

Cotter Pump 10

*AAT Alliance
Tenix Australia
ActewAGL*

Cotter Pump 10 is a compact high lift pump, located alongside the historical Cotter Pumping Station in its own purpose-designed pump house. It represents enhancement and modernisation within the framework of Canberra's existing water supply network.

Cotter Pump 10 was delivered by the AAT Alliance which was formed in 2009 by ActewAGL and Tenix Australia. It features a compact single stage pump with a capacity of 44ML/day housed in a pre-fabricated modular building.

Simple, yet robust, solutions are the strengths of the Cotter Pump 10 which was carefully designed as the first stage in a long-term redevelopment of the pump site. Simplicity of design includes air cooling via natural and forced ventilation, clear access to the pump from mezzanine floors and removable roof to allow easy access or expansion. The pump house is built into the side of a hill to minimise noise and complements the heritage nature of the rest of the Cotter Pumping Station.



Non-potable Water Master Plan

*AECOM Australia P/L
ACTPLA*

Many water demands do not require water of potable standard and opportunities exist to use alternative sources of water such as treated wastewater and treated stormwater. The Non-Potable Water Master Plan project has investigated the provision of alternative non-potable water sources for Canberra, based on identified and prioritised demands, predominantly for irrigation of open spaces and sports fields, and also including likely urban growth areas.

The master plan has been informed by an overarching modelling tool which applied quantitative assessment of economic and volumetric measures to develop a Canberra wide network of infrastructure to support the reuse of harvested stormwater and treated wastewater for non-potable uses.



ANZAC ASMD Active Phased Array Radar

CEA Technologies P/L

CEA Technologies has been involved from inception to installation of a new Active Phased Array Radar for the Royal Australian Navy's ANZAC Class Frigates. The company's world leading Active Phased Array Radar and Missile Illumination System was installed recently on board HMAS Perth as part of the Anti Ship Missile Defence Upgrade Program for eight of the ANZAC Class Frigates.

The success of the Anti Ship Missile Defence program and CEA's Phased Array System in particular, places Canberra 'on the map' as a centre of excellence for technology and outstanding engineering capabilities.

The project had to deliver a capability that would not only meet current threats, but be capable of countering threats that were projected of occurring well into the future. The success of the first part of this project has resulted specifically in flow down work to nearly 30 ACT and region businesses and more broadly had significant input into increased work levels for companies across the country.



**ACT Government
New Technology
& Innovation
Award Winner**

Nerang Pool Bridge

Oxigen P/L

Northrop

NCA

The Nerang Pool Bridge sits within the Canberra Central Parklands along the RG Menzies Walk. Designed by Oxigen Landscape Architects – with conceptual input from VerbungHoogendijk Architects from Amsterdam, in collaboration with Northrop Engineers – the Nerang Bridge seamlessly integrates engineering and architectural design enabling an elegant sculptural form.

Innovative engineering approaches including a compact and concealed substructure as well as an innovative composite lightweight decking system enables the intricately detailed bridge to appear to float on the water.

This project's sensitive engineering and seamless integration of architectural design inspires new confidence in contemporary and innovative approaches for future public infrastructure works.



Tharwa Heritage Bridge Restoration

Roads ACT

Aurecon

Roads & Traffic Authority NSW

The restoration of Tharwa Heritage Bridge in the ACT has achieved the objectives of providing a high level flood route and access across the Murrumbidgee River, while preserving the structure's national heritage value. The design has kept as close as possible to the original truss arrangement by Percy Allan, with innovative modifications in the design to increase the overall capacity and durability of the bridge. A commitment to quality and use of modern techniques has delivered a timber bridge with enduring visual appeal. The spirit of collaboration has been a key influence in the formulation and application of innovation in its design and construction.



**Highly
Commended**

Kingston Canal Bridge

Oxigen P/L
Northrop
LDA

The Kingston Canal Bridge spanning 20m across the new canal will become a distinct feature within the new Kingston Harbour development.

Designed by Oxigen Landscape Architects in collaboration with Northrop Engineers, the Kingston Canal Bridge incorporates sensitive engineering approaches for a bridge that is a sculptural object as much as an element of public infrastructure.



Inspired by the form and structure of a rowing scull, the bridge forms an important part of the pedestrian and cycle circulation network adjacent to the Harbour and Lake Burley Griffin.

The bridge is an excellent example of honest engineering where the architectural form is integral to the structural solution and represents a new confidence – innovative, contemporary and collaborative engineering and design.

Enlarged Cotter Dam Abutment Excavation Project

Bulk Water Alliance
ACTEW Corporation Ltd

The abutment excavation for the Enlarged Cotter Dam has been on a significant scale and has involved construction from a height of 110m above river level. Construction has included the formation of access tracks, drilling and blasting of the abutment foundation at a slope as steep as 0.5:1, extensive rock stabilisation and detailed foundation preparation.



The topography in the area is steep and difficult to access safely by excavation plant. A methodology was derived from first principles that consisted of a combination of top-down and bottom up excavation to complete the abutment works. Initial pioneering work was carried out by excavators to establish cuttings in the slope from which stabilisation and blasting could occur. The blasted material was then cast or pushed into the valley below and the process repeated until a 'bottom up' access track could be formed to the valley floor on the excavated material.

The first principle approach to completing the abutment excavation using the geological model developed in 2009 and numerous design considerations were used to successfully complete the excavation.

Hydrocarbon Vapour Mitigation and Remediation System

AECOM Australia P/L

AECOM Australia Pty Ltd (AECOM) was engaged to design a hydrocarbon vapour mitigation and remediation system for the site located in Lonsdale Street, Braddon, ACT.

Due to significant hydrocarbon contamination within the site and the associated identified risks to human health and the environment, the ACT Environmental Protection Agency and Contaminated Site Auditor viewed the site as being unsuitable for development.

To enable the project to be completed in the required timeframe and ensure that the health and safety of future occupants was addressed, AECOM's design incorporated a combination of two "active" vapour intrusion management systems:

- Vapour mitigation system; and
- Vapour remediation system.

The incorporation of this system into the building design and construction enabled the construction program to meet critical deadlines and allows future occupants to be confident that the indoor air quality is not affected by contaminated vapours and therefore will not affect the health of residents or the future value of their property.



Uriarra Wastewater Treatment Plant

*AAT Alliance
Tenix Australia
ActewAGL*

As part of plans to redevelop the Uriarra Village following the devastating 2003 bushfires, ACTEW Corporation undertook to upgrade the wastewater treatment facilities. The AAT Alliance, formed by ActewAGL and Tenix Australia, was engaged to design and construct a new wastewater treatment plant for Uriarra Village.



The construction of the new plant represents the delivery of world class wastewater treatment in a rural remote location. It features a pressure sewer system feeding a Membrane Bio-Reactor (MBR) treatment plant. MBR technology was selected as a robust and reliable treatment process with the ability to treat water to a quality suitable for agricultural purposes. In a first for MBR technology, the plant at Uriarra is located within a building to complement the rural setting of the Village. This remotely operated plant also required modification to allow for the local climate which includes extreme temperatures between summer and winter. It now provides a national model for the installation of MBR plants within challenging environments.

Alphachron™ Automated Helium Thermochemistry Instrument

*Australian Scientific Instruments
Patterson Instruments
CSIRO/ Curtin University*

Canberra company Australian Scientific Instruments (ASI), working with the CSIRO and Dr Des Patterson, have commercialised the world's first automated helium thermochemistry instrument, the Alphachron™.

The Alphachron allows geologists to study mountain building and landscape evolution, prospectivity of metalliferous belts and sedimentary basins, and the location of diamond-bearing kimberlite pipes.



The ASI engineering team has brought the skills acquired from the award winning SHRIMP IIe ion microprobe to the design, manufacture and management of the Alphachron program. The instruments, built in Canberra, have been successfully exported to the United States, Brazil, Germany, Israel and China. A program of ongoing development is finding new markets and applications.

Dunlop 5 West (Ginninderra Ponds)

*Indesco P/L
LDA*

Dunlop 5 West is an ACT Government land development project delivered by the Land Development Agency in conjunction with Indesco Pty Ltd (formerly Bill Guy & Partners). The development offered a well-engineered quality estate that included attractive streetscapes with parkland and block sizes that promoted affordable housing diversity.



Critical success factors achieved were:

- A well planned and design outcome that effectively understood the site's opportunities and constraints;
- A cost effective land servicing design and construction;
- An economically viable and marketable subdivision layout; and
- A sustainable and environmentally responsible development.

The Generation II Big Dish Solar Concentrator Prototype

Research School of Engineering, ANU

The new Big Dish at the Australian National University is a full-scale prototype of a solar energy system able to concentrate the sun by a factor of over 2200. Heat is transferred to water passing through tubes and the resulting steam drives a steam engine and generator.

The 500 square metre dish was designed by the ANU Solar Thermal Group in collaboration with Wizard Power. The design is geared to low cost, large scale manufacture; a key feature is the use of structural components formed on site. The dish is a brilliant advertisement for solar thermal power and Australian engineering.



The Datapod System

Datapod (Australia) P/L

Datapod is a system of modular data centre components that can be mass manufactured, factory tested and rapidly deployed to meet the growing demand for high performance data centre infrastructure worldwide.

This system significantly reduces capital cost, mitigates construction project risk and reduces the environmental impact of data centre facilities. It has been engineered for optimum energy efficiency, consuming fifty percent less electricity than an average data centre. It provides a complete turn-key solution, as all site infrastructure like chillers and generators are incorporated.

The system is scalable, and can also augment existing data centres or provide portable back up systems.



Kings Avenue Overpass

*National Capital Authority
Johnson Pilton Walker
Taylor Thomson Whitting
Steensen Varming
Warren Smith & Partners
SMEC
Woden Contractors*

The Kings Avenue Overpass is the most significant piece of urban and traffic infrastructure to be constructed in the National Capital since Parliament House.

As a major infrastructure project on a nationally significant site, care and attention has been given to the quality of its design, so that it complements the high quality of design that has been developed over the years throughout the National Triangle.

In a family of 10 existing, four and six lane overpasses in the National Triangle, the Kings Avenue/Parkes Way/Morshead Drive roundabout was the missing link in grade separated intersections managing Canberra's central precinct traffic demands. The new intersection now provides improved:

- Traffic movement and journey times;
- Traffic safety
- Pedestrian and bicyclist safety; and
- A new Canberra landmark and contribution to the National Triangle.



CIT Sustainable Skills Training Hub

Canberra Institute of Technology

The Sustainable Skills Training Hub is a purpose built facility at the CIT Bruce Campus for hands-on 'green' skills training for emerging sustainable technologies for both residential and commercial construction. Students will be trained in the design, installation, testing, commissioning and maintenance of these technologies and will gain the skills required to assess and employ the latest in green building applications, materials and new products.

The brief to the design team was to produce a highly energy efficient and ecologically sustainable building with most of the structure visible for training purposes and most of the building plan available for hands-on training. It was a design requirement to provide as many examples of sustainable technologies as possible.

The building was completed in time for the commencement of the 2011 academic year and has surpassed CIT's expectations. The building is already in demand by teaching staff other than those the building was designed for. CIT and the community have a 'state of the art' training facility targeted towards a sustainable future for all Australians.



Saddle Dam Design and Construction

*Bulk Water Alliance
ACTEW Corporation Ltd*

The results achieved on the Enlarged Cotter Dam Saddle Dam Design and Construction Project demonstrates excellence in the delivery of major engineering construction works in the Australian Capital Territory.

ACTEW Corporation, in partnership with GHD, Abigroup and John Holland, successfully completed the construction of the two saddle dams in February 2011. Each saddle dam is approximately 300 metres long and 20 metres high and is a principle pre-requisite to allow the construction of the Enlarged Cotter Dam to proceed.



Antarctic Broadband – Definition and Capability Development

Aerospace Concepts P/L

The Antarctic Broadband consortium has delivered a cost-effective solution to providing high-quality communications services to the Australian and international research community in Antarctica. The service is intended to directly support and accelerate efforts to monitor the effects of climate change in the Antarctic Region.

The need for communications services to and from Antarctica is increasing rapidly and is unable to be met by traditional satellite and terrestrial solutions. Through the creative application of small satellite technologies, unique orbit solutions and innovative new communications equipment the solution has the ability to deliver high quality, 24 hour coverage of the Antarctic Circle, providing over a terabyte of transfer capability per day at speeds comparable to that of ADSL.

In addition to the benefit of directly supporting Australian research in Antarctica, this project provides an opportunity to build capacity and expertise in design, implementation and support of small-satellite communications in Australia.

