

800-808 Bourke Street, Melbourne, Australia

TYPE AND SCALE

Grade: A-grade
Use: Office
NLA: 59,600m²
Average Floor Plate: 3500m²
Car Parks: 416
Key Tenant: NAB
Building completion date: 2004

TIMEFRAME

2003: 800-808 Bourke Street opened as first commercial office building.

2012: NAB, the tenant renewed its commitment to the building until 2027. The renewed lease commitment included multiple green lease clauses.

2014: Green Star rating by Green Building Council Australia.

GOALS AND TARGETS

As part of NAB's renewal for their lease agreement until 2027, GPT had a target period of one to two years for various sustainability objectives. The targets are listed below and achieved ahead of schedule.

- Achieve Base Building NABERS Energy target of 5 Stars by December 2015, achieved two years ahead of the target date.
- Improve Base Building NABERS Water rating from 2.5 Stars to 3 Stars (achieved 3 Stars in the first year of the new lease).
- Establish a Building Environmental Management Plan & Committee, an important component of achieving the NABERS targets.

MAIN STAKEHOLDERS

- The GPT Wholesale Office Fund – Owner
- The GPT Group – Manager
- The National Bank of Australia – Major tenant

INFORMATION

<http://www.gbca.org.au/green-star/green-star-projects/nab-800-808-bourke-street-docklands/36229.htm>

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Please note currency is expressed in Australian Dollars.



SUMMARY

This is a sustainability case study on improving building energy efficiency. It was a partnership between GPT, the manager of 800-808 Bourke Street, Melbourne and its tenant, National Australia Bank (NAB). The programme commenced in 2012 and the building has since cut its energy use by 29 per cent.

STRATEGY

Vision

800-808 Bourke Street is a pilot asset for the Green Building Council of Australia's Green Star Performance project. GPT and NAB works collectively on this initiative.

GPT has set itself a series of specific climate change and energy targets and has adopted a policy of achieving carbon neutrality within its control. GPT aims to have all of the buildings it manages operate carbon neutrally.

800-808 Bourke Street General Manager, Dominique Impiombato believes the results embody GPT's aspirations. "In my view the introduction of green clauses in the lease renewal, combined with achieving our sustainability targets are good examples of true partnerships and inherent sustainability. We support creating and maintaining the best conditions for our customers, by investing in mutually-beneficial initiatives such as the LED retrofit project."

IMPLEMENTATION

Approach

The establishment of a Building Environmental Management Plan & Committee to reduce energy use at 800-808 Bourke Street was a condition in one of the green clauses in the renewal of NAB's lease of the building to 2027. The framework for the plan included elements from other Building Environmental Management Plans and elements that were specific to the building.

The Building Environmental Management Plan committee regularly met to review the building's water and energy use and targets.

The committee consisted of members from both GPT and NAB, who collaborated in developing the plan to reduce the building's energy use. This included each of the companies funding the program. In the case of the LED lighting upgrade which the building's 14 floors and 60,000 square metres, GPT spent \$650,000 and NAB \$300,000.

Challenges

The program's key challenge was to meet the targets set in the green clauses in the renewal of NAB's lease of the building. These included setting up a Building Environmental Management Plan & Committee that would involve GPT and NAB having to collaborate together. There was the challenge of attaining a 5 Star NABERS rating and also overseeing a major retrofit of LED lighting in the building that was on a scale both GPT and NAB had never handled.

Achievements

A key achievement was GPT and NAB being able to cement a Building Environmental Management Plan and maintain the commitment to collaborate closely with each other. The program saw the building cut its energy use by 29 per cent over 2 ½ years and attain its Five Star NABERS rating ahead of schedule. 800-808 Bourke Street in 2014 also was the first building to be awarded a Green Star rating by Green Building Council Australia.

KEY FEATURES

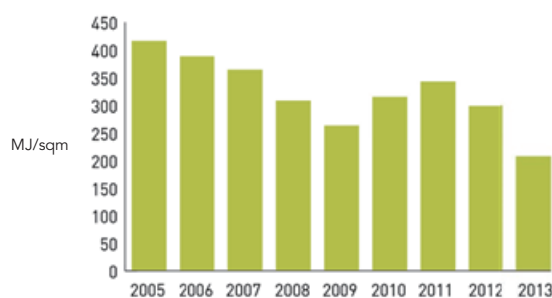
Base Building Efficiency Program

GPT has undertaken reviews of heating, ventilation, air-conditioning and lighting projects to improve the base building efficiency. In 2013, the projects resulted in energy savings of approximately \$230,000 when compared to the original energy intensity levels of the building in 2005.

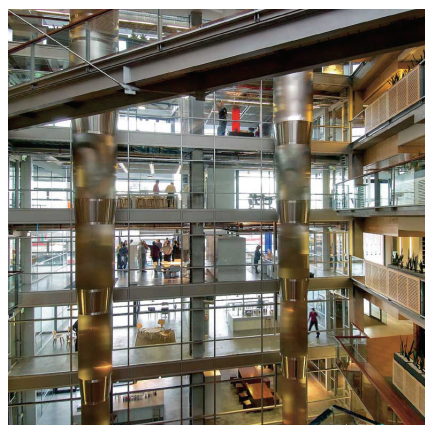
Significant projects to improve efficiency included:

- **Building Schedule Review** to determine which items of plant were controlled via the preferred Global Scheduling interface. Plant items were segregated and individually adjusted, minimising the amount of plant overruns and providing more flexibility and control over base building plant operation – saving approximately 60,000kWh/annum.
- **Boiler Staging Control Review** – The boiler stage down return temperature set point was reviewed and driven down to 66oC to ensure efficient boiler stage down. The previous stage down temperature set point (80oC) prevented the boilers from staging down effectively. The boiler outside air temperature (OAT) lock out was also reduced from 18oC to 16oC, with no negative impact on internal temperature control – saving approximately 2,650kWh/annum electricity and 1,500,000MJ/annum gas.

800 – 808 Bourke Street – Energy Intensity



Source: The GPT Group



- **Car Park Exhaust Review** – An initial audit found that the car park exhaust fans were running excessively. A review of CO calibrations was performed and offsets were applied to ensure readings were within normal parameters. A review of the current control set points was also performed and modifications were applied to bring the car park ventilation system in line with AS/NZ 1668 – saving approximately 50,000kWh/annum.
- **Air Handling Unit (AHU) Supply Air Static Pressure Review** – A review of the supply air static pressure control found that 10 of the buildings 23 AHU's had their static pressure reset functionality disabled. All 10 AHU's had this functionality re-enabled. A review of all minimum static pressure set-points was also performed and minimum set points were lowered to 80 Pascals to allow each AHU to operate at this lower set point, assisting in reducing fan energy – saving approximately 78,000kWh/annum.
- **Main Condenser Water Pump and Wet-bulb Condenser Water Temperature Control** – vSD's were installed to each of the three main condenser water pumps, resulting in reduced pump energy requirement. Wet-bulb calculations were also applied to provide more efficient control to the main condenser water loop leaving temperature at the cooling towers. This ensured that the most efficient cooling tower fan speed was applied under all conditions and stages – saving approximately 20,000kWh and 1,500kl/ annum water.

Significant projects planned to further improve energy consumption include:

- **Fire Stairwell lighting** – Replacement of 182No Twin 36w T8 fittings with Enlighten Chameleon LED 10 chip fittings, with on-board emergency battery and occupancy sensor, saving an estimated 114,000kWh/annum.
- **Car Park and Back of House lighting** – Retrofitting of 423No Twin 36w T8 fittings with 18.5w LED tubes, saving an estimated 108,000kWh/annum.
- **Loading Dock and Car Park lighting** – Replacement of 400w Metal Halide light fittings with 150w Induction light fittings, saving an estimated 33,000kWh/annum and approximately \$1,500 per annum in maintenance costs, whilst maintaining required lux levels within high traffic areas.
- **Building Energy Optimisation Program** – Consisting of an AHU energy efficiency strategy rollout, chiller and boiler control strategy energy reduction enhancements and tenancy/retail condenser water system optimisation.

Tenant Experience Sharing

"800-808 Bourke Street is a fantastic example of ecologically sustainable design and great place to work. It was designed before the Green Star design rating tools were developed, we're thrilled to have the opportunity to partner with GPT to assess the operational performance of the building through the Green Star Performance pilot."

Nicole Murphy
NAB Head of Environmental Sustainability

PROGRESS AND OUTCOMES

A key lesson learnt was that the energy efficiency of buildings can be dramatically improved if management plans are used in a holistic fashion and include performance targets that are regularly monitored. Another lesson was that the better the collaboration between building managers and tenants, the better the outcome for all.

Aside from improving the energy and water efficiency of the building, the program resulted in energy savings of around \$230,000 a year.