

## Trigeneration Project The Ark Building, 40 Mount Street North Sydney, NSW

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### PROJECT SUMMARY

**Project Type** – Design and Construct

**Commercial Facility** - A 21storey commercial office building located in the North Sydney business precinct, with 28,500m<sup>2</sup> of Net Lettable Area (NLA), including charging bays/parking spaces for electric vehicles.

**Trigeneration Project Cost** - \$2.6 Million

Certified Six star Green Star Office rating and targeting 5 Star NABERS energy.

Major tenants include  
Coca-Cola Amatil and Vodaphone Hutchison Australia

Estimated Greenhouse Gas Emission Savings from the implementation and use of Trigeneration system:  
1,300 tonnes of CO<sub>2</sub> per year = 500+ cars off the road each year.

### TECHNICAL SUMMARY

**This is a ground breaking Green Building project for Australia.**

The Ark Building has achieved the highest available Greenstar energy rating of 6 stars which represents 'World Leadership' in sustainable design with the implementation of a Trigeneration plant.

The Trigeneration plant is primarily made up of a 770 kWe reciprocating gas engine and a 650 kW absorption chiller allowing three outputs (hence tri-generation) to be produced: these are electricity, heating and cooling.

The Trigeneration plant produces about 80% of the building's electricity requirements as well as producing domestic hot water for bathrooms and kitchenettes, and chilled water for space air conditioning throughout the building. Both the hot water and chilled water are produced for "free" from the waste heat of the Trigeneration plant, making the Trigeneration plant highly energy efficient (about 85%) and cost effective.

The unique feature of this Trigeneration plant designed and constructed by TES, is its ability to provide emergency power to the building in the event of a blackout without diesel generators.

All core tenant functions, including ventilation, power, lighting and lift operation can be produced by the Trigeneration plant within 30 seconds of a network failure. Capital and maintenance savings are achieved and diesel emissions are eliminated.

The Trigeneration plant is interconnected to the building's Building Management System (BMS), and remote monitoring and control of the plant's operations can occur 24 hours per day, 7 days a week. With the Trigeneration plant in place, the Ark Building and tenants have reduced their carbon footprints dramatically.

For comparison purposes, if the Ark Building was designed with no Trigeneration plant in place, it would have consumed approximately 3,300 tonnes of CO<sub>2</sub>-per year. With the Trigeneration plant in operation, the building will consume approximately 2,000 tonnes of CO<sub>2</sub> - per year.

This is a saving of nearly 40% in carbon emissions every year which translates to taking over 500 cars off the road every year. Over the 15 year planned life of the Trigeneration plant, this will equate to taking 7,500 cars off the road.

"Now that's sustainability in action."



### CONTACTS

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