



Image Courtesy of Watpac Construction

“Green” Engineering The National Tennis Centre

Charuka Samaraweera
Director – WSP Buildings
Melbourne Forum 19/03/2013



“Green” Engineering The National Tennis Centre

The Dream, Bid & The Project



- **8 new indoor** tennis courts and **13 new outdoor** courts
- Warm up and warm down facilities for athletes
- An **elevated plaza** providing new public space and a new eastern entry to Hisense Arena
- **1,000 car spaces** and up to **30 bus parks** in **indoor** and **outdoor** carparks
- An **upgraded western entry** to Hisense Arena
- **Bridge Link** above the Olympic Boulevard between the elevated Plaza and the AAMI stadium

Video Courtesy of Watpac Construction

“Green” Engineering The National Tennis Centre



Image Courtesy of Watpac Construction

Challenges and Targets

- Shortfall in existing services infrastructure
- Operational requirements of the Client
- Stretch target of Practical Completion by early 2013
- Minimisation of “active” building services systems
- Integrated & Sustainable Design
- Simple, cost-effective & ease of maintenance

“Green” Engineering The National Tennis Centre



“Green” Engineering Initiatives

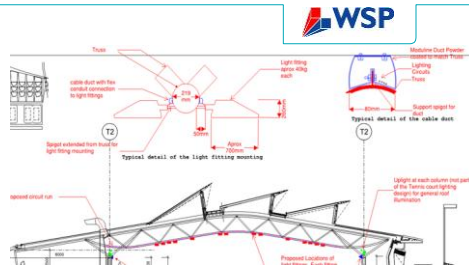
- Naturally ventilated Indoor Tennis Hall
- Use of purpose designed lighting reflectors and LED lights
- “Connection to” and “Utilisation of” existing storm water drainage and recycling system.
- Maximisation of Daylight within Indoor Tennis Hall
- Use of Photovoltaic Energy Generation
- Use of Water Efficient Fixtures
- Adaptation of LEED Rating/Certification



“Green” Engineering The National Tennis Centre

Key Initiatives– Electric Lighting

- 3 levels of lighting intensity using Metal Halide fittings
- Maximum illuminance level of 2200 Lux @ .85
- Use of purpose designed reflectors for glare control and efficacy
- Up to 24kW of lighting power density per court
- Use of LED fixtures in External Lighting
- Use of programmable Lighting control system



“Green” Engineering The National Tennis Centre



Key Initiatives– Daylighting

- Maximisation of Glazing to East, West and South Facade
- Use of automated blinds for glare control
- Use of High level “pop-ups” for channelling diffused daylight

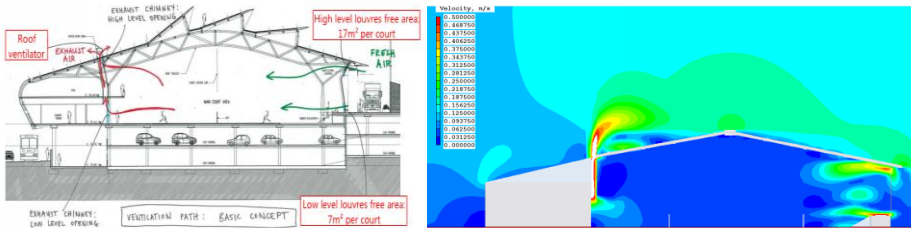


“Green” Engineering The National Tennis Centre



Key Initiatives– Natural Ventilation

- Provision of good indoor Environment Quality
- Comfort of the Players
- High Air Change Effectiveness
- Flexibility in adopting a Hybrid Solution – Active Cooling System within indoor Courts area

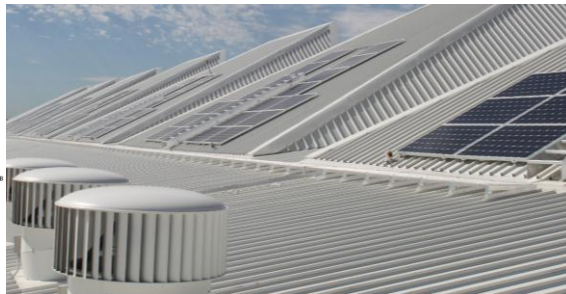
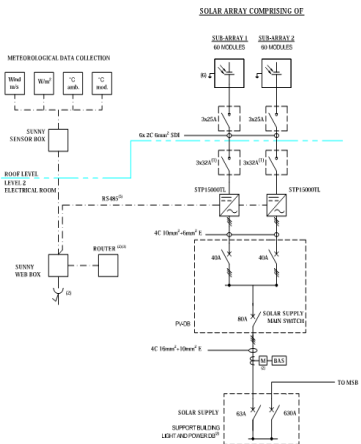


“Green” Engineering The National Tennis Centre



Key Initiatives– PV System

- System capacity 30kVA
- Upto 120 PV Panels installed on roof
- 2 Grid Connected Inverters
- Predicted Generation of 42.14MWh per year



“Green” Engineering The National Tennis Centre

Feedback Thus Far..



- Since Jan 2013 Approx. **9MWh** Generated by the **PV System**
- As of Feb 2013 **Active Cooling System** within the Indoor Tennis courts have **not been activated**
- Majority of **court lighting utilise 500lux** setting
- **Positive Feedback** from the tennis players that participated in the **Australian Open 2013**
- **43** out of **60 LEED Target Points confirmed**

