

# Part 5

## Environment

### Introduction

DPS places a high priority on our responsibilities for management of the environmental aspects of Parliament House in a way that supports sustainable development objectives and promotes the public interest.

DPS manages and reports on the environmental 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

Parliament House provides the home for the Australian Parliament and is also a major attraction for visitors and educators. 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 operate effectively, while minimising resource consumption, and waste production, and maintaining the heritage value of the building.

There are three key activities for DPS in delivering its environmental responsibilities.

- We collect data about environmental performance.
- We develop forward plans to improve our environmental performance.
- We implement programs and projects to improve our environmental performance.

This part of the Annual Report:

- (a) sets out the legal requirement for reporting on environmental performance;
- (b) summarises our overall plans;
- (c) summarises our 'whole of Department/whole of Parliament' environmental activities; and
- (d) details our environmental performance and activities related to water usage, energy efficiency, waste production, and gaseous emissions.

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

In reviewing environmental performance for Parliament House, there are two important realities.

Firstly, the Canberra region has had a long period of sustained low rainfall. This has provided considerable impetus to reduce water consumption, within the building and for landscape purposes around the building. These conservation measures have been largely successful, but further savings can be achieved by altering the internal plumbing of the building and by changing much of the lawn around Parliament House to lower water consumption varieties, such as couch grass.

Secondly, we had considerable success in reducing energy consumption over the first two decades of the life of the building, but our high-energy systems are now over 22 years old. They are beginning to wear out, and are becoming less efficient. Further improvements in energy performance are feasible, but these will require major investment in new technologies, especially for our central energy systems and related heating, ventilating and air conditioning systems. Trigeneration technology appears to be very promising, and will be a key focus in the coming years.

## Legal requirements

'The annual reports of Commonwealth departments, Parliamentary departments, Commonwealth authorities, Commonwealth companies and other Commonwealth agencies must under Section 516A of the *Environment Protection and Biodiversity Conservation Act 1999*, all now include a report on environmental matters in their annual reports'.  
<http://www.environment.gov.au/epbc/about/reports.html#annualcwth>

DPS reports annually on elements of environmental performance to meet the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (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) the Energy Efficiency in Government Operations (EEGO) policy;
- (b) the National Environmental Protection Measures (NEPM) Act;
- (c) the National Pollution Inventory (NPI); and
- (d) the 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, accorded 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'<sup>19</sup>.

The parliamentary departments do not manage, coordinate or administer legislation that impacts directly on ESD.

To support Senators, 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 2009-10 outcomes of the parliamentary departments, specified in the Appropriations Acts (Parliamentary Departments), do not directly contribute to ESD. However, subprogram 3.1 in the DPS Portfolio Budget Statement 2009-2010 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.

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19. The National Strategy for Ecologically Sustainable Development (<http://www.ea.gov.au/esd/national/nsesd/index.html>), endorsed by all Australian jurisdictions in 1992.

## Identification, management and monitoring of environmental impacts

Paragraphs 516A(6)(c-e) of the EPBC Act require reporting on the effects of the parliamentary departments' activities on the environment, the measures in place to manage environmental impacts and how DPS ensures 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:

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

## Whole of Department / Whole of Parliament initiatives

### Strategic plans

Energy and Water Strategic Plans 2007-2010 have reached their renewal date of 30 June 2010. New plans are being developed for the next three year period 2010 to 2013, consistent with the new overall DPS Strategic Plan.

A number of objectives in the Water Strategic Plan were met and work continued on a number of other objectives, notably to reduce internal and external water consumption. Similarly, some of the objectives of the Energy Strategic Plan 2007-2010 objectives were achieved. However, it is now apparent that major further reductions in energy consumption will require renewal of ageing plant and equipment, with a particular focus on heating, ventilating and air conditioning systems, and the central energy plant.

To improve outcomes of future plans, a new planning framework for energy management will be implemented that provides a truly strategic approach. The proposed framework will provide a long-term 20-year strategic direction and detail the shorter term actions that move us toward achieving our targets.

If the new framework is successful, it will be used for both the water and waste plans as they are renewed.

The Waste Strategic Plan is due for review in January 2011. The next plan will strengthen roles and responsibilities minimising waste and improving the amount of waste recycled.

### Sustainable purchasing practices

The DPS Chief Executive's Procedures (CEPs) require procurement decisions to take into account the total resources required to develop, acquire, own, operate and dispose of departmental purchases. Green procurement information has been incorporated into the CEP, 'DPS Procurement of Property (Goods) and Services'.

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.

These considerations will be adopted in strategic plans developed for 2010-2013.

Examples of contracts in 2009-10 where environmental considerations have been incorporated are:

- (a) committee room and library lighting upgrades;
- (b) construction of data storage hub room;
- (c) engineers panel arrangements;
- (d) architects panel arrangements; and
- (e) the mobile phone contract.

### Communication and promotion

The environmental report located on the Parliament House website, <http://www.aph.gov.au/environment> shows progress against water, energy, emissions and waste targets. A new Parliament House website is being developed and access to information on

environmental activities and performance is being improved.

DPS supported National Ride to Work Day on 14 October 2009 by providing a promotional stand, maps, brochures, newsletter articles, lunchtime talks and a free breakfast.

Advice on environmental management is provided to building occupants in information circulars. Newsletter articles on topical environmental issues are published in the *DPS Dispatch*, our staff fortnightly newsletter. Topics covered in 2009-10 included articles on water leaks, running toilets and taps, cycling to work and the Department of Climate Change and Energy Efficiency green loans program.

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

In the coming year a formal environmental education and awareness strategy will be implemented with the aims of increasing awareness of environmental activities and procedures and increasing participation in recycling schemes.

## 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 a wide-reaching impact on the look of the Parliamentary Precincts, and how or if we carry out cleaning and maintenance activities.

A water audit was completed in December 2009. The audit focused on collecting information about water use, patterns and demands.

The audit recognised our existing water efficiency measures (including the trial plantings of couch grass lawn), and identified significant further opportunities for improving water efficiency. These included:

- (a) replacement of all existing 11L urinals with water efficient urinals, which the auditors expect will achieve an annual water saving of 6.94ML;
- (b) replacement of all existing single 11L toilets with dual flush water efficient toilets (i.e. 3/6L dual flush system), which the auditors expect will achieve an annual water saving of 8.85ML; and
- (c) replacement of all existing 12L per minute (estimated) taps in male public toilets with water efficient 6L per minute taps (via the installation of flow restrictors), which the auditors expect will achieve an annual water saving of 6.12ML.

In addition to the water efficiency improvement opportunities, a number of opportunities for alternative water sources were identified which could provide water for non-potable uses.

The implementation of both the water efficiency improvements and alternative water supplies will reduce the potable water required to sustain operations at Parliament House and is expected to result in long-term operational cost reductions.

Recommendations from the audit will be investigated further and viable options will be incorporated into the Water Strategic Plan 2010-2013.

### Water consumption

Total water consumption for 2009-10 was 161,187kL. This was a reduction of 4% compared with the previous year's consumption, in which Stage 3 water restrictions also applied. Water consumption this year was the lowest on record, as seen in Figure 5.1.

The decrease was mainly due to a reduction in water use for irrigation from 97,244 kL in 2008-09 to 83,817 kL in 2009-10. This represents a 14% reduction in landscape water use and is mainly attributed to a higher than average autumn and winter rainfall.

Figure 5.2 shows a breakdown of water use during 2009-10. 'Building - other cold 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.

Figure 5.1—Annual water consumption from 1988-89 to 2009-10

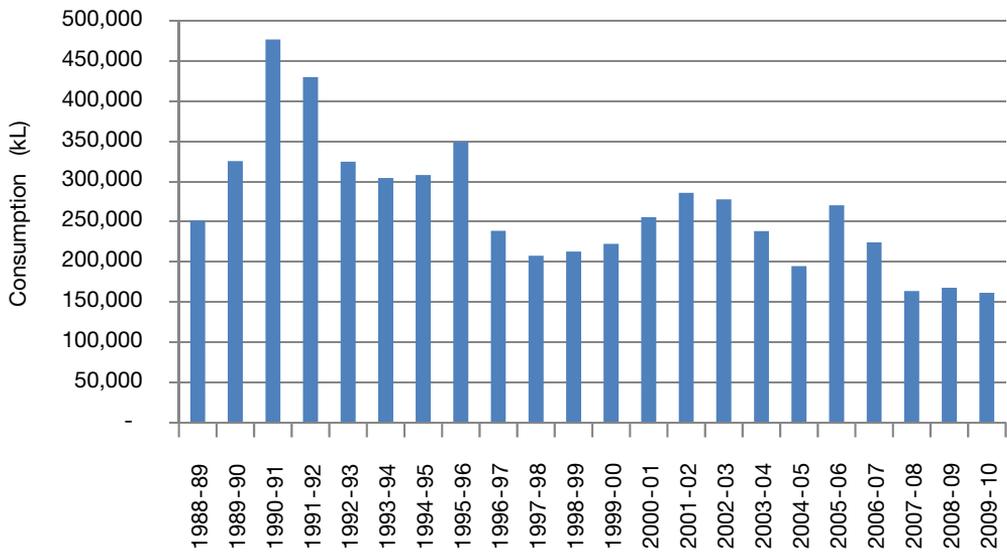
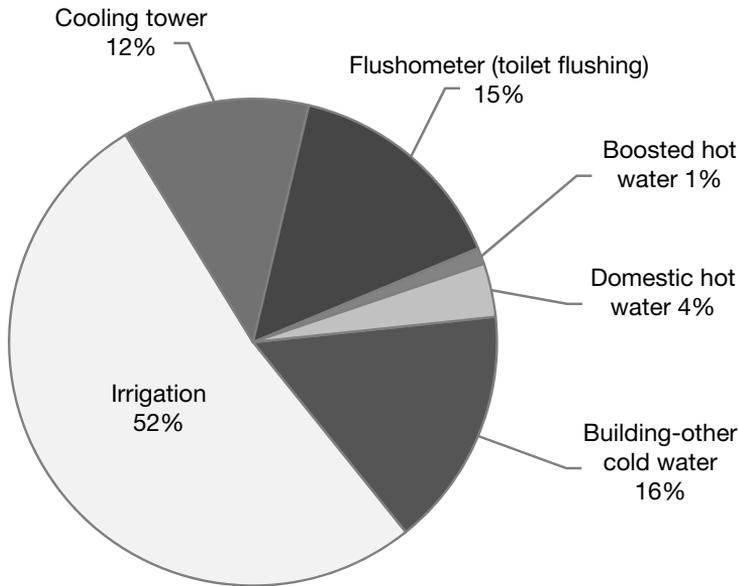


Figure 5.2—Breakdown of water use during 2009-10



## Water restrictions

ACT stage 3 water restrictions were in place for the whole 2009-10 year. DPS's target of a 35% reduction of the equivalent month's water use in 2005-06 was met in all but two months in 2009-10. Figure 5.3 shows progress in meeting this target.

## Water saving initiatives

### Savings in the landscape

The most significant water savings have been made in the Parliament House landscape. For the fourth year, overall irrigation was reduced as planned with actual watering levels based on condition monitoring of soil moisture levels.

Landscape Services has continued to maintain the parliamentary landscape under stage 3 water restrictions.

The use of couch grass has the potential to reduce irrigation of lawns by around 50%. The current couch grass trial began in January 2008, and includes some small plots and the Senate playing field. The couch grass was oversown with a rye grass in April 2010

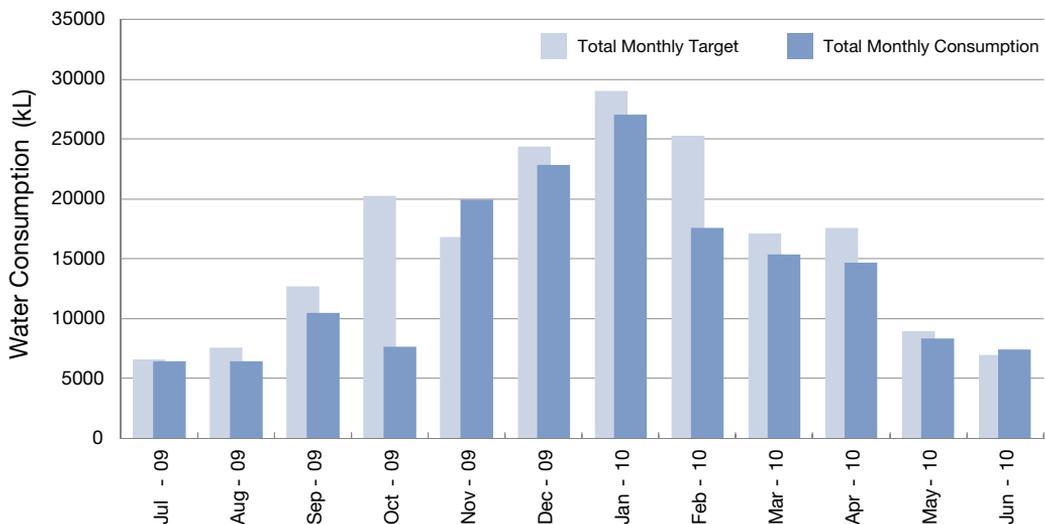
to maintain a green cover of turf during the winter when the dormant couch loses its green appearance. The rye will be removed in October when the couch starts to come out of its winter dormancy period. The oversowing process has been very successful so far.

### Water features and the forecourt pond

In 2009-10, DPS initiated a water recycling project to re-use discarded water from the cooling towers and convert it into high grade water through a reverse osmosis treatment process. The water will be used for the forecourt water display and reactivation of two prominent water features in the internal courtyards, and one other external water feature.

In May 2010, an exemption to water restrictions was granted for the use of 30kL of potable water. This water is being used to clean and test water features which are scheduled for re-activation with recycled water.

Figure 5.3—Actual water use compared to Stage 3 restrictions target



## CASE STUDY—WATER FEATURES RE-ACTIVATION



Vincent McDonagh is a member of the team working on the water features re-activation project.

The project seeks to provide a sustainable and cost-effective solution to operating some of the water features at Parliament House, all of which were shut down in 2006 to comply with local water restrictions.

Given his experience with project work and his mechanical engineering background, Vincent is a good fit for the role and enjoys the challenges the project entails.

The use of recycled water has been key to the success of this project. It involves the recovery of waste water from the main

cooling tower and treating it using a Reverse Osmosis process to remove all dissolved contaminants, mainly salts.

The treated water is then pumped to a 45,000 litre storage tank for use in the Forecourt and Formal Gardens water features, summer being the season of peak demand for both systems.

Vincent came to DPS from the dairy industry in the private sector and enjoys the diversity of roles he experiences each day. While the Forecourt pond has the highest profile, it is only one aspect of his work as part of a team to ensure DPS water consumption and operational costs are managed sustainably into the future.

## Male Public Toilet refurbishment

A refurbishment of the male public toilets is currently being carried out as an objective of the Water Strategic Plan 2007-10 to install water efficient appliances

Stage 1 of the program is close to completion. Low-flow urinals, dual-flush toilets and sensor-activated taps in basins are being installed in a number of toilets, replacing the original fittings and fixtures. The remaining toilets are to be completed during stage 2 in the coming year.

## Water leak detection system

In March 2010, a water leak detection system was installed by ActewAGL as part of a wider water consumption efficiency program in the ACT.

The aim of the program is to detect abnormally high water consumption that could indicate undetected leaks or faulty equipment. Water trends are monitored 24 hours a day, 7 days a week for abnormally high flows.

The initiative will provide DPS with an extra level of security by detecting unobserved leaks in our water supply reticulation system.

## Energy

Parliament House is a major energy consumer. An Energy Audit<sup>20</sup> was completed in October 2009 and has helped identify priorities for energy improvements to assist us to deliver a major reduction in energy consumption.

Key recommendations of the energy audit will require further investigation to confirm technical issues and sources of funding. We have begun implementing several recommendations, and are planning others, including:

- (a) establishment of new independent base load chillers;
- (b) installation of energy efficient lights (library, external pedestrian areas and car park);

- (c) reducing the number of computing servers;
- (d) an upgrade of central computer server room air conditioning;
- (e) installation of solar electric and hot water panels; and
- (f) installation of trigeneration plant (this would achieve major energy savings).

Some of these audit recommendations are further discussed in the Energy Initiatives section of this report.

## 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 5.4 summarises this energy use in 2009-10.

Energy consumed in 2009-10 was 143,188GJ, an increase of 3% on the 138,898GJ consumed the previous year. Passenger and other transport energy use decreased slightly.

Electricity and natural gas consumption at Parliament House comprised 98%—140,402 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 5.5 shows the long-term downward trend in electricity and gas consumption since the building opened.

In the last two years there has been a slight but gradually upward trend in building energy consumption. This is attributed to various factors such as climatic conditions, aging equipment and related failures, sitting patterns, election years, increased building activity and operational demands. Historically, analysis shows that small upward trends have occurred frequently as seen in Figure 5.5.

To improve analysis of energy trends, DPS is investigating upgrading the energy metering system at Parliament House. This will provide a better understanding of how and where energy is used throughout the building.

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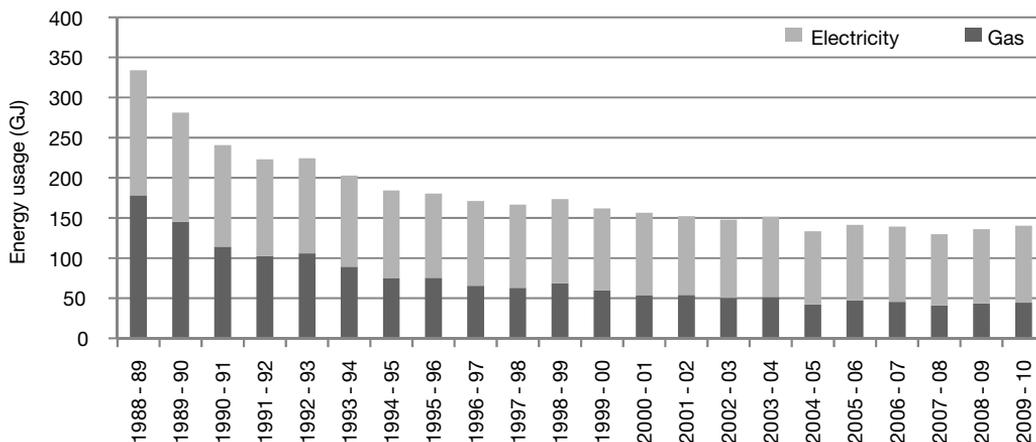
20. The energy audit was undertaken in accordance with the requirements of a level 2 energy audit as defined in Australian Standard AS/NZS 3598:2000 Energy Audits.

Figure 5.4—Energy consumed at Parliament House and by transport

Category	Energy Consumption (GJ)		
	2007-08	2008-09	2009-10
Parliament House building:			
Electricity: non-renewable source	66,482	69,290	72,068
Electricity: clean energy source <sup>21</sup>	22,160	23,096	24,023
Natural gas	41,015	43,522	44,311
Diesel	200	443	361
Total	129,856	136,351	140,763
Passenger vehicles:			
Automotive diesel	41	141	372
Automotive gasoline (petrol)	1556	1,206	903
E-10 (biofuel)	513	655	616
LPG	111	93	87
Total	2,221	2095	1978
Other transport:			
Automotive diesel	282	292	251
Automotive gasoline (petrol)	124	114	92
LPG	41	46	104
Total	447	452	447
Total energy consumption	132,522	138,898	143,188

21. In 2009-10 DPS sourced electricity through the Whole of Government (WoG) Electricity contract and sourced an additional component separately from ActewAGL directly. DPS purchased 10% renewable energy – as accredited Green Power (WoG); and 15% green energy – as a Greenhouse Friendly accredited offset.

Figure 5.5—Annual electricity and gas consumption (in 000's of GJ)



## Vehicles

Parliament House's passenger vehicle fleet<sup>22</sup> consisted of 39 leased vehicles in 2009-10, including 31 SES vehicles. Eighteen vehicles (14 SES) scored higher than 10 in the Green Vehicle Guide.

## Energy-saving initiatives

Initiatives to conserve energy—including implementing more energy efficient lighting schemes, upgrading the compressed-air system used for the air conditioning, removal of boiling water units in offices—have been or being implemented as set out below. In addition, studies have been initiated including a trial of solar electric and solar hot water systems, and assessing the feasibility of an independent base load chiller system and a new trigeneration system.

## Lighting

During 2009-10, completed lighting projects that reduced energy consumption included:

- (a) external lighting improvements for pedestrians;

- (b) upgrade of the 2<sup>nd</sup> floor Parliamentary Library lighting; and
- (c) committee room lighting upgrade - trial.

A further project to replace lighting in the car parks was commenced during 2009-10 and will be completed in 2010-11. The revised lighting scheme and lamp types will use substantially less energy than the existing scheme.

Ongoing energy-efficient lighting options continue to be investigated at Parliament House. Low energy 'light emitting diode' (LED) lamps have been trialled with promising results as a possible replacement for the 12-volt down lights which are common throughout the building. This lamp technology is continually improving in terms efficiency, colour rendering and cost.

## Compressed-air system

As air-controlled equipment for the HVAC system has been upgraded with new electronic devices over the years, the amount of air required by the compressors to operate the system has reduced. This has allowed air compressors that supply air to equipment associated with the building's air conditioning system to be replaced with smaller more efficient models.

22. This includes vehicles across the three parliamentary departments.

Together with the smaller compressors, and an ongoing air-leak detection program, energy savings have been significant in this area.

### Boiling water units

During 2009-10, inefficient boiling water units have been removed from Senators' and Members' kitchenettes. The majority of boiling water units will be replaced with kettles. In other areas where there is a higher demand, units will be replaced with more energy-efficient boiling water units.

### Base load chillers

As part of the replacement plan to upgrade critical pieces of infrastructure with more efficient types, a project to replace a number of heavily utilised chillers was commenced in 2009-10.

Chillers that supply base load cooling to the building will be replaced with new chillers that are capable of operating at much greater levels of efficiency.

### Solar power trial

A solar energy trial was commenced at Parliament House following the recent completion of the design stage. A 35kW solar electric system is due to be completed in 2010-11. Results will be assessed with a view to expanding the system further.

The solar trial will include the installation of solar hot water panels with sufficient capacity to supply hot water to the gardeners' compound.

### Trigeneration investigation

A feasibility study and preliminary design of trigeneration energy for Parliament House was completed in 2010.

A trigeneration plant would utilise natural gas to generate electricity onsite; importantly, the waste heat would also be utilised to provide hot water and to power cooling systems. Major reductions in greenhouse gas production are possible. Sources of funding have yet to be identified.

### Earth Hour

Parliament House again participated in Earth Hour on 27 March 2010. All external lights were switched off except for those lights required for safety and security purposes—for example, lights on the flagpole.

### Sustainable Transport

As part of the energy audit completed in October 2009, energy and emissions resulting from all land-based business travel to and from Parliament House was assessed. The energy consumption and greenhouse gas assessment of land based travel at Parliament House comprised of business and commuter travel for:

- (a) parliamentary departmental staff; and
- (b) Senators and Members and their staff and contractors, licensees and business visitors.

Land-based travel to and from Parliament House was assessed under the following categories:

- (a) commuter travel (Canberra residents travelling to and from Parliament House for work); and
- (b) business travel (including pool vehicles, Comcar and taxi travel).

The assessment has shown that most of the estimated energy consumption and greenhouse emissions are associated with private vehicle commuter travel by parliamentary department staff. Taxi travel is the largest contributor to business travel impacts.

DPS will incorporate recommendations from the audit into a sustainable transport strategic plan outlining objectives to reduce greenhouse emissions associated with land-based transport.

## Recycling and waste management

### Waste generation and recycling

The amount of general waste (excluding construction waste) sent to landfill in 2009-10 was 389 tonnes. This is an increase of 1% compared to the 385 tonnes sent in 2008-09. The quantity of paper recycled decreased by 10% from 306 tonnes in 2008-09 to 275 tonnes in 2009-10. Figure 5.6 shows trends since 1998.

### Landscape waste

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

During 2009-10, 196 tonnes of landscape waste was generated from Parliament House landscape. All of this waste that was not chipped was sent for recycling by various private companies.

Figure 5.7 shows annual trends in landscape waste and recycling rates. The peak in landscape waste in 2005-06 was because of waste generated by turf replacement project on the grass ramps.

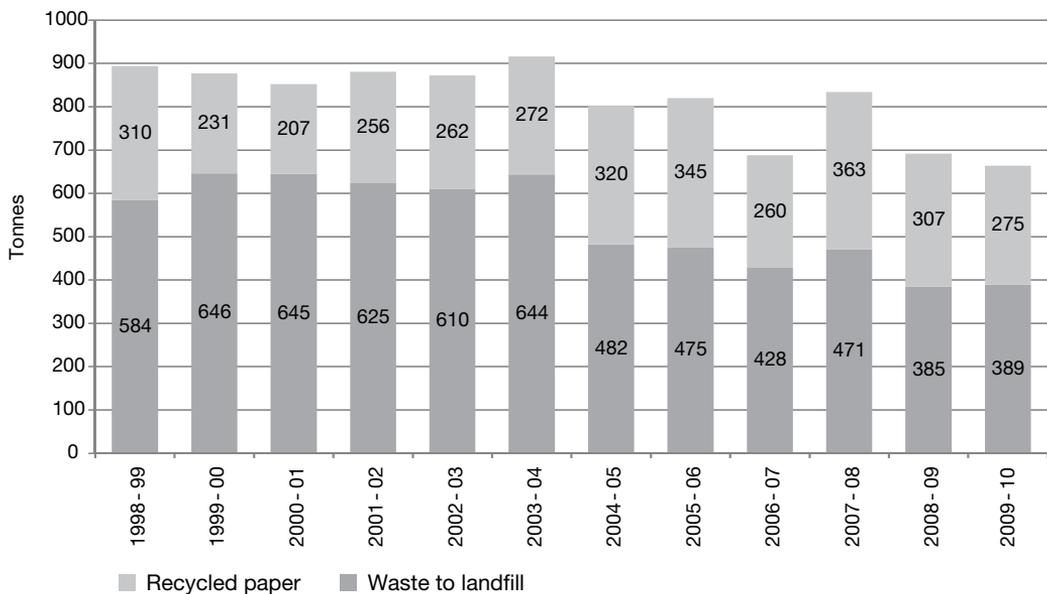
### Waste management initiatives

#### Recycling facilities and co-mingled recycling

DPS provides facilities to recycle paper, cardboard, printer cartridges, lamps, used oil, grease, batteries, landscape, metal, and co-mingled waste (co-mingled wastes are those collected from kitchen wastes including metal cans, glass bottles, milk cartons and plastic which are separated from food wastes).

Over 2009-10, 105 tonnes<sup>23</sup> of co-mingled waste had been collected and recycled, compared to 96 tonnes the previous year.

Figure 5.6—Annual waste disposed to landfill and recycled



23. The weight of co-mingled waste is based on a conversion factor of 250 kg per cubic metre collected. This factor is provided by DPS's waste management contractor and based on weighing random bin samples.

## Emissions and effluents

### Greenhouse gas emissions

During 2009-10, 23,913 tonnes of carbon dioxide equivalent<sup>24</sup> (CO<sub>2</sub>e) were generated from energy consumption at Parliament House<sup>25</sup>. Greenhouse emissions are described in Figure 5.8.

Figure 5.9 shows annual greenhouse gas emissions since Parliament House opened in 1988.

### Ozone depleting substances

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

- (a) chillers, which provide cooling for the building's air conditioning;
- (b) cool rooms;
- (c) freezers; and
- (d) refrigerators.

Figure 5.10 shows the type and 'ozone depletion potential' of refrigerants purchased in 2009-10.

### Air pollutants – NO<sub>x</sub>, SO<sub>x</sub> and particulates

The combustion of natural gas for heating, hot water and cooking purposes generates oxides of nitrogen (NO<sub>x</sub>), oxides of sulfur (SO<sub>x</sub>) 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 5.11—Emissions of air pollutants from natural gas consumption—lists these emissions for 2009-10. Parliament House gas combustion

increased by 2% in 2009-10, and as a result the majority of 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 2009-10 there were no significant spills of chemicals, oils or fuels from Parliament House.

## Summary

Achieving sustainable environmental outcomes for Parliament House continues to be a priority for DPS.

Along with ongoing efforts to achieve reductions in our water use, which have been successful in areas such as the Parliament House landscape, 2009-10 saw the implementation of a number of initiatives to reduce our energy consumption that accord with our long-term commitment to environmental considerations. However, further significant reductions in energy consumption will require replacement of ageing and high-energy systems within the building.

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24. Carbon dioxide equivalent, CO<sub>2</sub>e, is an internationally accepted measure that expresses the amount of global warming of greenhouse gases in terms of the amount of carbon dioxide (CO<sub>2</sub>) that would have the same global warming potential.

25. The Parliament House emissions total is calculated according to DEWHA's methodology for recording greenhouse data for Government programme reporting. The EEGO policy requires DPS to use this methodology.

Figure 5.7—Annual quantity of landscape waste

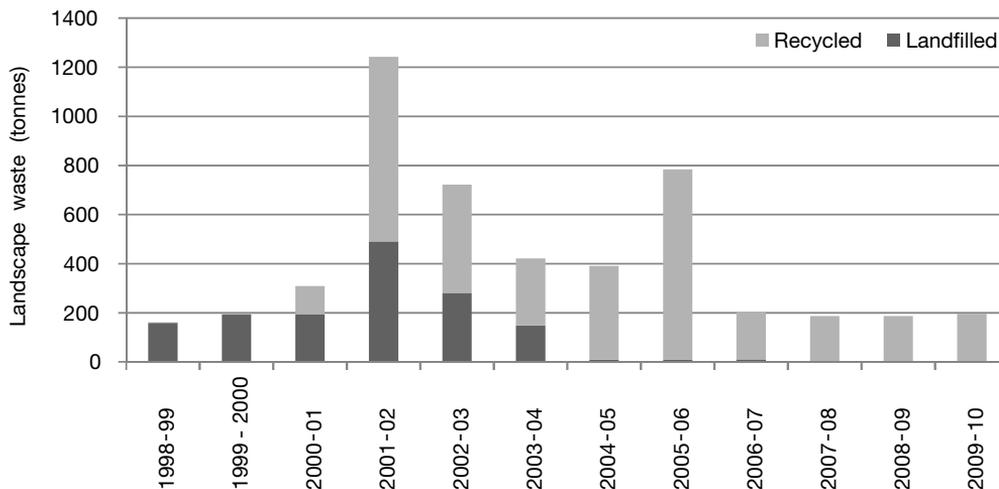


Figure 5.8—Parliament House emissions (direct and indirect, including SES and operational vehicle fleets)<sup>26</sup>

Emission category	Comment	2007-08 (tonnes CO <sub>2</sub> e)	2008-09 (tonnes CO <sub>2</sub> e)	2009-10 (tonnes CO <sub>2</sub> e)
Scope 1	Emissions at the source of the activity (e.g. emitted from gas and fuels used at Parliament House and by vehicles)	2,318	2,436	2,461
Scope 2	Emissions generated elsewhere (e.g. by the power plants that produce the electricity used at Parliament House)	16,520	17,253	18,425
Scope 3	Indirect emissions, meaning emissions generated during the delivery of electricity, gas and fuel to Parliament House, which DPS has little control over.	3,916	3,276	3,027
Scopes 1 & 2	DPS has direct responsibility for these emissions.	18,838	19,689	20,886
Scopes 1,2 & 3	Direct and indirect emissions.	22,754	22,965 <sup>27</sup>	23,913

26. Emissions values in figure 5.9 require an external reporting tool - Online System for Comprehensive Activity Reporting (OSCAR), administered by the Department of Climate Change and Energy Efficiency. These values may vary slightly (less than 2%) from values stated in part 4. This is due to an emission factor methodology difference between the DPS Engineering database, used for internal reporting (part 4), and OSCAR (part 5). Both OSCAR and the DPS database derive the emissions factors from the latest National Greenhouse Accounts (NGA) factors.

27. Scope 1, 2 & 3 emissions for 2008-09 were 23,609 CO<sub>2</sub>e, not 22,965 CO<sub>2</sub>e. The difference is due to a change in the emissions factor that calculates scope 3 emissions.

Figure 5.9—Annual greenhouse gas emissions from electricity and gas

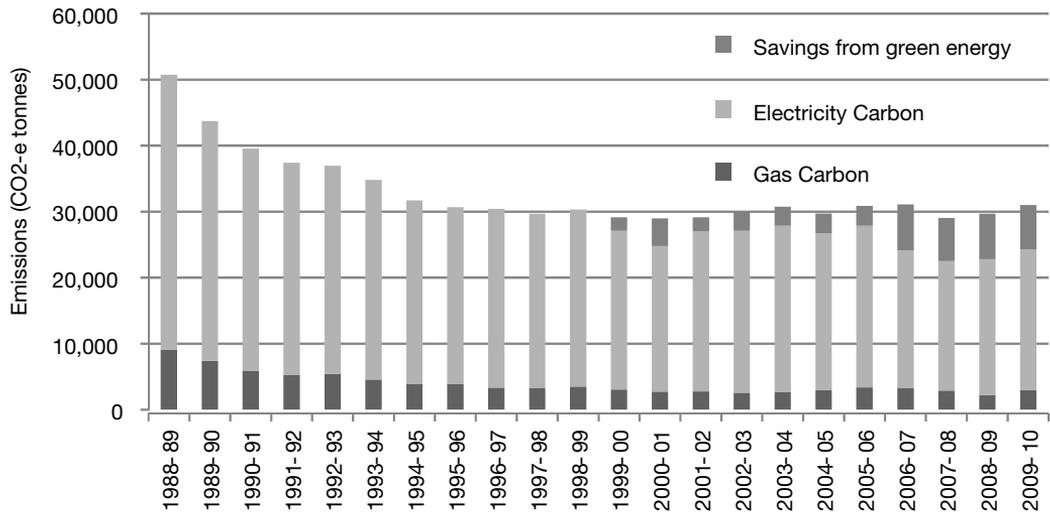


Figure 5.10—Type of refrigerant use

Refrigerant	Ozone Depletion Factor	Global Warming Potential Factor
R404A	0	3,260
R134A	0	1,300
R22	0.034	1,780

Figure 5.11—Emissions of air pollutants from natural gas consumption

Air pollutants	2007-08 (kg)	2008-09 (kg)	2009-10 (kg)
Carbon monoxide	1680	1,782	1814
Oxides of nitrogen	1993	2115	2153
Particulate matter (PM10)	148	157	159
Particulate matter (PM2.5)	148	157	159
Total Volatile organic compounds	110	116	119
Sulphur dioxide	32	34	11
Polycyclic aromatic hydrocarbons	<1 (0.013)	<1 (0.014)	<1 (0.14)