

## **Part 5—Environment and heritage**



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## Introduction

DPS places a high priority on its responsibilities for management of the environmental and heritage aspects of Parliament House.

Environmental reporting information in this part is structured using the core Global Reporting Initiative (GRI) environment performance indicators ([www.globalreporting.org](http://www.globalreporting.org)).

DPS manages and reports on the environmental and heritage aspects for the whole of Parliament House. In some cases this includes information from the Department of the Senate and the Department of the House of Representatives.

## Overview

DPS recognises our responsibility to properly manage Parliament House, its resources and facilities in a way that supports sustainable development objectives, and promotes the public interest.

Parliament House was designed to last 200 years, is a major national and international tourist attraction and is an eminent work of architecture. It embodies significant heritage values, both socially—as a national icon reflecting the Australian people's faith in the future of democracy—and physically, as a functional work place and the home of the Australian Parliament.

Parliament House provides a home for the Australian Parliament and is also a place of major visitation and education. These functions mean that it is a large operation which consumes resources and produces waste. DPS aims to ensure the vital functions of Parliament House are maintained, while also minimising resource consumption, minimising waste production and maintaining the heritage value of the building.

## Strategic plans

In November 2008, the DPS Water Strategic Plan 2007-2010 and DPS Energy Strategic Plan 2007-2010 were reviewed. Progress against objectives was mixed. The review strengthened the plans by assigning roles and responsibilities and adjusting timelines. These plans identify priorities for managing energy and water consumption, taking into account stakeholder expectations.

The DPS Waste Strategic Plan 2008-2011 was finalised in January 2009. Its objectives are:

- a) reducing waste generated and maximising the proportion recycled;
- b) designing purchasing processes, tenders, contracts, construction and refurbishments to meet targets;
- c) ensuring waste disposal, collection and off-site transportation processes are efficient and sustainable; and
- d) fostering greater awareness of waste management procedures (including hazardous waste disposal) among building occupants.

We were unable to finish our Heritage Strategy as expected in 2008-09. It is still being developed and is under review.

## Sustainable purchasing practices

The DPS Chief Executive's Procedures require procurement decisions to take into account the total resources required to develop, acquire, own, operate and dispose of departmental purchases.

## Heritage considerations

The aesthetic values of the building—such as building materials, equipment, furniture items and light fittings are given careful consideration to ensure both quality and alignment to the original design intent in all asset replacement projects. DPS Heritage Management staff use the Central Reference Document as a guide in understanding the significant values of the various aspects of the building.

## Environmental considerations

All DPS purchases require consideration of the Department of Environment, Water, Heritage and the Arts (**DEWHA**) guidelines on purchasing.

The DPS Energy Strategic Plan 2007-2010 and DPS Water Strategic Plan 2007-2010 require all tender documents to seek innovative energy and water saving solutions. They also require us to consider products that have the highest energy and water efficiency ratings, while ensuring value for money principles are met.

Examples of contracts in 2008-09 where environmental considerations have been incorporated are:

- a) the construction of the child care centre;
- b) refurbishment of the staff dining room;
- c) engineers panel arrangements;
- d) architects panel arrangements; and
- e) mobile phone contract.

## Communication and promotion

### Heritage

DPS Heritage Management staff undertake a range of activities to promote the significance of the architectural and heritage values of Parliament House.

In 2008-09 we:

- a) provided advice to Parliament House Project Managers on technical heritage aspects of their projects—for example, the child care centre and the Staff Dining Room;
- b) provided advice to other Government agencies regarding heritage management plans and strategies (ensuring overlapping interests are addressed) for example the *National Capital Authority's Parliament House Vista Heritage Management Plan* and the *National Capital Authority Lake Burley Griffin Heritage Management Plan*;

- c) provided numerous briefings to contractors engaged to undertake capital works projects in the building to ensure an awareness of potential heritage impacts, constraints and legislative requirements;
- d) developed a series of internal interest papers, which were published in the internal newsletter. Topics included the meaning of heritage, how it affects the way work is carried out in Parliament House, the design intentions of the building and the similarities and relationships with other prominent buildings around the world; and
- e) provided heritage and architecture presentations to special interest groups and at formal functions—for example, the Study of Parliament Course.

## Environment

The environmental information located on the Parliament House web site, <http://www.aph.gov.au/environment>, is updated quarterly to provide information on progress against water, energy, emissions and waste targets.

Advice on environmental management is provided in information circulars to building occupants. Recycling promotional material was also distributed at a promotional stand which was set up near the Staff Dining Room in June 2009.

A promotional stand, maps, brochures, newsletter articles, lunchtime talks and a free breakfast were provided for National Ride to Work Day on 14 October 2008. This was the first time that Parliament House has participated.

Newsletter articles on topical environmental issues are published in the *DPS Dispatch*, our staff fortnightly newsletter. Some of the topics covered in 2008-09 included articles on travelling to work, participation in Earth Hour and “buying green”.

Site tours and environmental training sessions are other ways DPS communicates with diverse audiences about environmental management practices.

## Legal requirements

### Heritage

DPS is required to meet heritage obligations under two acts.

- a) Section 195AT (2A) of the *Copyright Amendment (Moral Rights) Act 2000* requires DPS to:
  - i) provide the “author” with a written notice stating the intention to carry out a change to the building; and
  - ii) provide access to the “author”, if requested, to make a record of the building in its present state and/or to consult in good faith with DPS about the changes to the building.

These notifications are issued by DPS Building and Security Projects section, in consultation with Heritage Management staff.

- b) The *Environment Protection and Biodiversity Conservation Act 1999* (the **EPBC Act**) requires DPS to prepare a Heritage Strategy and a register of the heritage values of Parliament House. The aim of the strategy will be to achieve the conservation of Parliament House and maintain its cultural heritage significance consistent with its ongoing operation as the home of the Parliament and as a key component of the parliamentary zone.

### Environment

DPS must report on elements of environmental performance in its Annual Report to meet requirements in EPBC Act. DPS also provides EPBC Act reporting for the Department of the Senate and the Department of the House of Representatives.

DPS also reports under:

- a) Energy Efficiency in Government Operations (**EEGO**) policy;
- b) National Environmental Protection Measures (**NEPM**) Act;
- c) National Pollution Inventory (**NPI**); and

- d) National Packaging Covenant (**NPC**).

### Ecologically sustainable development

Paragraph 516A(6)(a) of the EPBC Act requires DPS to report on how the activities of the parliamentary departments, including their administration of legislation, accords with the principles of ecologically sustainable development (**ESD**). The goal of ESD is defined as:

*... “development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.”*

The parliamentary departments do not manage, coordinate or administer legislation that impacts directly on ESD. However, the Senate and the House of Representatives carry out law-making and policy review roles at Parliament House, which may have the potential to support ESD principles.

To support Senators and Members and their staff in their parliamentary duties, DPS provides information and research services. One area of expertise is the Science, Technology, Environment and Resources Section of the Research Branch in the Parliamentary Library. The Parliamentary Library’s collections provide comprehensive environmental resources. Together, these services and resources can assist Senators and Members to assess how their decisions impact on ESD.

### Contributions of outcomes

Paragraph 516A(6)(b) of the EPBC Act requires DPS to report on how the outcomes specified in an Appropriations Act for the reporting period contribute to ESD.

The 2008-09 outcomes of the parliamentary departments, specified in the *Appropriations Acts (Parliamentary Departments)* do not directly contribute to ESD. However, Output 3.1 in the *Department of Parliamentary Services Portfolio Budget Statements 2008-2009* sets energy and water consumption, greenhouse gas emissions and recycling targets. These outcomes require DPS to manage the potential impact of parliamentary operations on the environment.

## Identification, management and monitoring of environmental impacts

Paragraphs 516A(6)(c-e) of the EPBC Act require reporting on the effects of the activities of the parliamentary departments on the environment, the measures in place to manage environmental impacts and how we ensure these measures are reviewed and improved.

Activities and operations at Parliament House, particularly maintenance, engineering, landscape, computing and catering services have the potential to affect the environment, as do office based activities. These result in:

- consumption of electricity, natural gas, diesel fuel, water, paper and other resources;
- greenhouse gas emissions; and
- generation of waste.

## Heritage Performance

### Design Integrity Index 2008-09

The Design Integrity Index (**DII**) is the mechanism used to measure, review and report on DPS's performance with regard to design integrity and heritage management. In addition, the DII is the methodology adopted to assess all projects

*Figure 42—Design Integrity Index score by area*

Zone	Score (%) 2007-08	Score (%) 2008-09
Public and Ceremonial areas	93.4	95.9
House of Representatives Wing	93.2	92.1
Senate Wing	94.5	95.4
Ministerial Wing	90.1	93.0
Committee Rooms and Library	92.4	90.8
Facilities Areas and Tenancies	82.8	83.0
Circulation and Basement Areas	85.6	87.2
Exterior: Landscape and Roadways	91.8	92.8
<b>Total Score</b>	<b>90.5</b>	<b>91.8</b>

completed within a reporting year for their consistency with the original design intent of Parliament House.

For the purpose of measuring the DII, Parliament House is divided into eight zones.

In each zone, the components of language, symbolism, design order, change and the overall impression are examined and given a score from one to five. The outcomes for each component are added together to obtain a zone score. The zone scores are added to obtain a building score. This score is then expressed as a percentage of the total possible score. The DII is prepared every year, however a comprehensive building-wide review is only undertaken on a five yearly basis.

The 2008-09 DII is a full five yearly assessment of all eight DII zones. The yearly assessment focus on areas that have been changed in the reporting period. The DII for 2008-09 is assessed at 91.8%. The 2008-09 DII results indicate a slight rise in the DII from the 2007-08 year and remain above the ongoing target of 90%.

In 2008-09 most zones had improved scores, indicating well integrated physical changes, building maintenance and presentation that align with the building's original design intent.

Activities contributing to improved scores included maintenance and restoration work of the furniture collection (in the Senate Wing), substantial

maintenance work undertaken in the post election period (in the Ministerial Wing), the reinvigoration of circulation areas, new art acquisitions and good management of the Parliament House Furniture Collection (in Public and Ceremonial areas).

Building-wide issues that adversely affected the overall DII rating included inactive water features (which were decommissioned to enable Parliament House to comply with ACT stage 3 water restrictions), inadequate cleanliness and presentation of building facades (also due to Parliament House complying with water restrictions), minor maintenance issues, and the existence of electric and data cables in Committee Rooms and office areas.

## Environmental performance

### Water

Water use is a significant environmental aspect of Parliament House operations, particularly because of our commitment to comply with ACT Government water restrictions. Water conservation has had an impact on the look of the Parliamentary Precincts, and how we carry out cleaning and maintenance activities.

Improving water management is challenging because efficiency was not a particular focus of the original design and fit-out of Parliament House. The DPS Water Strategic Plan 2007-2010 has

formalised our priorities in this area.

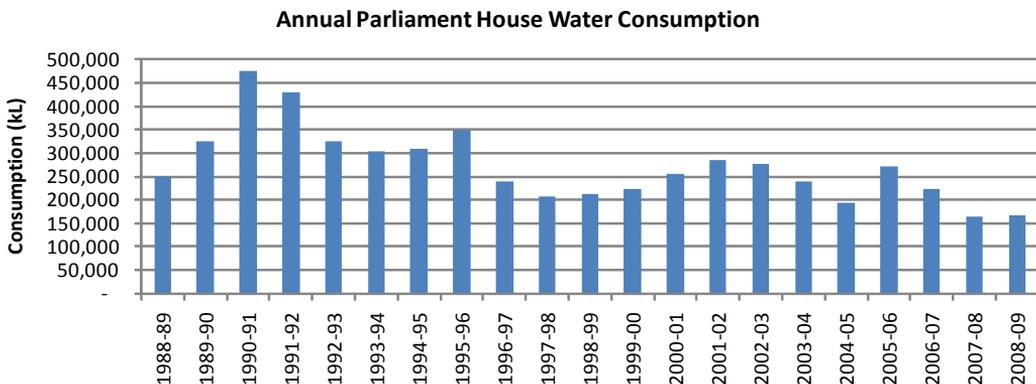
Reduction in reliance on potable water, through the use of recycled water or stored stormwater, continues to generate considerable interest nationally. While committed to investigating both possibilities, DPS concentrated on reducing overall consumption in the 2008-09 year.

Late in 2008-09 a consultant was engaged to undertake an audit of water use at Parliament House. A focus of the audit includes collection information to assist with determining where water is used and variability in demand. The audit should also inform the department on alternative water sources such as the use of recycled water and stored stormwater. The audit will be conducted in the first half of the 2009-10 year.

### Water consumption

Water consumption for 2008–09 was 167,662kL. This was consistent with the previous year’s consumption, in which ACT stage 3 water restrictions also applied. Consumption was 10% less than the ACT stage 3 water restriction target of 186,650kL and well within the portfolio budget statements target of 240,000kL. Water saving initiatives, related to ACT stage 3 water restrictions, resulted in this year’s consumption being almost the lowest on record, as seen in Figure 43. The slight increase over 2007-08 was due to an election being held, which resulted less internal water use in that reporting period.

Figure 43—Annual water consumption





# Caring for our Parliament House landscape : a case study

Trent is one of the team of DPS landscaping staff who experience the full seasonal extremes offered by the Canberra climate.

***“Yep, it gets pretty cold outside in winter. That’s about the only time when I wouldn’t say my job is one of the best!”***

Trent started working at Parliament House over ten years ago as an apprentice horticulturalist before becoming a full-time staff member.

***“After my apprenticeship I worked as a greenkeeper in Canada, then came back and applied for this job—it’s a great job, so I’m still here!”***

The focus of Trent’s work now is on the Parliament House turf. He is heavily involved in the trial of the couch grass that is visible on the Senate playing field. While the grass colour gives the impression of being under stress, it is in a dormant stage which means that it requires no water in winter. The couch moves out of dormancy soon and becomes green during spring. It then looks much better for the summer.

***“When the temperature rises the grass will really take off and require mowing at least a couple of times a week. Add to that the fact that it knits together really well to make a great surface. So this summer it should play well, look good and saves water.”***

In explaining the job he does, most people are interested in how the stripes on the grass are achieved.

***“A roller on the back of the deck of the mower flattens the grass one way going down the ramp and the other way going up, and the light does the rest”.***

Figure 44 shows a breakdown of water use during 2008-09. "Other building water" includes the cold water used in bathrooms, kitchens and the swimming pool. The "flushometer" consumption is the water used for flushing toilets and urinals.

**Water restrictions**

ACT stage 3 water restrictions were in place for the full year and required a reduction in water use of 35% over the equivalent season in 2005-06. For DPS, this meant a target of 186,650kL per annum. Figure 45 shows progress in meeting this target since the introduction of restrictions on 16 December 2006.

**Water saving initiatives**

**Savings in the landscape**

The most significant water savings have been made in the Parliament House landscape. For the third year, overall irrigation was restricted, based on condition monitoring of soil moisture levels.

An exemption to water restrictions was granted on 2 December 2008 to allow the planting and irrigation of couch grass on the sports field and one viewing strip. The exemption was granted based on recognition that establishing drought tolerant grass species supports long term water reduction objectives.

Figure 44—Breakdown of water use during 2008-09

**Water features and the forecourt pond**

The 20 external water features in and around Parliament House remained turned off and empty during 2008-09, except for the forecourt pond.

In May 2008, for the 20<sup>th</sup> anniversary of Parliament House, the forecourt pond was filled with recycled water trucked in from the Lower Molonglo Water Quality Control Centre. Using recycled water ensured that DPS did not contravene ACT stage 3 water restrictions.

During 2008-09, a 40kL tank was installed beneath the forecourt pond in the public carpark. The tank stores excess recycled water delivered by truck and captures stormwater for use in the pond. DPS plans to undertake further projects in 2009-10 using local rainfall collection.

**Energy**

Parliament House is a major energy consumer. An energy audit was undertaken in 2008-09 and has helped identify priorities for energy improvements to assist us to deliver the 10% reduction in energy consumption we committed to in our 2007 Energy Strategic Plan.

Altogether the recommendations of the energy

**Water use at Parliament House 2008-09**

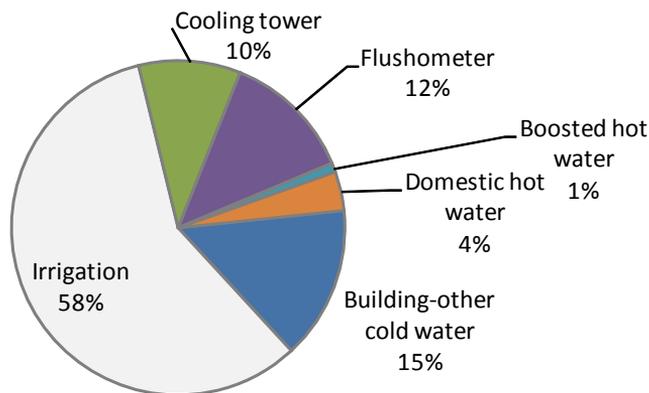
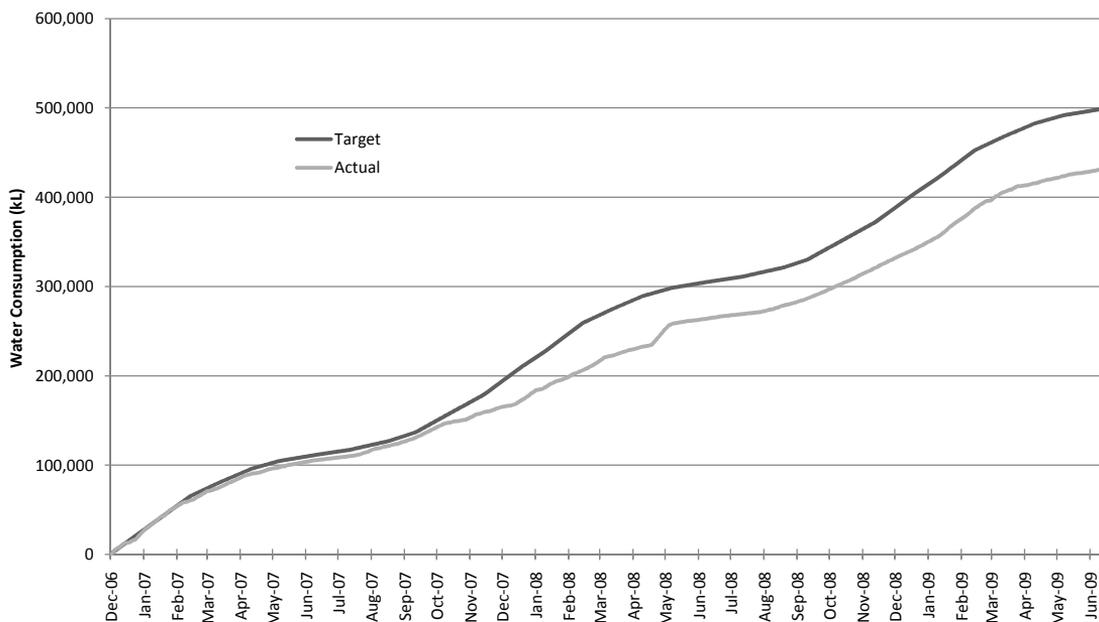


Figure 45—Actual water use compared to Stage 3 restrictions target



audit would exceed our energy reduction objective, although there will need to be staged implementation of the recommendations, and some will require further investigation to confirm their feasibility. We have begun implementing several recommendations, and are planning others including:

- a) replacement of power factor equipment;
- b) low-load chillers system project;
- c) installation of energy efficient lights (office and carpark);
- d) reduced numbers of computing servers project;
- e) removal of instant boiling water units; and
- f) trigeneration and solar power concept trials.

## Energy consumption

DPS’s energy profile consists of energy consumed at Parliament House and transport energy, including both passenger vehicles and maintenance vehicles (“other transport”). Figure 46 summarises this energy use in 2008-09.

Energy consumption in Parliament House in 2008-09 was the second lowest recorded since the building opened in 1988. There was an increase on 2007-08 due to that year being an election year with fewer sitting days. The gas consumed during 2008-09 is consistent with previous non-election years.

Energy consumed in 2008-09 was 138,898 GJ, an increase of 5% on the 132,718 GJ consumed the previous year. Passenger and other transport energy use decreased slightly.

Electricity and natural gas consumption at Parliament House comprised 98%—136,351 GJ—of total energy use. Gas is used for heating, domestic hot water and in kitchens. Electricity powers a variety of services including office lighting, mechanical services, lifts, chillers, computer equipment, central waste plant and boosted hot water heating. Figure 47 shows the downward trend in electricity and gas consumption since the building opened.

## Vehicles

Parliament House’s passenger vehicle fleet consisted of 41 leased vehicles in 2008-09, including 35 SES vehicles. Eight vehicles (seven

SES) scored higher than 10 in the Green Vehicle Guide.

## Energy saving initiatives

Initiatives to conserve electricity included the continual monitoring and adjustment of the electrical plant load, implementing more energy-efficient lighting schemes, and reduced airconditioning during summer.

### Chilling and boiling water

During 2007-08, a review of drinking water supply identified several locations where kettles could

provide boiling water more efficiently than instant boiling water units and where water chillers were unwarranted. Kettles were distributed to all Senators' and Members' suites during 2008-09. It is proposed to remove boiling water units during 2009-10 in these and relevant DPS areas.

### Lighting

Trials continued to identify alternatives to incandescent lamps, including those in offices and general circulation areas.

A project to replace carpark lighting commenced in 2008-09, and is due to be completed in the 2010-

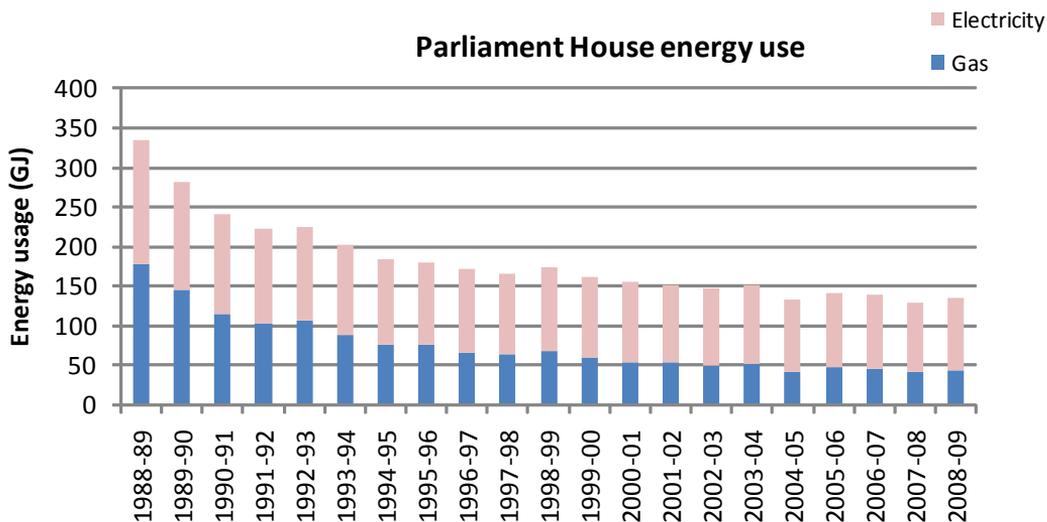
Figure 46—Energy consumed at Parliament House and by transport

Category	Energy Consumption (GJ)		
	2006-07 <sup>29</sup>	2007-08 <sup>30</sup>	2008-09
<b>Parliament House building:</b>			
Electricity: non-renewable source	71,391	66,482	69,290
Electricity: renewable source	23,575	22,160	23,096
Natural gas	45,382	41,015	43,522
Diesel	480	200 (393)	443
Total (for building)	140,828	129,856 (130,050)	136,351
<b>Passenger vehicles:</b>			
Automotive diesel	-	41	141
Automotive gasoline (petrol)	2,007	1,556	1,206
E-10 (biofuel)	202	513	655
LPG	125	111	93
Total (for passenger vehicles)	2,334	2,221	2,095
<b>Other transport:</b>			
Automotive diesel	319	282	292
Automotive gasoline (petrol)	112	124	114
LPG	41	41	46
Total (for other transport)	472	447	452
<b>Total energy consumption</b>	<b>143,634</b>	<b>132,522</b>	<b>138,898</b>

29. 2006-07 electricity consumption figures include 982GJ (903GJ non-renewable source, 79GJ renewable source) related to a DPS tenancy at West Block. The tenancy ceased from 1 July 2007.

30. The amount of diesel used at Parliament House reported in 2007-08 was over-read, and has been corrected from 393GJ to 200GJ in this table. This has also affected the total 2007-08 energy consumption figure, which has been reduced from 132,718GJ to 132,522GJ.

Figure 47—Annual electricity and gas consumption (in 000's of GJ)



11 financial year. The revised lighting scheme and lamp types will use substantially less energy than the existing scheme.

Energy efficient lighting design is incorporated into all new construction work undertaken in Parliament House. In the 2008-09 year this included major projects such as the child care centre and the Staff Dining Room Refurbishment.

### Earth Hour

Parliament House again participated in Earth Hour on 28 March 2009. There was an approximate 10% reduction in energy use compared to the same hour on the previous weekend.

All external lights were switched off except for those lights required for safety and security purposes—for example, lights on the flagpole.

## Recycling and waste management

### Waste generation and recycling

The amount of general waste (excluding construction waste) sent to landfill in 2008-09 was 385 tonnes, which is 18% less than the 471 tonnes sent the previous year. The quantity of recycled

paper waste decreased by 16%, from 363 tonnes in 2007-08 to 306 tonnes in 2008-09. Both the decreased waste to landfill and decreased waste paper to recycling statistics recorded for 2008-09 are partly attributable to business activities returning to normal after the November 2007 election—an election provides an opportunity for an increase in maintenance work and office “clean-ups” throughout Parliament House, and a change-of-government election means a much higher than normal increase in paper sent to recycling as offices are vacated. Figure 48 shows trends since 1998.

### Landscape waste

The preferred method for disposing of green waste at Parliament House is to chip the material on-site and re-use it in the landscape. The amount of chipped material is not recorded. When waste generated in the landscape cannot be chipped on-site—due to volume, composition or resources—then the material is taken off-site to be recycled or to landfill.

During 2008-09, 187 tonnes of landscape waste was generated from the Parliament House landscape. Only 3.2 tonnes was sent to landfill during the year. This was mixed rubble and soil from a small project to construct a ramp to a soil bin in the ministerial car park which could only be disposed of at the landfill.

Figure 49 shows annual trends in landscape waste and recycling rates. The peak in landscape waste during 2005-06 was because of a turf replacement project on the Grass Ramps.

## Waste management initiatives

### Recycling facilities and co-mingled recycling

DPS provides facilities to recycle paper, cardboard, printer cartridges, lamps, used oil, grease, batteries, landscape and metal waste. From 4 February 2008, DPS expanded these facilities to provide building occupants the option of recycling co-mingled wastes, so 2008-09 was the first full year that the voluntary co-mingled recycling scheme was available.

At 30 June 2009, 96 tonnes of co-mingled waste had been collected and recycled, compared to 56 tonnes the previous year. An objective of the DPS Waste Strategic Plan is to make the recycling scheme mandatory.

### Other waste initiatives

Putrescible waste (ie vegetable, fruit, meat, other food scraps and handtowels) from Parliament House currently goes to landfill. In consultation with the waste contractor DPS is considering options for recovering and recycling putrescible

waste.

DPS is now procuring 100% recycled content office paper, at a cost increase of approximately 27%. We aimed to reduce paper use by 21% to offset the additional cost. In the end we achieved a reduction of 13%, or a little over 1,000 reams of paper. Initiatives such as the new Electronic Document Records Management System provide the potential for further reductions in paper use. Regular reporting to branches on paper use coupled with reminders of methods to save paper such as double sided printing and reducing the number of printed copies of documents also helped to reduce paper use, and will continue.

## Emissions and effluents

### Greenhouse gas emissions

During 2008-09, 22,965 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) were generated from energy consumption at Parliament House. Greenhouse emissions are described in Figure 50.

Figure 51 shows annual greenhouse gas emissions since Parliament House opened in 1988. Purchasing 25% of our electricity from renewable sources has helped to achieve continuing record low emissions, although the low energy consumption of the 2007-08 election year remains the best ever.

Figure 48—Annual waste disposed to landfill and recycled

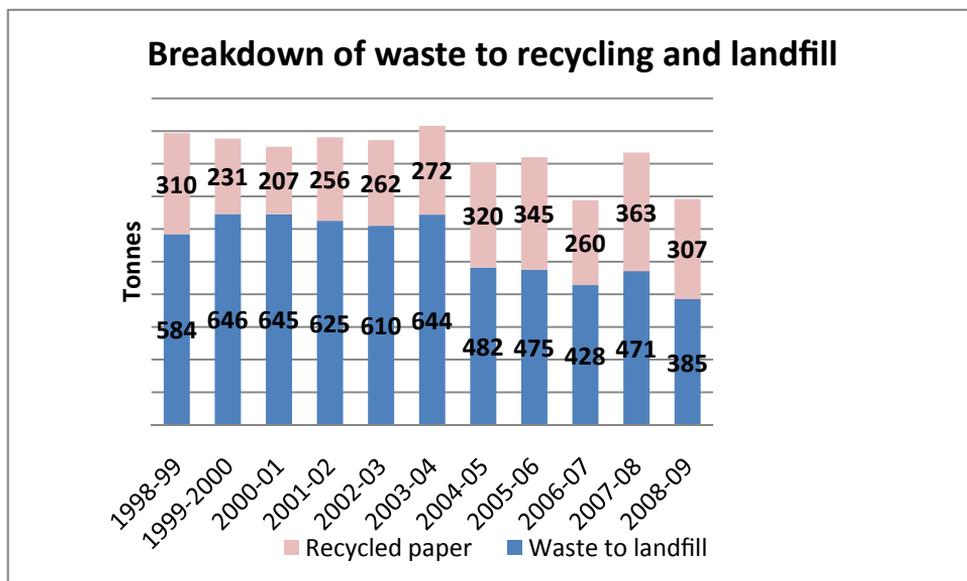
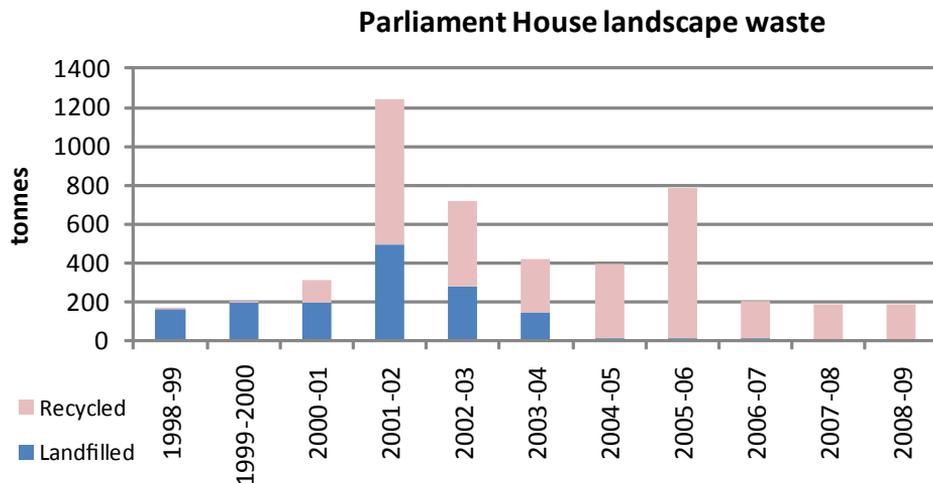


Figure 49—Annual quantity of landscape waste



DPS’s membership of the Greenhouse Challenge Plus program ceased when the project was discontinued on 1 July 2009. DPS had been a member since 1997.

### Ozone depleting substances

Parliament House uses refrigerants that contain ozone depleting substances. These are used for:

- i) chillers, which provide cooling for the building’s airconditioning;
- ii) cool rooms;
- iii) freezers; and
- iv) refrigerators.

Figure 52 shows the type and “ozone depletion potential” of refrigerants purchased in 2008-09.

### Air pollutants—NOx, SOx and particulates

The combustion of natural gas for heating, hot water and cooking purposes generates oxides of nitrogen (NOx), oxides of sulphur (SOx) and other air pollutants. Each year, DPS reports on these emissions to the National Pollution Inventory ([www.npi.gov.au](http://www.npi.gov.au)).

Figure 53—Emissions of air pollutants from natural gas consumption lists these emissions for 2008-09. Parliament House gas combustion increased by 6% in 2008-09, and as a result air pollution emissions increased in proportion.

### Discharges to water

Sewage from Parliament House is required under a trade waste agreement to be equivalent to domestic strength. To ensure these requirements are met, there is a:

- a) grease trap on each kitchen drain;
- b) coalescing plate filter on the vehicle wash down bay (to prevent oil from entering the sewer); and
- c) system to remove paint solids from paint brush washing facilities before they enter the sewer.

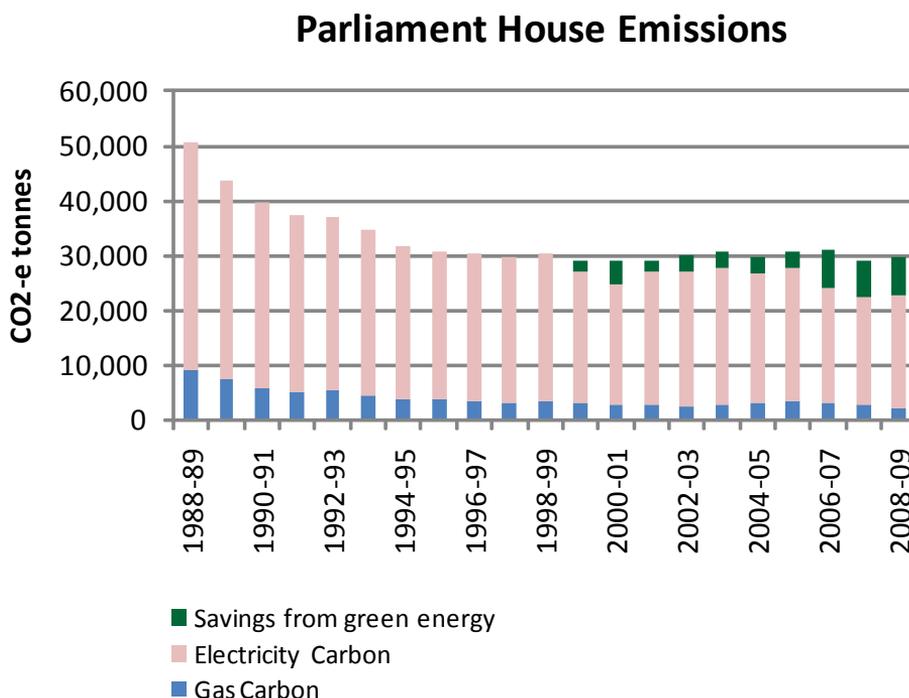
### Significant spills of chemicals, oils, and fuels

In 2008-09 there were no significant spills of chemicals, oils or fuels from Parliament House.

Figure 50—Parliament House emissions (direct and indirect, including SES and operational vehicle fleets)

Emission category	Comment	2006-07 (tonnes CO <sub>2</sub> e)	2007-08 (tonnes CO <sub>2</sub> e)	2008-09 (tonnes CO <sub>2</sub> e)
Scope 1	Emissions at the source of the activity (eg emitted from gas and fuels used at Parliament House and by vehicles)	2,587	2,318	2,436
Scope 2	Emissions generated elsewhere (eg by the power plants that produce the electricity used at Parliament House)	17,129	16,520	17,253
Scope 3	Indirect emissions, meaning emissions generated during the delivery of electricity, gas and fuel to Parliament House, which DPS has little control over.	4,307	3,916	3,276
Scopes 1 & 2	DPS has direct responsibility for these emissions.	19,716	18,838	19,689
Scopes 1,2 & 3	Direct and indirect emissions.	24,023 <sup>31</sup>	22,754	22,965

Figure 51—Annual greenhouse gas emissions from electricity and gas



31. The emissions reported in 2006-07 were 24,290, not 24,023 tonnes CO<sub>2</sub>e. The difference is due to a change in the emissions factor that calculates the CO<sub>2</sub>e associated with fuel consumption.

Figure 52—Type of refrigerant use

Refrigerant	Ozone Depletion Factor	Global Warming Potential Factor
R404A	0	3,260
R409A	0.048	1,560
SPE34E	0	1,280
R134A	0	1,300
R410A	0	2,000
R22	0.034	1,780

Figure 53—Emissions of air pollutants from natural gas consumption

Air pollutants	2007-08 (kg)	2008-09 (kg)
Carbon monoxide	1,680	1,782
Oxides of nitrogen	1,993	2115
Particulate matter (PM10)	148	157
Particulate matter (PM2.5)	148	157
Total Volatile organic compounds	110	116
Sulphur dioxide	32	34
Polycyclic aromatic hydrocarbons	<1 (0.013)	<1 (0.014)