each specific event
- restrictions on maximum noise levels and curfew times for night events
- stage and PA placement in relation to sensitive noise receivers
- conducting of professional noise monitoring for events
- notifying nearby residents and providing event details and a Noise Hotline telephone number.

In addition to specific measures put in place for events, the Authority has been liaising with the NSW Department of Environment and Climate Change regarding a precinct-wide approach to managing noise emissions. This will link in with the Authority's Master Plan 2030 and is expected to be completed by mid-2009.

#### Future directions

As the Park increases in size and visitation numbers, the Authority is conscious of the need to ensure there is no significant harm to the Park's environs, which may threaten existing natural resilience levels.

In the next year, the Authority is planning to:

- explore alternative leachate treatment and reuse options (instead of the treatment plant and sewer processes), to enhance the environmental sustainability of the landfill remediation process and reduce ongoing costs
- participate in the NSW Department of Environment and Climate Change's Sustainability Advantage Program to enhance the organisation's sustainability performance. By participating in this program the Authority will be better placed to meet the NSW Government's 2020 carbon neutral target
- develop a low-carbon strategy that addresses how it intends to meet the Government's carbon neutral targets.

## *Case study: Boundary Creek Fishway*

The new Boundary Creek Fishway was designed to help rehabilitate the upper reaches of Boundary Creek and restore it as a feeding, breeding and nursery area for native fish such as mullet, gudgeon and eels.

The fishway is made up of carefully designed pools separated by strategically positioned rocks. This allows creek water to form a gentle gradient that can be used by fish in their passage upstream from Lake Belvedere into Boundary Creek.

