

ADAPTIVE REUSE  
TERALBA CO-OPERATIVE STORE  
75 YORK STREET TERALBA

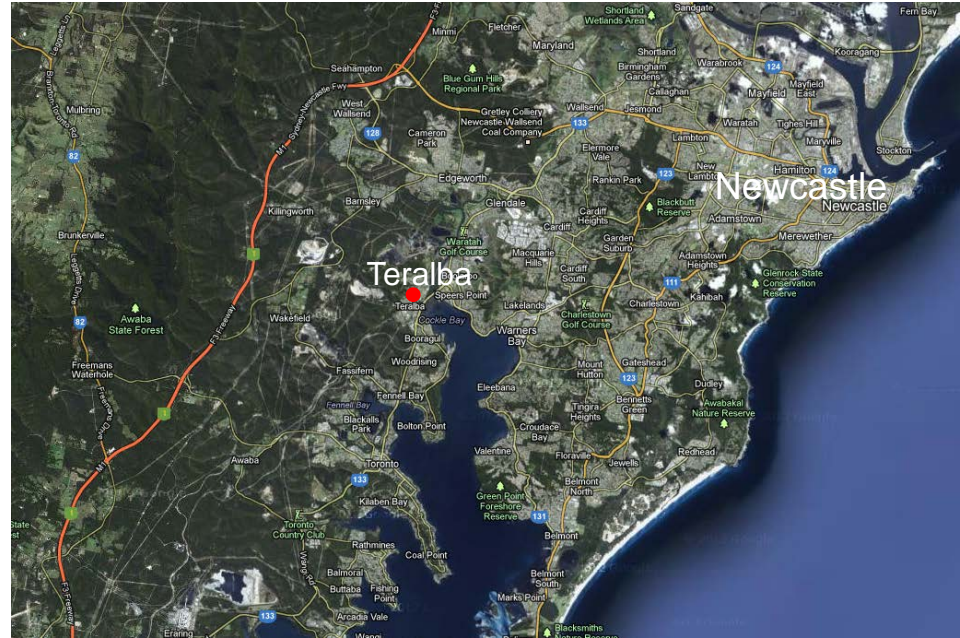
October 2015



# Building Design Objectives - 75 York Street Teralba

75 York Street

- Provide high quality space for 130 staff
- Adaptive reuse of heritage building
- Be part of Teralba community
- Minimise energy footprint through
  - Low energy use for heating, cooling and lighting
  - On-site electricity generation and storage
- Healthy building – natural lighting, warm LED lighting and limited air conditioning
- Functional/high staff amenity
- Create building that people live with
- Low maintenance - short and long term
- Access to trains, buses and cycleways
- Accessible to staff and clients







Teralba Branch Co-Operative Built 1925  
(Photo Circa 2004)





**Teralba Branch Co-Operative Built 1925**  
(Photo Circa 2008)





- 5500 m<sup>2</sup> land
- 2500 m<sup>2</sup> floor space
- 35 KW of solar panels
- 40 parking spaces
- High speed network connection
- Optic Fibre connection for on-site back up

Umwelt Offices - York Street Teralba NSW



- Make use of high thermal mass required for earthquake design
- Double roof insulation and vented ridge
- Solar panels shield roofing from Solar Radiation
- Low E Comfort Glass
- Shade Louvers over skylights and western end of building
- 1.5 metre wide eaves
- Passive ventilation - air movement aided windows in roof apex, louver windows, doors, central stairway, sea breeze
- Reception building roof garden – concrete and soil
- Landscaping (trees and shrubs) to shade building
- 28,000 litres of rainwater gravity fed to toilets and landscaping
- Car park design includes underground rainwater detention
- Task lighting using LED lights to minimise energy usage



## Temperature controlled by:

- two reverse cycle chiller units (one for server room)
- 1200 m of geothermal condenser loop below car park
- 3800 m of hydronic piping in slabs to heat and cool building
- 100 metres of chilled beams to offset roof heat on upper floors
- 3 evacuated vacuum solar hot water units to assist in heating building
- BMS system that monitors room temps and regulates heating/cooling system – internet accessible
- Manual control and ongoing analysis to minimise energy use
- Continued refinement of system



- 25 KW of solar panels producing approximately 35,000 KWh/year of electricity (trees and cement dust)
- Use of thin film solar panels which at time of purchase:
  - Used 30% of energy required to manufacture monocrystalline solar panels – energy return 3 years
  - Work better in low light and produce on average 10% to 15% more power than same size monocrystalline system.
- 100 kWh of battery capacity allows server/communications to function for approximately 10 to 20 hours with batteries connected to blade server and backup air conditioner as Uninterrupted Power Supply
- Backup generator connected to battery supply





Excavation for Condenser Loop





Geothermal Condenser Loop





Hydronic Piping





Concrete Slab for Reception Area





Raised Roof of Teralba Co-Operative





Adaptive Reuse - 75 York Street





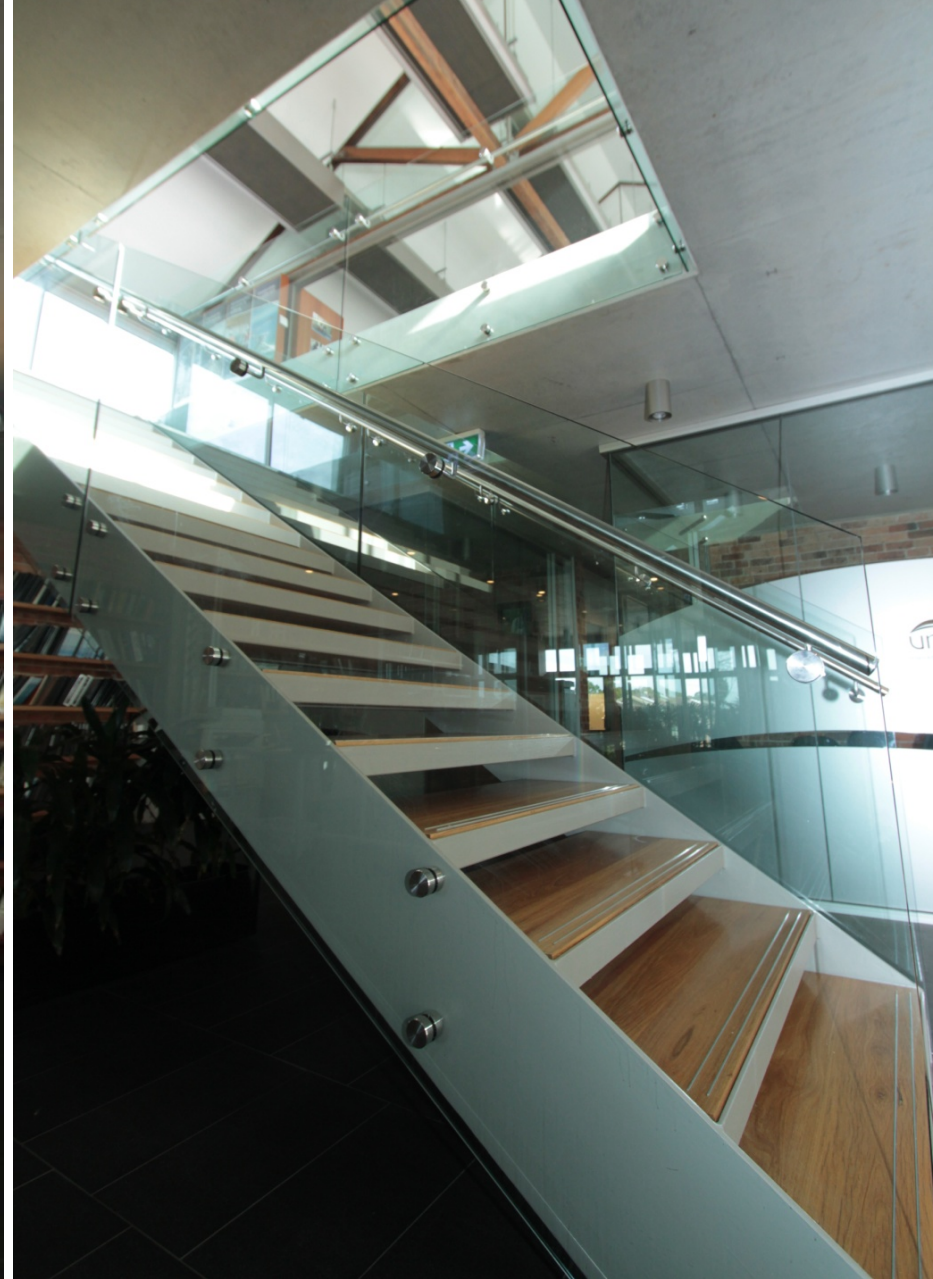
Separation of Old and New





Separation of Old and New





Refurbished Teralba Co-Operative





Reuse of Original Timber Trusses





Solar Panels and Landscape Areas





Solar Power Inverters, Controllers and Batteries





Central Stairs





Carpark, eaves and shade louvers





William Street Car Park





Roof top garden on Reception Building





Roof top garden on Reception Building





Outdoor deck and roof top garden

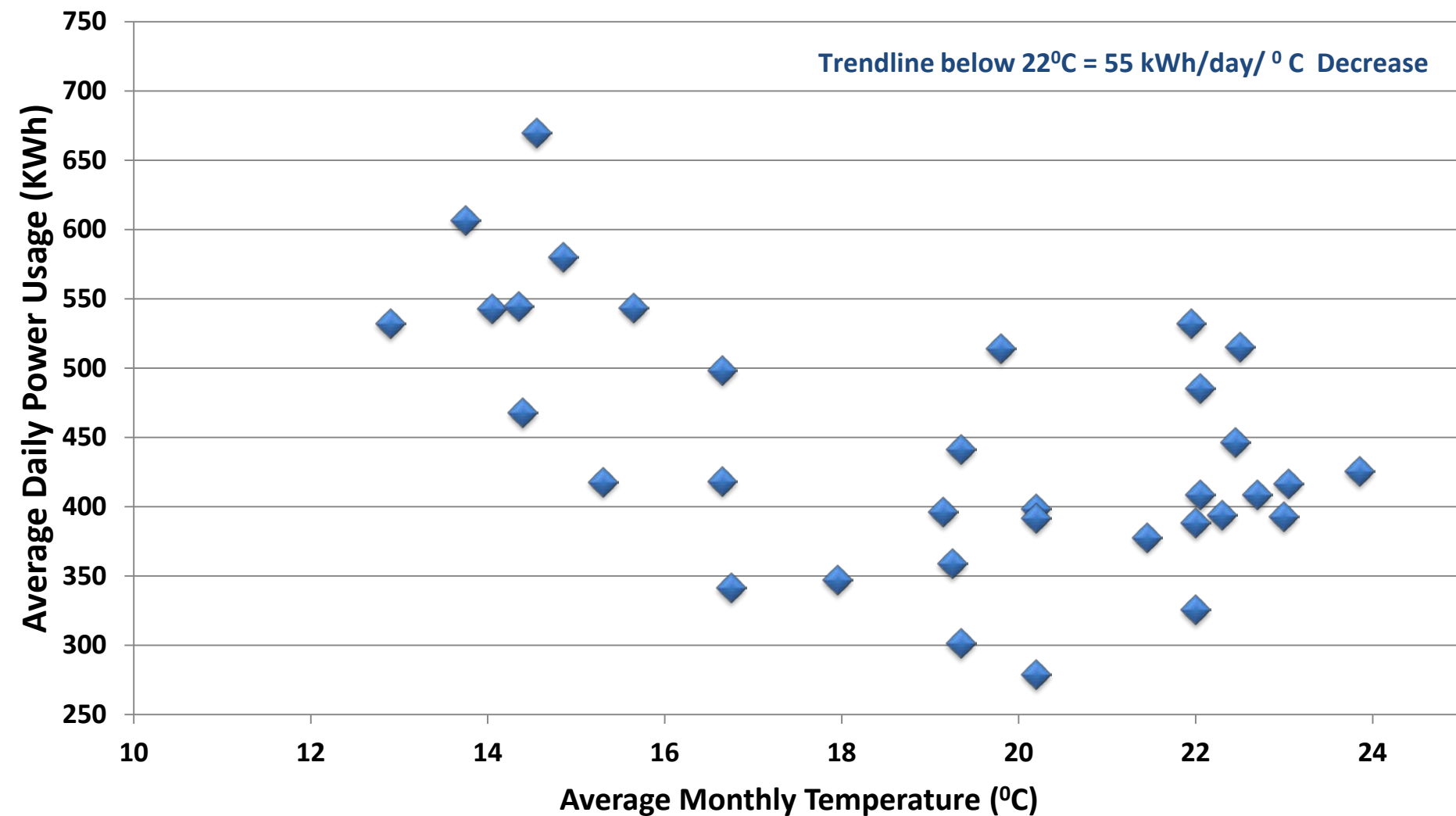




Warm LED Lighting



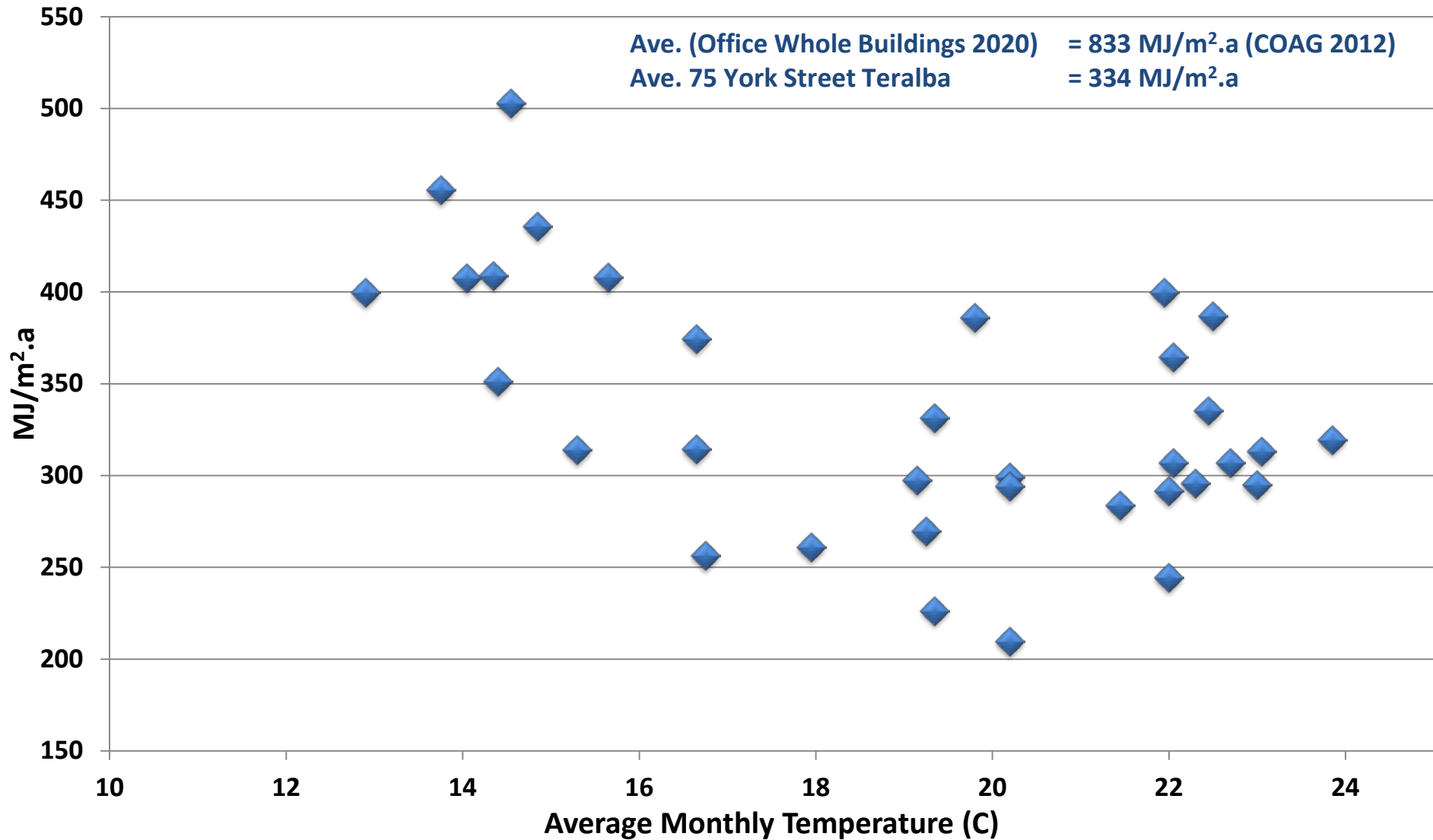
# Average Daily Power Usage vs Average Monthly Temperature (November 2012 to August 2015)



75 York Street Energy Usage Trends



# Total Power Usage vs Average Monthly Temperature (November 2012 to August 2015)



## 75 York Street Energy Usage Trends