

# ROYAL NORTH SHORE HOSPITAL

## Retrofit Lighting Upgrade



### Background

Royal North Shore is one of the largest hospitals in NSW, admitting more than 58,500 patients in 1998/99 with an additional 775,000 treated as outpatients.

An initial assessment of the hospital's main type of light fitting was made and 10 were retrofitted in a common area as a trial prior to the entire upgrade of almost 2,200 fittings. The trial was done to show staff that the proposal would be acceptable, and to also seek their feedback. The retrofit upgrade concept reduced the light fitting tubes from two to one by improving its performance with an internal mirror reflector.

### Finance Support

Energy Performance Contracting made the project possible.

Tarong Energy undertook an Energy Performance Contract (EPC) with funding provided by the NSW State Treasury. The energy savings are utilised to repay the Treasury loan. Any energy shortfall in the guaranteed savings is made up by the contractor.

An agreed contract term and methodology of Measurement & Verification (M&V) are employed to ensure both the contractor and customer are confident of the resulting savings.

### Project Support

In addition to the support processes offered by the head contractor Tarong Energy, due to the technical nature of the lighting retrofit upgrade, Tarong Energy's lighting supplier provided a free trial after first investigating and coordinating the custom design of a mirror reflector and prewired replacement "gear tray" designed to minimise installation labour costs for the approximate 2,200 light fittings. The KW/2 reflector and gear tray were fitted over the top of the existing internal light fitting gear.

A major part of a typical EPC approach is that of a team effort from experts in different fields. For key organisations involved in the lighting upgrade, see below.



### KEY OBJECTIVES:

- » Improve performance of existing very old fluorescent light fittings. Approx. qty 2,200 - 2x40W.
- » Reduce lighting electricity consumption by  $\geq 50\%$ .
- » Improve lighting levels.
- » Reduce light fitting ongoing maintenance costs.
- » Standardise lamp type by using high performance, long life, new generation triphosphor 36W fluorescent tubes.

### KEY OUTCOMES:

- » Installed new high efficiency KW/2 reflector kits: 2,200 - 1x36W.
- » Lighting energy reduction > 50%.
- » Energy savings: 24,980 GJ p.a.
- » CO<sub>2</sub> savings: 4,145 tonnes p.a.
- » Project cost \$1,295,215.
- » Annual savings \$266,575.
- » IRR = 21.9%.
- » Simple Payback = 4.9 years.

Note: Costs and savings are for the total project, not just the lighting upgrade – details provided by SEDA.

DLOR\* (Downward Light Output Ratio)

### KW/2 Mirror Reflector



### KW/2 Retrofitted Troffer



### High Performance 'KW/2' Mirror Reflectors

### KEY CONTACTS

#### Royal North Shore Hospital

John McCarney - Business Development Manager

#### Tarong Energy

Laurie Shaw - Commercial Manager

#### Pierlite Lighting

Greg Morris - Technical Representative

#### Efficient Energy Systems

Gary Egglestone - General Manager

### Old Existing Lighting

- Very old technology.
- >110 watts per light fitting.
- Rapid Start tubes.
- Useful tube life < 8,000 hours.
- Poor tube light-output.
- Poor fitting light-output due to paint surface deterioration.
- Fitting component failures.
- High maintenance costs.

### New Lighting Upgrade

- Super-high DLOR\* performance.
- KW/2 mirror reflectors.
- Increased lighting levels.
- New tube life > 15,000 hours.
- Low maintenance costs.
- Total power consumed:

	Watts	Amps
Old	242.0 kW	1,254.0
New	92.4 kW	418.0
Savings	62%	67%

To lower your lighting energy bills contact:

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