



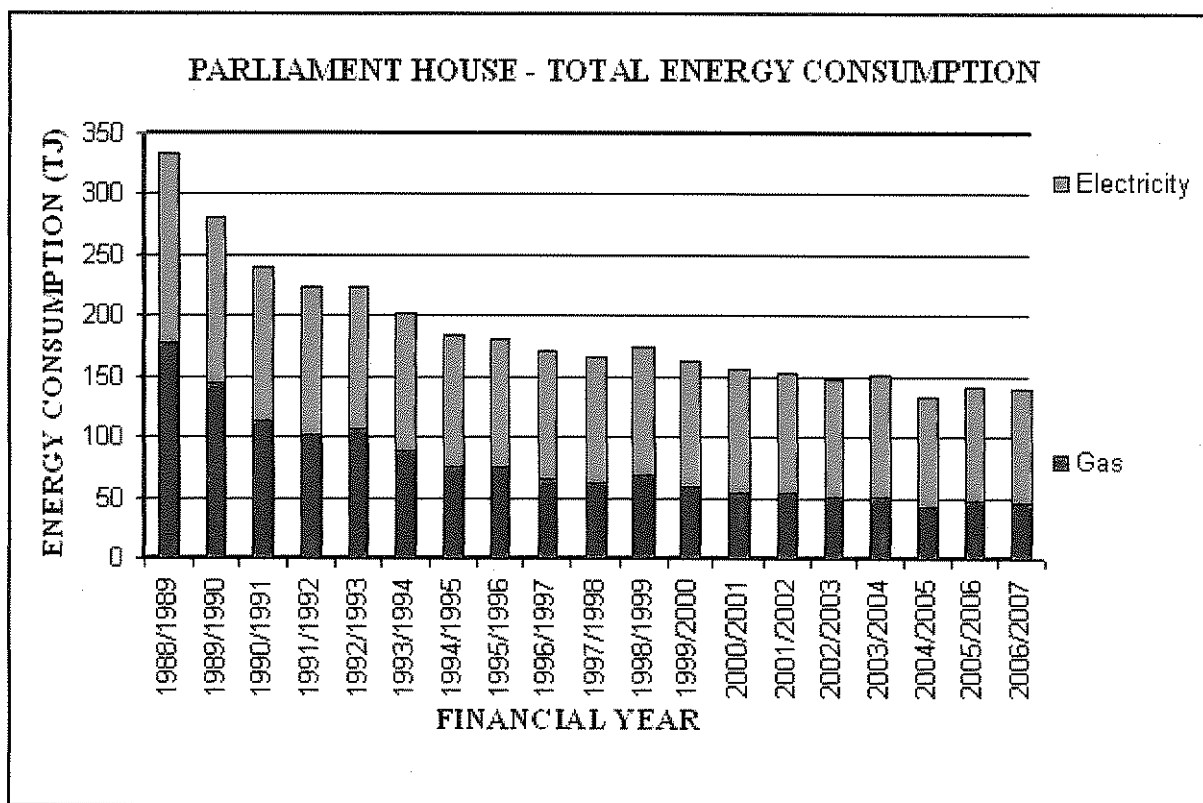
Parliament House Energy Consumption

1 Since Parliament House was opened in 1988, DPS has achieved the following results:

- (a) electricity reduction of 39.7%;
- (b) gas reduction of 74.54%;
- (c) carbon dioxide emission equivalent reduction of 52.4%; and
- (d) energy (electricity and gas) consumption reduction of 58.3%.

2 The reduction in electricity and gas consumption is shown in **Figure 1**.

Figure 1: Annual electricity and gas consumption



3 These figures reflect consumption to June 2007.

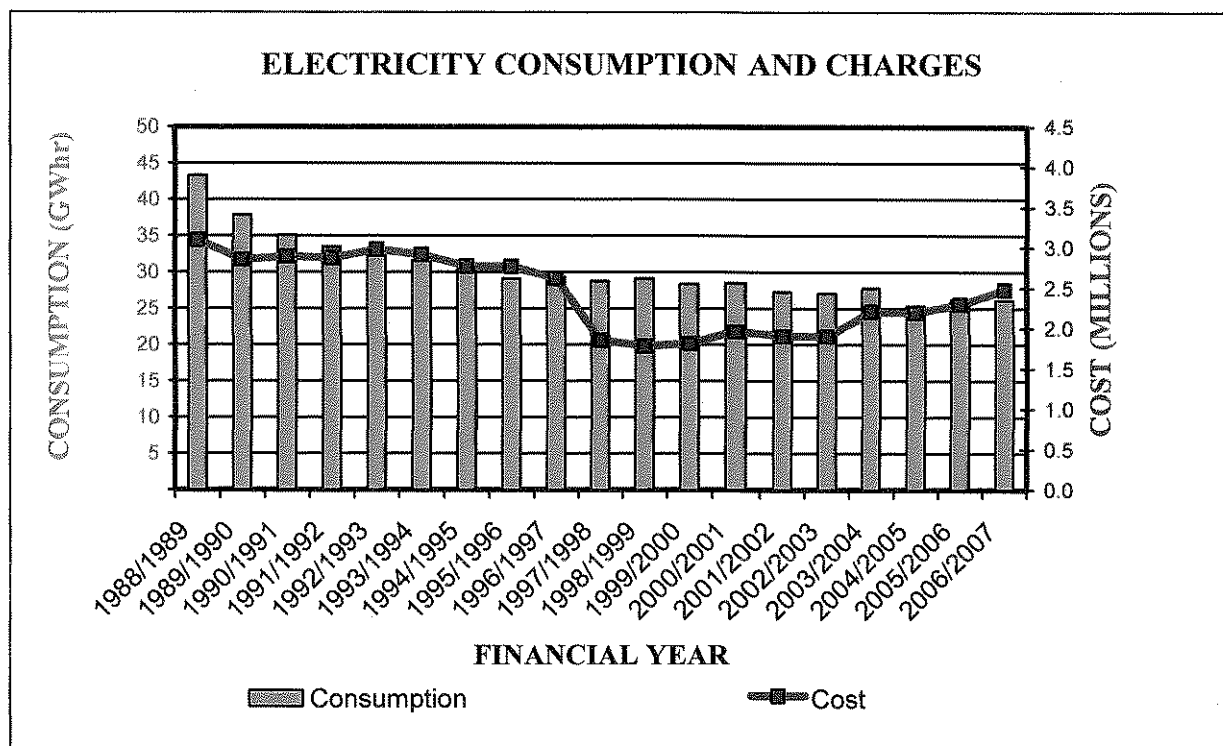
Electricity consumption

4 Electricity consumption during 2006–07 was 26,106,721 kWhrs, an increase of 0.03% compared with 2005–06 (**Figure 2**).

5 Electricity consumption is approximately 40% higher on a sitting day (meaning a day when the Parliament meets) compared with a non-sitting day. As there were 71 sitting days in 2006–07, which is four more days compared to 2005–06, a small increase in electricity consumption is a reasonable result.

6 Due to the election in 2007, DPS expects 2007/2008 consumption to be lower than last year, similar to what was seen in 2004/2005.

Figure 2: Annual electricity consumption and charges



Gas Consumption

7 Gas consumption during 2006–07 was 45,382 GJ, a reduction of 4% compared to the previous year (47,307GJ) (Figure 3).

8 Gas consumption is approximately 35% higher on a sitting day compared with a non-sitting day. As there were four more sitting days in 2006–07 (see paragraph 5), reduction in gas consumption is believed to be the result of milder winter weather and consequently a lower demand for heating.

9 In 2006–07, 75% of Parliament House’s electricity (19,580,041kWhrs) came from coal-fired power stations. The remainder was from renewable sources, including 15% produced from hydropower.

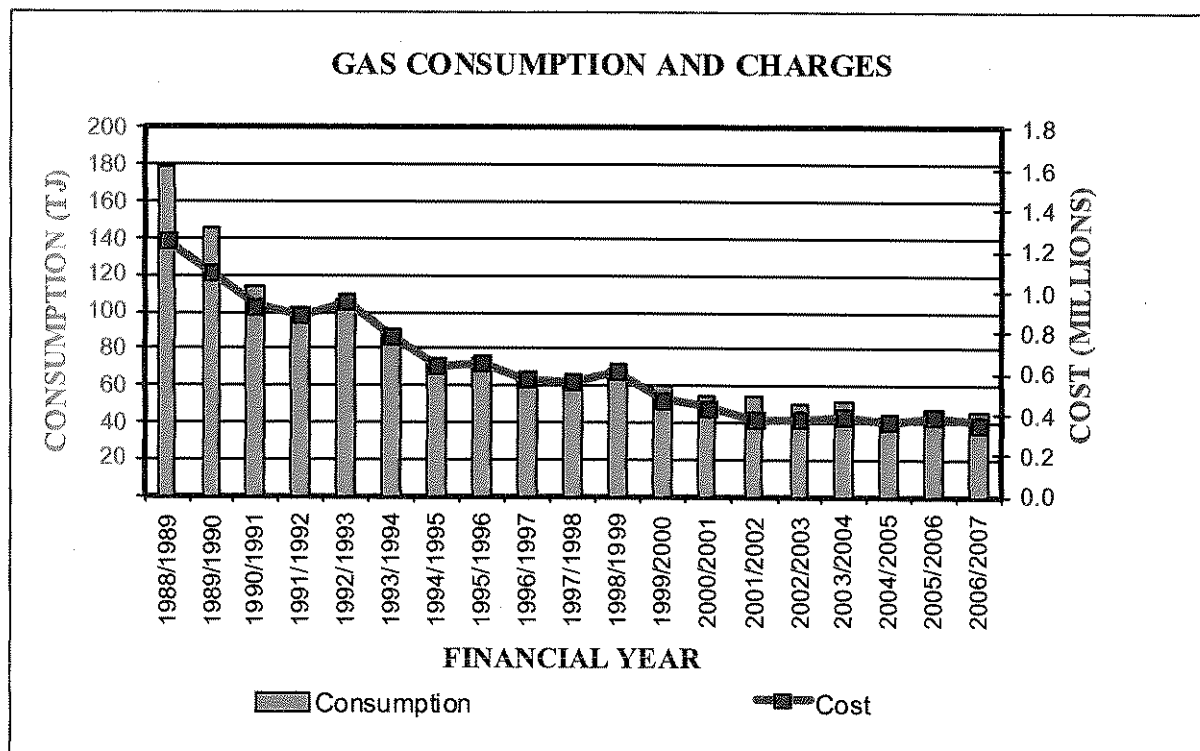
10 It is evident from these figures that energy consumption has levelled off.

Energy Strategy

11 In November 2007, DPS finalised a three year energy strategic plan aiming to reduce overall energy consumption in the building. The vision is “to achieve reliable, efficient environmentally sustainable in Parliament House”.



Figure 3: Annual gas consumption and charges



12 Immediate actions in the plan include:

- a) Undertake an audit of energy use;
- b) Encourage building occupants to adopt energy saving initiatives;
- c) Install additional metering to help identify where savings can be made and provide early warning of wastage;
- d) Monitor consumption by broadcasting and computing equipment;
- e) Develop asset replacement plans relying on energy efficient technology;
- f) Implement options such as standby and hibernate modes on office equipment; and
- g) include environmental factors in tender specifications.

13 Parsons Brinkerhoff Pty Ltd has been selected to undertake the energy audit, following an open tender.

14 Advice on saving energy is published on the APH website, and from time to time in information circulars to building occupants.

15 Electricity meters have been installed in five suites to provide detailed information on consumption.



16 When light bulbs are replaced—whether as part of normal maintenance, or a project to upgrade light fittings—low energy bulbs are selected whenever possible.

17 Replacement of two chiller units, with more water and energy efficient devices, is planned in 2008. Development of a design brief will commence in late May 2008.

18 Actions that will require longer relate to the major infrastructure equipment responsible for heating, cooling and humidity management of the building.

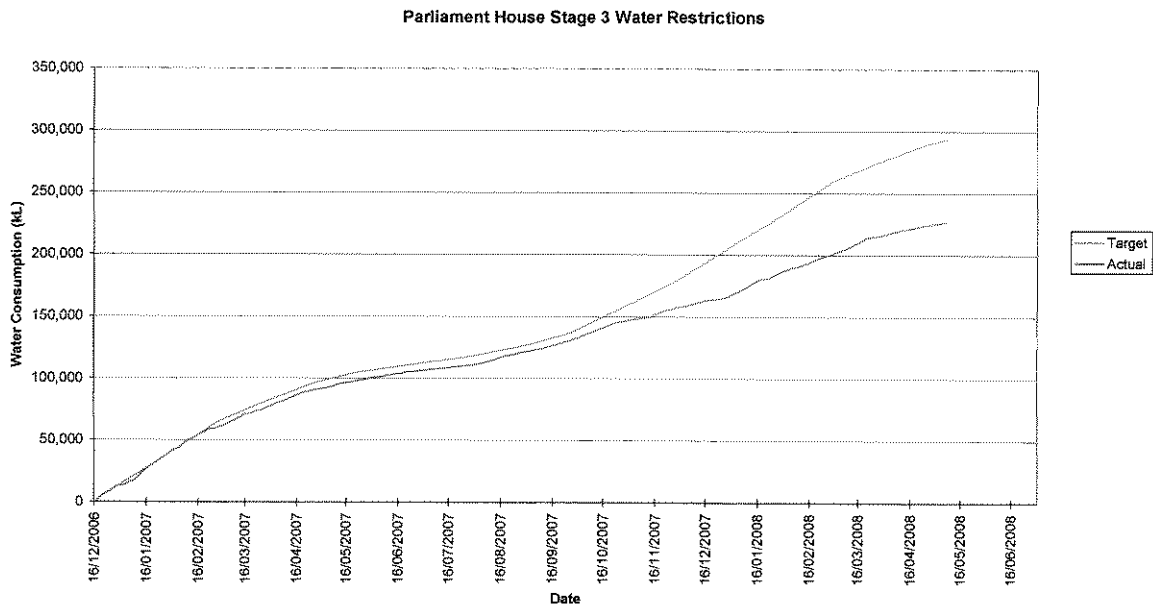
19 During a sitting day, electricity consumption peaks at about 5Mw, and is consistently well above 4Mw.

20 However, during late evening and early morning, when the building is largely unoccupied, consumption is still around the 2Mw level. The challenge for DPS is to find ways to reduce that base load, as well as the peaks.



Parliament House Water Consumption

1 Water consumption for 2006–2007 was 224,006 kL. This was a 17% decrease in water consumption compared to the previous year (270,421kL). The majority of water-saving initiatives undertaken were related to reducing landscape irrigation and turning off water features. These measures were taken to comply with Australian Capital Territory (**ACT**) water restrictions.



2 Consumption to date (as at 6 May 2008) for 2007-2008 is 120,000kL.

3 The most significant water savings have been made in the Parliament House landscape. All 20 external water features in and around Parliament House have been turned off and emptied, although the forecourt fountain was re-opened in May using re-cycled water. Annual flower displays were not planted, and watering has been severely restricted in the grounds beyond Parliament Drive.

4 Internal measures to reduce consumption include the installation of AAA shower heads in all showers, trial of waterless urinal technology, and trial of dual flush valves in other toilets. The intention is to convert all toilets to dual flush once it has been established that dual flush valves work satisfactorily with the flushometer system.

5 The consumption of water can be attributed to the following categories shown in **Figure 4**. "Other building water" includes the cold water used in bathrooms, kitchens and the swimming pool and the "flushometer" category refers to the water used for flushing toilets and urinals.

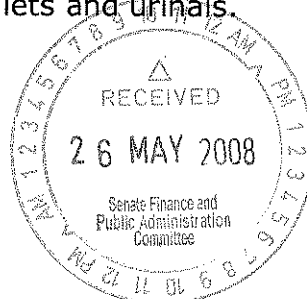
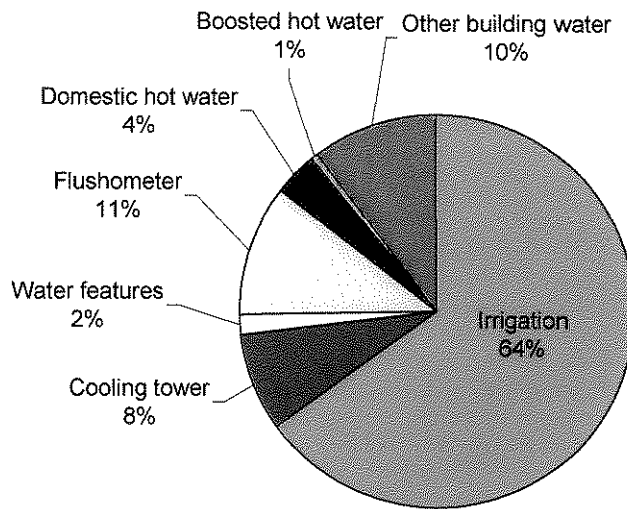


Figure 4: Water use during 2006-07



6 The following graph shows the consumption of water since the building was opened in 1988 (**Figure 5**). The consumption of water in 2006-07 was the fifth lowest since the building opened in 1988.

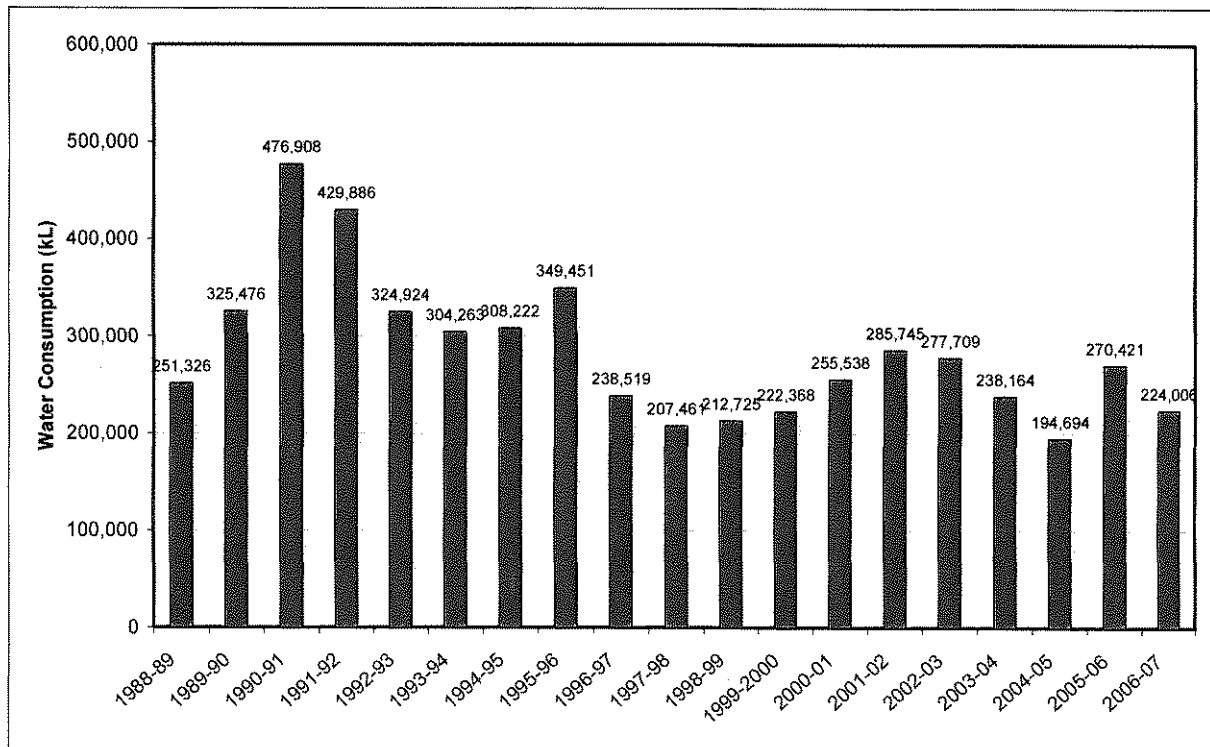


Figure 5: Annual water consumption



Water Strategy

7 In November 2007, DPS finalised a three year water strategic plan. The primary objective of that strategy is to reduce overall water consumption in the building and landscape. The vision is "to achieve efficient environmentally sustainable water use in Parliament House".

8 Immediate actions in the plan include:

- a) Undertake an audit of internal water use;
- b) Install additional water metering to monitor water use and provide early warning of leaks and waste;
- c) Install water efficient appliances such as dual flush toilets and waterless urinals;
- d) Procurement of plumbing equipment and appliances that have the highest Water Efficiency Labelling Scheme rating while ensuring value for money principles are met;
- e) Where relevant, tender specifications should seek water saving solutions; and
- f) Review the landscape performance and design philosophy.

9 Installation of 10 extra water meters and associated connections to the building management system (BMS), costing \$57,000, was approved on 6 May.

10 Trial of waterless urinal and dual flush technology continues as we seek to identify satisfactory solutions.

Landscape Review

11 Late in 2007, DPS commissioned a review of the parliament house landscape, to be undertaken by Mr Merv Dorrough and Mr Peter Britz of Redbox Design. The primary objective of the review was to reduce the irrigation water requirements of the landscape.

12 DPS has now received a draft report, and has asked for more work to be done on a couple of areas, which is expected to be finished by the end of May.

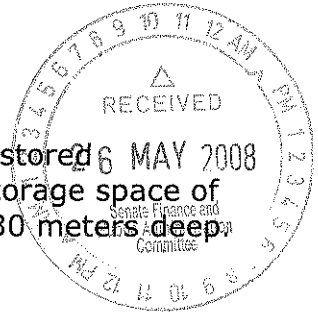
Water storage and recycling

13 Reduction in reliance on potable water, through use of re-cycled water or stored stormwater, is generating considerable interest nationally. While committed to investigating both possibilities, DPS has initially concentrated on reducing overall consumption.

14 The main reason for taking this approach is volume, though the likely time and cost of building necessary infrastructure are also both substantial.

15 Assuming all available internal water going into drains and sewers could be recycled, it would only provide about 30% of the total irrigation requirement.

16 On the other hand, if all irrigation demand was met from stored stormwater tanks, the 150+ mL required per year would take storage space of 150,000 cubic meters—the equivalent of a rugby football field, 30 meters deep



Air conditioning set point

17 A trial to save water by increasing the building's airconditioning temperature set point from 22° C to 24° C was conducted from January 22 to January 25, 2007.

18 There was a reduction in water used by the cooling tower, of up to 50 kL per day, during the week of the trial compared to the preceding week. A number of variables may have contributed to this saving, not the least being a slightly cooler daily temperature.

19 Feedback from building occupants during the trial was predominantly positive. 26 positive responses compared to 11 negative responses were received.

20 The air-conditioning system is a large consumer of water through the evaporative cooling effect of the cooling tower. Water consumption can exceed 250 kL, with a peak of 272 kL observed last year.

21 There is a correlation between the building temperature set-point and water consumption in the cooling tower. A lower building set-point requires more waste heat to be removed through evaporative cooling at the cooling tower and therefore greater water consumption.

22 The majority of the building's Variable Air Volume (VAV) boxes, around 90%, had their set-points increased by 2° C. Areas of the building that were excluded were computer and media rooms, paper storage and print rooms, committee rooms, public areas, the Great Hall, Prime Minister's suite, the President's suite and the Speaker's suite.

23 A VAV box is the device that controls the amount of cooled air that enters a space. There are over 1,800 VAV boxes in Parliament House. 162 VAV boxes were excluded from the trial.