“Green” Engineering The National Tennis Centre
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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
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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 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
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**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

**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
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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

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
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**Key Initiatives – Water Efficiency**
- Minimisation of new plant/system for water treatment
- Utilises the existing 4.5Ml central rainwater harvesting system
- Utilises the existing holding tanks adjacent to Hisense Arena
- Provision for use of Recycled water for Court irrigation
- Use of Water Efficient Fixtures and Fittings

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**LEED – Leadership in Energy & Environmental Design**
- Reduction of the urban heat island effect through light coloured roof and underfloor car parking
- Building “flush out” to maximise air quality prior to occupancy
- Construction waste management to divert construction waste from landfill
- Selection of low ODP/GWP refrigerants
- Measurement and verification process to verify performance of building in operation
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**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**