

UMWELT

75 YORK ST TERALBA

Australian Institute of Energy - Peter Jamieson

April 2014



- Locally owned – 2 Directors, 3 Shareholders.
- Environmental consultancy established in March 1993 in Toronto NSW.
- Opened offices in Perth (March 2007) and Canberra (October 2011).
- Moved from Toronto after 20 years to new office in Teralba in October 2013.
- 75 York Street – working sustainably
- Currently employ 100 people in three offices
- Undertake projects across Australia, NZ, Africa, Malaysia, PNG and Samoa

- Over the last 20 years we have been given the opportunity and trust to work closely with our clients and stakeholders to achieve quality outcomes, integrating environmental, social and economic considerations.
- Assisting others in making informed decisions in regard to development and environmental management requires research and innovation.
- Innovation and sustainable business practices are integral components of our environmental consultancy business.



Teralba NSW



Umwelt Head Office - Teralba NSW

- Provide space for 120 to 130 employees
- Reuse of existing heritage building
- Minimise energy footprint – site constraints
 - Low energy use for heating, cooling and lighting
 - On-site electricity generation and storage
- Healthy building – natural lighting and limited air conditioning
- Functional and provide excellent staff amenity
- Create building that people live with
- Low maintenance - short and long term
- Access to public transport, cycleways



Construction commencement



Reuse of Teralba Co-Operative Store



Reuse of Original Timber Trusses



Adaptive Reuse - Separation of Old and New



- High Thermal Mass – 300 mm to 400 mm thick concrete required for earthquake loading so use it
- Double roof insulation, vented ridge and solar panels
- Low E Comfort Glass to minimise heat loss
- Louvers over skylights and western end of building
- 1.5 metre wide eaves to shade windows and sun shades
- Passive ventilation - air movement aided ridge windows, louver windows, doors and central stairway

Building heating and cooling controlled by:

- two reverse cycle chiller units (one for server room)
- 1200 m condenser loop 3 metres below car park
- 4000 m of hydronic pipes in bottom of thick concrete slabs to heat and cool building
- 100 metres of chilled beams to offset roof heat on upper floors
- three evacuated vacuum solar hot water units to assist in heating building
- BMS system that monitors room temps and regulates heating/cooling system – internet accessible
- Additional heat load - reverse cycle air conditioners

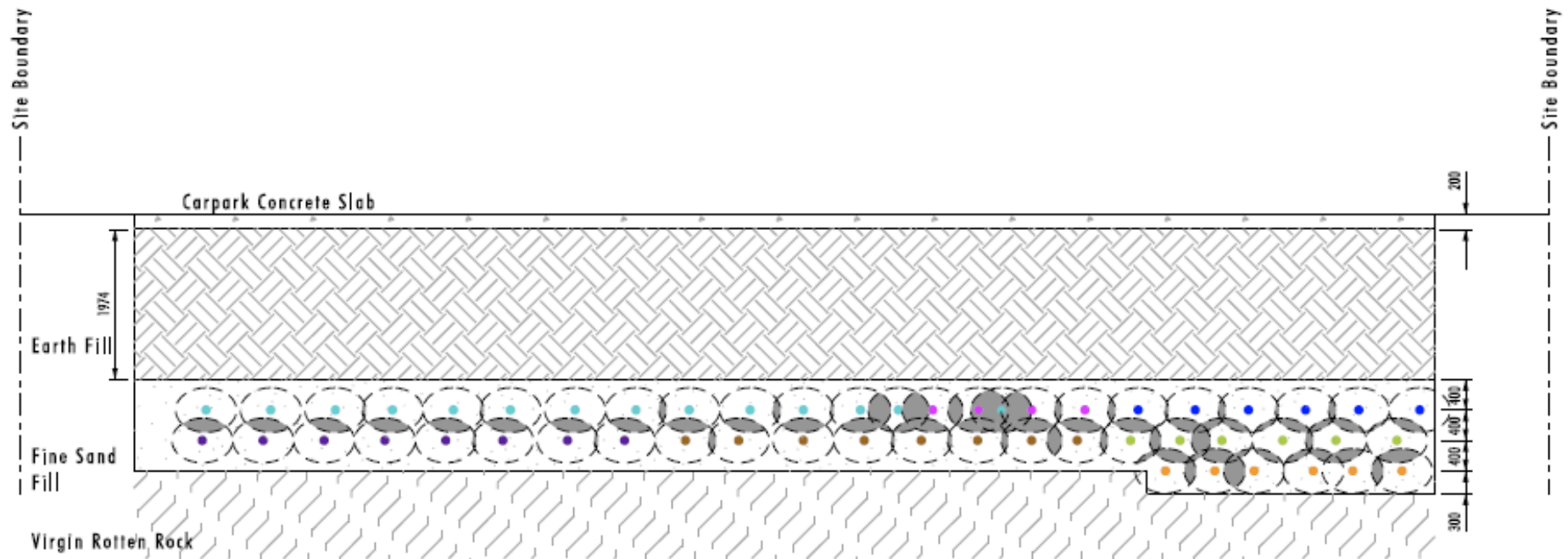
- Reception building roof garden – 40 tonnes of soil and plants over a drainage layer to provide insulation in winter and shading and cooling through latent heat of evaporation in summer
- Landscaping to shade reception building and main building to minimise heat and glare in the building
- 28,000 litres of rainwater gravity fed to toilets and landscaping with integrated stormwater drainage that feeds landscaped areas and condenser loop
- LED lights throughout to minimise energy usage and heat generation



3m Excavation for Condenser Loop



1200 m of 40 mm dia. Condenser Loop Piping



Section A-A'

1200 m Condenser Loop Piping as Built



4000 m of 20 mm dia. Hydronic Piping



3800 m Hydronic Piping and Conduits



100 m Chilled Beams and LED Strip Lights

- 25 KW of solar panels producing approximately 35,000 KWh/year of electricity
- Use of thin film solar panels
 - 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.
- Solar Panels reduce roof solar radiation loading by 40%
- 100 kWh of battery capacity provides server/communication approximately 10 to 20 hours of UPS



Solar panels, extensive glass & louver windows



Concrete mass, louvers and landscaping



Concrete mass, louvers and landscaping



Concrete mass, louvers and landscaping



Concrete mass, louvers and landscaping



Roof top garden on Reception Building

- Umwelt worked with architect and engineers in design and development of 75 York St Teralba.
- Umwelt won Sustainable Business Practice category at Lake Macquarie Business Excellence Awards 2013 for its development of 75 York St.
- 75 York St building also won Heritage Building and Sustainable Building categories of Lower Hunter Urban Design Industry Awards 2013.