

# 1.964 Design for Sustainability

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Sustainable Design  
Bordo International Headquarters  
Victoria, Australia

Presented by Raymond Kwok

# Green Building Council of Australia



- Rating System

- Based on
  - i. Management
  - ii. Energy reduction
  - iii. Water reduction
  - iv. Materials selection
  - v. Emissions
  - vi. Innovation
  - vii. Transportation

- Green Star Rating

- Rating Scale
  - 1) 1 ★ : 10-19 pts
  - 2) 2 ★ : 20-29 pts
  - 3) 3 ★ : 30-44 pts
  - 4) 4 ★ : **45-59 pts**
  - 5) 5 ★ : **60-74 pts**
  - 6) 6 ★ : **75-100 pts**



# Building quick facts

<b>Building name</b>	Bordo International Headquarters
<b>Location</b>	Victoria, Australia
<b>Total floor area</b>	2700 m <sup>2</sup>
<b>Number of storey</b>	2
<b>Construction time</b>	4.5 months
<b>Building cost</b>	\$1.6 millions USD
<b>GBCA rating</b>	

# Sustainable Design



- Efficient Lighting System
  - Building orientation
    - The long sides of the building is oriented to the east and the west to maximize amount of daylight received
  - Interior lights
    - T5 fluoro white lights are carefully spaced
    - No lights are needed in some perimeter offices of the building during the daytime due to the increased natural lighting

# Sustainable Design



- Natural Ventilation
  - Manually operable windows are installed in the N & S sides of the building to provide X-flow ventilation  
→ no mechanical system is needed to provide ventilation
- Ceiling Insulation
  - Super-insulated ceilings to reduce heat penetration
- Rainwater tank
  - To collect and store rainwater from the roof to supply for 90% of landscape irrigation and toilet flushing needs



# Benefits/Costs (financially)

<b>Total cost</b>	<b>\$1.6m</b>
<b>Cost for sustainable design</b>	<b>\$45000</b>
<b>Predicted operational savings per annum</b>	<b>\$4000</b>
<b>NPV after 5 &amp; 10 years</b>	<b>\$25000 &amp; 35000</b>
<b>Payback period</b>	<b>~4 years</b>

# Benefits/Costs (environmentally)



Standard office building energy consumption	600 MJ/m <sup>2</sup> /annum
Bordo International Office Building energy consumption	192 MJ/m <sup>2</sup> /annum
Percentage energy saving	68%
Estimated energy saved	~250,000 MJ/annum
Estimated greenhouse pollution saved	~100 tons CO <sub>2</sub> eq/annum

# Questions?

