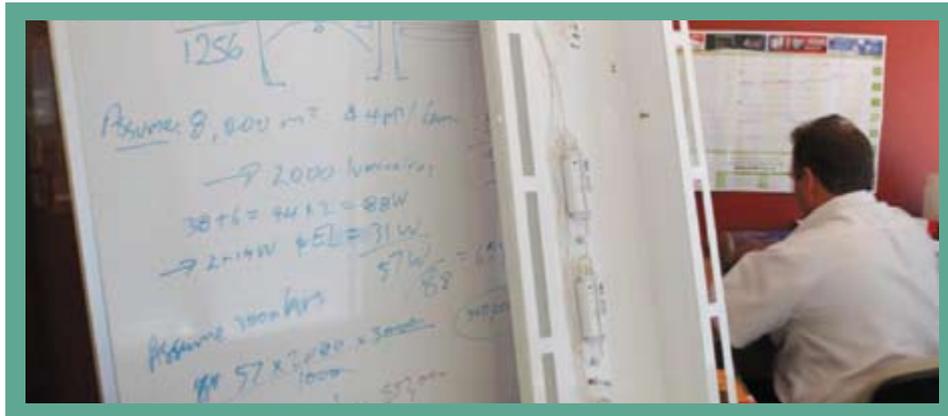


Case Study 5

The Department of Public Works

The Queensland Government Department of Public Works occupies 22,000m² out of a total 29,000m² available at this 17 level premises located at 61 Mary Street, Brisbane. Efficient Energy Systems were contracted by Honeywell to audit the site, design and supply a lighting solution as part of a multi-million dollar Energy Performance Contract with the Queensland Government Accommodation Office.



The Project

An initial walk through inspection established an understanding of the installed lighting system and allowed estimation of a broad cost of the proposed work. The existing lighting scheme fell into four main groups; the main offices featured 2 x 36W fluorescent lamps with magnetic ballasts, diffusers in white painted cases, the lift lobbies featured 50W mercury vapour lamps, the basement car park featured 125W mercury vapour lamps, while another basement level featured 1 x 36W lamps and magnetic ballasts. A total of 4,141 luminaires were identified at this location.

The Challenge

The lighting power density and the amount of energy used to illuminate an area were well above the Building Code of Australia benchmark of 10W/m², at the same time within the office areas the illumination levels varied significantly with over illumination causing glare problems in some areas. The challenge was to design an energy efficient lighting solution taking into consideration lighting levels and the type of use needed for each area, the budget and schedule.

The Solution

Following formal approval of the budget, a comprehensive site survey was conducted and a detailed description of the scope of work, along with expected energy and cost savings was presented to the client and duly agreed.

Commencing in September 2007 and working over a seven week period between the hours of 6pm and 2am, a new lighting control solution was installed, with minimum disruption to daily operations or the tenant.

The 2 x 36W luminaires were upgraded by fitting an electronic ballast, specular KW/2 reflector and a single 36W tri-phosphor tube. In addition, some of the diffusers were inappropriate and were replaced with low glare diffusers for even light output across the whole area.

Across five levels it was found that the luminaires were incorrectly spaced and had too many fitted for the area. Some were repositioned and upgraded with new control gear, while a total of 176 luminaires were completely removed.

Mercury vapour lamps were replaced with more efficient and longer lasting CFL

lamps, whilst an auto transformer was fitted to the car park basement lighting that delivered a 27 per cent energy saving, with an unperceivable change to light output. Lastly a control of each lighting zone was connected to the existing Building Management System, so scheduling of lighting could be controlled centrally.

Occupants noticed several improvements, lighting levels were more uniform at a more comfortable level and while overall lighting levels were reduced the new scheme met the requirements of AS/NZ1680 for lighting design.

The Cost Savings

The energy saving, as a result of the lighting upgrade, was estimated at 920,000 kWh per annum, while greenhouse gas emissions were reduced by 956 tonnes with an annual energy cost saving of \$73,200.

In addition to the energy savings, the fitment of modern lamps and ballasts should result in significant maintenance savings over the first five years, for this project it was estimated that \$56,800 would be saved as a result of the upgrade.

The Facts

Annual energy savings	920,000 kWh
Annual greenhouse gas savings	956 tonnes
Annual energy cost savings	\$73,200
Annual maintenance cost savings	\$56,800

Efficient Energy Systems
A Business Unit of Clipsal Australia Pty Ltd
Head Office
33-37 Port Wakefield Road, Gepps Cross,
South Australia 5094
Telephone (08) 8345 9507
Facsimile (08) 8346 8737
Internet eesaustralia.com

National Customer Care Enquiries:
1300 2025 25
National Customer Care Facsimile:
1300 2025 56

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