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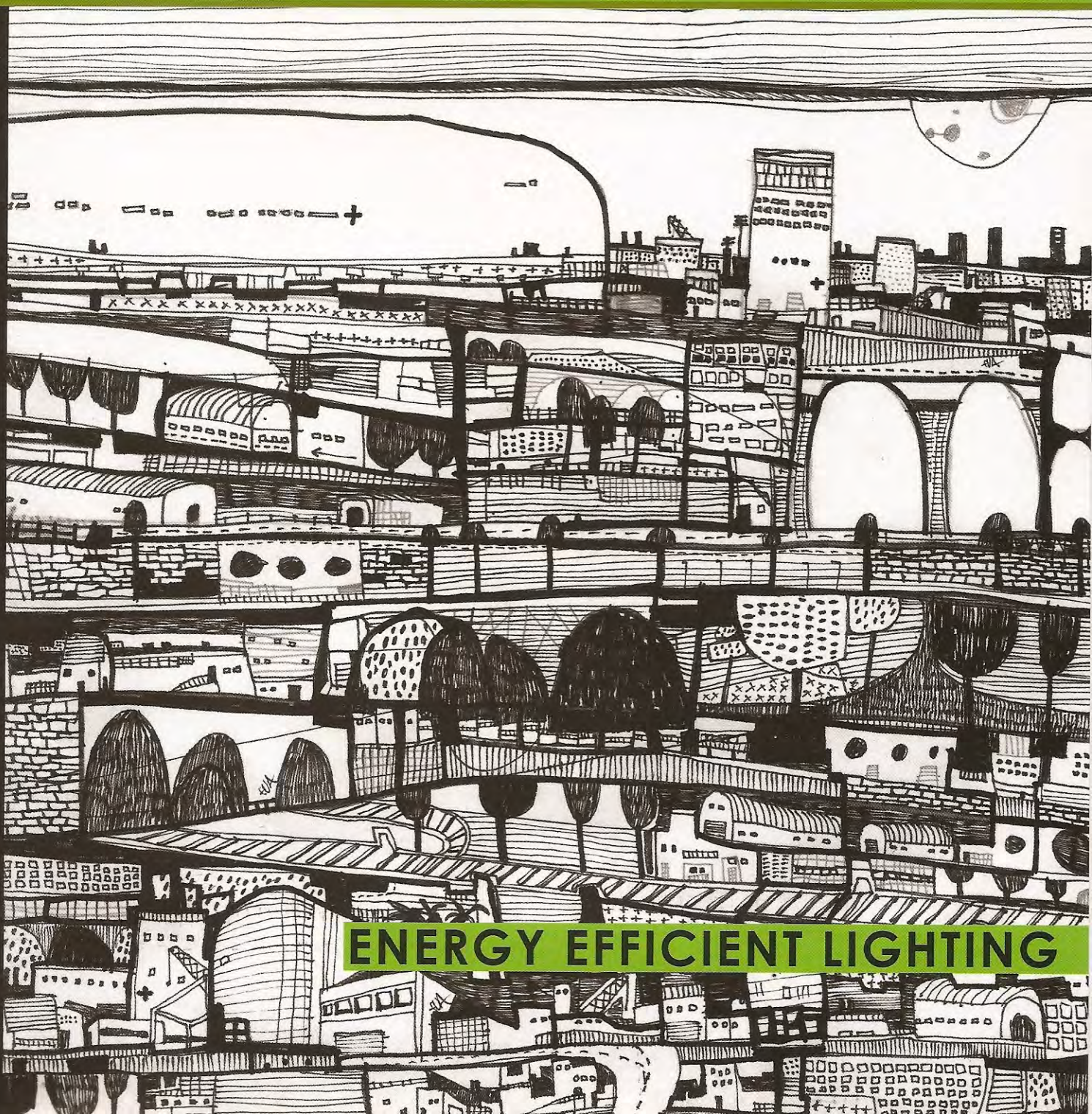
# ILLUMINATE

EXCELLENCE IN LIGHTING DESIGN

OFFICE AND ENERGY EFFICIENT LIGHTING



## ENERGY EFFICIENT LIGHTING

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# NEW LIGHTING

## FOR BUILDINGS GIVEN THE 'GREEN' LIGHT

BY PAULA WALLACE

ENERGY EFFICIENCY HASN'T BEEN A MAJOR ISSUE FOR COMMERCIAL BUILDINGS IN THE PAST DUE TO THE RELATIVELY LOW COST OF ENERGY IN AUSTRALIA.

BUT WITH ENERGY COSTS ON THE INCREASE AND THE CONSCIOUSNESS OF 'GREEN' ISSUES BEING PROGRESSIVELY RAISED IN THE PUBLIC ARENA, TENANTS ARE TAKING A CLOSER LOOK AT SUSTAINABLE DESIGNS IN LIGHTING COMMERCIAL SPACES.

IN SOME CASES THEY ARE ALSO GOING BEYOND TECHNOLOGY ISSUES TO CONSIDER THE VALUE OF GOOD LIGHTING DESIGN AS IT RELATES TO OTHER FACTORS SUCH AS WORKER PERFORMANCE AND SATISFACTION.

1. DIGITAL IMPRESSION OF ROOF-TOP GARDEN, '30 THE BOND', HICKSON ROAD, SYDNEY. © BOVIS LEND LEASE

## BUILDINGS ARE PART OF THE ENVIRONMENT

The Federal government's declaration that this year the environment should include buildings as well as trees and rivers, comes at a time when the Australian Greenhouse Office is reporting that commercial buildings are one of the fastest-growing sectors of greenhouse gas pollution in Australia. They are likely to double their contribution to greenhouse gas pollution from 32 million tones in 1990 to 63 million tones by 2010.

Energy efficient lighting measures are being prepared by the Australian Building Codes Board (ABCB), and their regulation document for commercial buildings (classes 5-9) is programmed for release in the last quarter of this year. The document will invite public comment on the proposals it contains.

While the Australian Standard and Australian Greenhouse Office provide provisions for commercial lighting fit-outs, these ABCB measures are expected to have the greatest influence on luminaire performance and lighting design.

Going 'green' may no longer be an optional extra in property development. Companies who are providing early leadership in energy efficient design, can bolster their credentials through seeking an Australian Building Greenhouse Rating (ABGR), a scheme monitored by the Sustainable Development Authority (SEDA).

"The Sydney City Council often stipulates a 4-star rating for new commercial premises so the SEDA rating is becoming widely known and respected", notes Alex McBurney, Electrical Engineering Group Leader for Bovis Lend Lease.

In January this year, Energy and Utilities Minister, Frank Sartor, named the "Top 10 greenest buildings in Sydney", drawn from SEDA's program comprising 71 NSW buildings.

"Peak energy consumption is expected to grow by 3.1% per year over the next nine years, and this year we are expected to once again set a new record for energy consumption", says Sartor.

## TOP TEN ENERGY EFFICIENT BUILDINGS

The ten most energy-efficient buildings in Sydney last year saved a total of 7142 tonnes of greenhouse gas emissions, the equivalent of taking more than 1500 cars off the road for one year.

The buildings, which use energy-efficient lighting, high-performance glass to minimise heat costs and draw some of their energy from renewable resources, can either be new premises or retrofitted. The highest rating is 5-stars.

The top ten buildings include: 4.5 stars-Henry Deane (20 Lee Street, Central), 4 stars-Lands (22-33 Bridge Street, City), 3.5 stars-80 Pacific Highway (North Sydney), 3.5 stars-The Barrington (10-14 Smith Street, Parramatta), 3.5 stars-Colonial Tower (150 George Street, Parramatta), 3.5 stars-54 Miller Street (North Sydney), 3.5 stars-The Denison (65 Berry Street, North Sydney), 3.5 stars-30 Cowper Street (Parramatta), 3.5 stars-Maritime Trade Towers (207 Kent Street, Sydney), 3 stars-BT Tower (1 Market Street, Sydney).

1. HENRY DEANE BUILDING, SYDNEY. © SEDA
2.
3.

4. DIGITAL IMPRESSION OF ATRIUM, '30 THE BOND', HICKSON ROAD, SYDNEY. © BOVIS LEND LEASE

## ON THE WAY TO A PERFECT FIVE – '30 THE BOND'

SEDA is expecting that one of the newest additions to Sydney's corporate landscape will receive the country's first 5-star rating, following a period of assessment over the next year.

The major tenant and development managers of the project, property giant Bovis Lend Lease, is due to move in at '30 The Bond' at Hickson Road, at the end of March.

Over recent years Bovis Lend Lease (the construction arm of Lend Lease) has completed a number of government buildings which feature aggressive energy targets. This has allowed its engineers to develop evaluation processes involving detailed energy modelling of a building. "This gives us a competitive edge in this market and what better way to demonstrate our expertise in this area than through our own premises", says McBurney.

Lend Lease's vision for '30 The Bond' was driven by "lower energy consumption which is tied to reduced greenhouse gas emissions", according to Project Manager, Peter Marix-Evans who is in charge of the fit-out for the Lend Lease tenancy.

He continues, "This building and this tenancy in particular will be used to benchmark a lot of projects and fit-outs....it will be exposed to a good deal of review by clients, consultants and the industry in general."

The design of the building was also driven by the aspirations of Lend Lease's own people, as identified through workshops and discussions which resulted in the company recognising the importance of these aspirations in the design of the work environment.

## DESIGN FEATURES INCLUDE CHILLED BEAM TECHNOLOGY

'30 The Bond' is a $112 million, nine-storey building owned by Deutsche Office Trust. The building consists of nine levels of commercial tenancy space, a ground level tenancy and two levels of car parking. Lend Lease Corporation will occupy seven levels of the building.

The building uses chilled beam technology and naturally ventilated/mixed mode spaces to significantly enhance indoor environment quality and reduce greenhouse gas emissions, which will contribute significantly to its chances of achieving a 5-star rating.

The building design, which features 100-metre-long floor plates, an eight-storey atrium and a 3000mm high glass facade with sunrooms and operable louvres, will produce 30 per cent less greenhouse gas emissions than a typical office building.

With a predominantly western-facing facade, it was important to minimise the impact of afternoon sun and reduce air conditioning loads. The solution was an external operable shading system on the building's north, west and southern facades. It operates progressively on a time clock during the day as the sun moves west.

## THE BLINDS INDIVIDUALLY ADJUSTED BY TENANTS

The facade features naturally ventilated sunrooms and external terraces. Sydney's climate will allow the sunrooms to operate for up to 50-60 per cent of the year with natural ventilation, which contributes to the overall reduction in energy use and greenhouse emissions.

Michael Wheatley, Senior Project Manager at Bovis Lend Lease, says that "implementing environmentally efficient management for a commercial building has a positive impact on the asset as a whole. The most significant impact is in lowering the building's running costs, and how attractive the building is to tenants seeking energy efficient accommodation."

The use of chilled beams is a first in a large-scale commercial building in Australia. They operate by pumping chilled water through cooling elements in the ceiling. People, computers and office equipment heat air that rises to the ceiling.

This air is then cooled by the chilled beams and falls, creating a natural convection process of hot air rising and cold air falling. Additional radiant cooling from the chilled beams supports the convection process.

## GENERAL LIGHTING DESIGN

The fit-out of electrical services for the new headquarters, and design of the basebuild, became the job of consultants, Connell Mott MacDonald.

Their brief from Lend Lease was to provide 320 lux at desk level, maximise efficiency, minimise maintenance and not exceed 8W/m2 energy usage.

In addition, daylight sensors were to be provided to control the energy use of perimeter lights and the BMCS was specified to incorporate time scheduling for automatic switching. An integrated lighting solution was required to accommodate the restrictions