

WINDS OF CHANGE

DEVELOPER : CWP Renewables
CONSTRUCTION CONSORTIUM : Downer and GE
CONSTRUCTION VALUE : \$270 million



Photo by: GE Australia

The \$360M landmark Boco Rock Wind Farm Project comprises 67 wind turbines and a 25km 132kV transmission line, spread across 27 different properties. The wind farm will generate 113MW of clean, renewable energy, powering the equivalent of approximately 40,000 homes.

CWP Renewables developed Boco Rock Wind Farm, situated on the Monaro Plains, approximately 10km south west of Nimmitabel, in southern New South Wales, and have seen it grow from inception in 2007 to an operating wind farm in 2015.

CWP Renewables (CWPR) is a joint venture between two leading renewable energy developers: Continental Wind Partners and Wind Prospect Group. With over two decades of renewable energy development experience and 5,000MW of installed capacity across 20 countries, CWPR brings world-class renewable energy development expertise to Australia.

CWPR took Boco Rock from early development right through to financial close, before 100% ownership was transferred to EGCO, the Electricity Generating Public Company of Thailand. \$250million of debt funding was sourced from five local and international banks in the “Asian Financial Deal of the Year” in 2013 according to Project Finance Magazine. CWPR has maintained strong ties to the project

through its role as Owners Representative and Asset Manager during construction and operations on behalf of EGCO.

Construction at the wind farm began in August 2013, and CWPR undertook a number of roles including:

- Oversight of the EPC consortium (which included turbine suppliers GE and construction company Downer EDI)
- Supervision of the Owners’ Engineers (Jacobs) and Superintendent
- Managing grid connection into the Essential Energy (EE) distribution network
- Registration with the Australian Energy Market Operator
- Registration with the Clean Energy Regulator
- Extensive community engagement and collaboration on local events

Ed Mounsey, Head of Development at CWPR, managed the planning, environmental and land aspects of the project. “Seeing the development through to construction demanded rigorous analysis of

design constraints, numerous independent technical assessments, and early and transparent communication with all project stakeholders” said Ed Mounsey.

“Our approach to development, and community engagement during development, was carried through into construction, with the demands of a construction schedule being balanced with a number of social and environmental considerations” said Mr. Mounsey.

On-site civil works were avoided during a 1st November to 1st February window in line with protection requirements for the endemic Grasslands Earless Dragon and the Legless Lizard species. The construction team also worked around variable weather conditions at 1,000m above sea level (rain, snow, bitter cold and wind) to bring the wind farm online nearly two months ahead of schedule.

Construction Manager, Adrian Oakey, oversaw construction of the project and was based in Cooma for the duration of construction. “We had a great team on-site for construction, including the haulage team, Rex J Andrews who delivered components for the 67 turbines, and a number of local and interstate contractors who spent time at the site laying 34 kms of new internal gravel roads, pouring turbine

foundations, installing turbines and connecting the wind farm to the grid” said Mr Oakey.

“We had visits from a number of community groups, and we ran a Community Open Day that attracted over 1,000 people” said Mr Oakey. The Nimmitabel Lions Club and CWA both helped out on the day with catering, and a broad range of visitors were overwhelmingly positive about the opportunity to visit and see inside a turbine.

Community Engagement done well is hard but rewarding work, and is an integral part of developing, constructing and operating a wind farm. CWPR’s efforts were rewarded when, in 2014, CWPR won the Clean Energy Council’s Community Engagement Award for their work at Boco Rock Wind Farm.

For more information contact CWP Renewables, PO Box 1708, Newcastle NSW 2300, phone 02 4013 4640, fax 02 4926 2154, email info@cwprenewables.com.au, website www.cwprenewables.com.au

For more information about the Boco Rock Wind Farm Project visit, www.bocorockwindfarm.com.au

Below Robin Johnson Engineering supplied engineering, design, management and supervision.

Robin Johnson Engineering (RJE) have been providing design and construction to the renewable energy industry for 15 years and have successfully completed 25 major wind farm projects. The company is extremely familiar with the procedures and requirements that are needed to effectively complete a wind farm. This is reflected in their ability to always accomplish wind farm projects on time, under budget and without incident.

As a result of their undeniable expertise, RJE supplied engineering, design, management, supervision, construction, commissioning support, WHS&E and Quality Control System for the electrical, civil, building and communications on the Boco Rock Wind Farm project.

Detailed scope of works for the Boco Rock Wind Farm project included the design, supply, transportation, installation and commission of a 33kV switchroom (30.5m x 5.5m) constructed from glass reinforced concrete (GRC) panels. This switchroom was fitted with 12x33kV ABB switchgear tiers for the collection of power generated by the wind turbines. In a separate room within the building is the protection, control, scada and communications equipment which operates, monitors and protects the electrical components. The switchroom package is supplied with pre-installed fire detection, protection and suppression systems. The switchroom also contains security systems, low voltage distribution boards, general light and power and other safety accessories.

RJE installed the underground 33kV electrical reticulation which includes 67km of medium voltage 3 Core cable (120mm² to 500mm²), fibre optic cable, trench, cable laying, bedding sand, backfill and reinstatement. This is installed from the 132kV/33KV substation out to the 67 wind turbines on site. The installation was completed with purpose designed and built machines that are owned by RJE. Using a 20T Franna Crane, RJE also unloaded and installed the KIOSK transformers located near the base of the wind turbine.

The landscape was very rugged, with steep hills and many rocks which made it challenging to carry out trenching and cable installation for the 33kV wind farm reticulation system. With RJE's safe work practices and purpose built plant, the project work was completed without incident in a timely manner. Subzero temperatures with snow and strong winds

caused minor delays but overall did not compromise their contractual milestones.

Steep declines towards the 132/33kV substation made transportation of the 33kV switchroom difficult, but with careful planning and safe work methods, RJE managed to successfully delivery a premium quality product to benefit all companies involved.

RJE have designed, implemented and perfected a 33kV XLPE underground cable jointing technique which consists of welding of the stranded aluminium conductor within the 33kV MV cable. This innovation eliminates the chance of cable joint failures on wind farms that are contributed to a combination of high cyclic loads, poor conductor material quality and mechanical compression links.

The results of this new joint method means less downtime for the owner and a greater efficiency in power production. RJE have eliminated the weakest link in any medium voltage reticulation system.

Along with the welded jointing procedure, RJE have also developed a transportable welded jointing air conditioned workshop which can be temporarily positioned to install medium voltage joints in a controlled environment. This enables an enclosed environment that reduces any dust and particulates, as well as providing a comfortable work environment for the cable jointer. The location of the wind farms usually lead to weather conditions which are not always suitable for MV cable jointing and terminating. The workshop allows the team to produce high quality welded joints every time.

All RJE works at the Boco Rock Wind Farm were completed in a safe and timely manner with minimal impact to the environment. Scheduled tasks were completed on or before time.

RJE's professional contribution to the wind farm industry and the attitude "always improvises never compromises" where safety is concerned, has put RJE at the forefront for the design and construction of any wind farm project.

For more information contact Robin Johnson Engineering, 115 Morphett Road, Morphettville SA 5043, phone 08 8300 9500, fax 08 8300 9501, email dale.altschwager@jgc.net.au, website www.rje.net.au





Boco Rock Wind Farm, NSW



SMB Civil provided their expertise on the recently developed Boco Rock Wind Farm. The project involved the construction of 67 Wind Towers in which the team at SMB Civil were contracted to carry out excavation, supply and erect formwork, fix reinforcing steel, assemble bolt clusters, transport clusters to site and place, install electrical and communication conduits, place and finish concrete foundations, construction of kiosk plinth and concrete foundations associated with the substation construction.

With a crew of approximately 35 people on site throughout construction, SMB Civil overcome all challenges that arose including working within the windy conditions that were persistent throughout the construction process.

At SMB Civil, they focus on civil and concrete works with a primary focus on working with tier one contractors. The team is also able to take the head contractor role on suitable, smaller projects.

An example of their capabilities includes; concrete construction, road construction, bulk earthworks, mining infrastructure, water and wastewater infrastructure and bridge construction.

SMB Civil was formed with the objective of providing a service to clients that surpasses their expectations in all forms of project delivery. The company aims to achieve this through providing their clients with innovative solutions based on sound engineering practices that achieve sustainable, economical and serviceable solutions.

Operating throughout New South Wales, Victoria and South Australia, SMB Civil employ in excess of 50 staff along with boasting a resourceful pool of subcontractors.

The team at SMB Civil is currently working at Glenelg WWTP (SA), Iranda Feedlot Expansion (SA), Katfish Reach Hydrological Structures (SA), Bridge Construction Western Highway (VIC), Road Construction Werribee (VIC) and Timber Processing Plant Upgrade (SA).

For more information contact SMB Civil Pty Ltd, 7 Avey Road, Mount Gambier SA 5290, phone 08 8723 6277, fax 08 8723 6508, email admin@smbcivil.com.au, website www.smbcivil.com.au

Boco Rock Wind Farm is located 10km south west of Nimmitabel and is set to generate clean, renewable energy and contribute to the electricity supply for NSW. Rex J Andrews Pty Ltd was responsible for the handling and delivery of all wind turbine components for this exceptional project.

New and specialised 65m blade trailers were developed for the Boco Rock Wind Farm project. This allowed for easier and more effective transportation. The undertaking of the main transport route for the turbine component delivery ran smoothly.

Components delivered included tower sections, nacelles, blades and hubs, most of which were oversized loads. During the transport period, up to seven loads were delivered to the site per day, six days per week.

The team at Rex J Andrew Pty Ltd have a successful history working with developments such as Boco Rock. Other projects include:

- NH2U Project
- Taralga Wind Farm
- Lake Bonney Wind Farm
- Burrinjuck Dam

Rex J Andrews Pty Ltd was formed 25 years ago in 1989. The family owned company operates from Adelaide (SA), Sydney, Newcastle (NSW) and Portland (VIC).

The company is capable of transporting loads ranging from standard semi trailers through to large, heavy loads requiring complex multi articulated equipment. The team offers services beyond transport including loading, unloading, storing and placing articles using cranes, lifting systems, jacks and skates. They are also able to design and manufacture equipment specific to a customers transit needs.

Rex J Andrews operates a fleet of prime movers, trailers and cranes along with jacking and weighing equipment. Rex J Andrews Pty Ltd is accredited on both the NHVAS and WAHVA systems. All equipment adheres to documented maintenance schedules, and serviced in-house by their experienced and dedicated staff.

For more information contact Rex J Andrews Pty Ltd, PO Box 271 Penrith NSW 2751, phone 02 4721 7633, fax 02 4721 7644, website www.rja.com.au

Below Develin Engineering completed excavation and constructed roads and drainage throughout the entire site.



Below ProWater Cooma Rural supplied water infrastructure for the Boco Rock Wind Farm project.



For a period of 12 months, Develin Engineering dedicated a team of experienced personnel to carry out works at the Boco Rock Wind Farm project in New South Wales.

Develin Engineering was responsible for excavating the bases for the towers and constructing roads, drainage and crane pads throughout the entire site.

The team at Develin Engineering utilises late model Hitachi machines with access to a full range of attachments. For the Boco Rock Wind Farm project the team worked with a 35 tonne Hitachi excavator.

Once complete, Stage 1 of the Boco Rock Wind Farm will feature 67 wind turbines and 33km of new on-site roads. Company Director Geoff Develin, said, “We are very pleased to have been involved with such a significant project and great company [Downer].”

Develin Engineering specialises in the hire of excavators across NSW and the ACT. The company features an impressive selection of products which includes 9 machines ranging from 3 tonne up to 47 tonne. All machines are late model Hitachi with tilting hitches and most come complete with GPS (global positioning system).

Develin Engineering has been operating as an engineering firm since 1985. The business is highly regarded for having the very best and latest model equipment, skilled operators and an impeccable safety record.

The Develin team are committed to providing a service, that not only deliver the brief to the clients standards but also take into account environmental, cost, aesthetic and logistical considerations. Their imagination and ingenuity to problem solving has come for many years of experience and allows them to tackle each project to bring out its fullest potential.

The team are currently working on several urban sub-divisions and major road developments.

For more information contact Develin Engineering, 124 Hickey Road, Sutton NSW 2620, Geoff Develin 0418 628 090, website www.develinengineering.com.au

ProWater Cooma Rural Supplies in Cooma (NSW) played an integral role in Stage One of the Boco Rock Wind Farm Project. The company’s involvement with the project began in October 2013 in partnership with Boco Rock Wind Farm project manager, Downer Infrastructure.

A number of ProWater Cooma Rural’s key suppliers including Rapid Plas, Aquamate Tanks, Philmac, Franklin Electric Australia, Advanced Industrial Products (AIP), Southern Cross and Netafim, provided a significant role in the successful delivery and completion of the project. ProWater Cooma Rural Supplies carried out the detailed installation in conjunction with Sprocket’s Electrical, Quod’s Plumbing and Quod’s Mowing and Irrigation.

ProWater Cooma Rural’s support and participation in the project is ongoing, and during March 2014 they conducted training for the system. The project has cemented a solid working relationship with Downer Infrastructure’s on site management which has been based on effective communication and trust.

The initial brief for the project was to supply approximately 80,000 - 90,000 litres of water per day to the concrete batching plant. Four

22,500 litre Rapid Plas tanks were installed as the storage point, with water supplied from a large spring fed dam.

A Southern Cross HR pump was used with a 12.5hp Kobota motor delivering approximately 150 litres/min (90,000 litres per 10 hours of pumping). The system was later upgraded when the earthworks and civil sector’s demand for water increased. To accommodate this increase, a 3 phase 7.5kw, generator driven Franklin bore pump was floated in the dam delivering approximately 300 litres/min to the 2 Aquamate 115,000 litre galvanized tanks. This system delivered between 250,000 litres and 350,000 litres per day for batching and civil works.

The Boco Rock Wind Farm Project sees the construction of 67 wind turbines to provide electricity to the existing power grid at a site 20km west of Nimmitabel in the Snowy Mountains.

For more information contact ProWater Cooma Rural Supplies, 61 Commissioner Street, Cooma NSW 2630, phone 02 6452 5566, email ahood@sasolutions.com.au, website www.crtcountrystores.com.au

Below Australian Radio Towers (ART) provide communication systems and wind monitoring towers.

Below Platinum Traffic Services provided extensive traffic control solutions for all stages of the project.



Australian Radio Towers (ART) has established themselves as leaders in providing communication systems and wind monitoring towers since 1973.

ART was involved in several areas of the Boco Rock Wind Farm project which is located 10km south west of Nimmitabel in New South Wales. Work for the project included wind prospecting, power curve and performance testing along with ongoing wind monitoring.

The approved wind farm comprises up to 122 wind turbines, with Stage 1 seeing the construction of 67 wind turbines.

With complete client satisfaction in mind, the team at ART is able to carry out a seamless service on all projects including the design, manufacture, supply and installation of all their products.

The innovative Boco Rock Wind Farm features the most advanced wind logger system to date. ART is constantly investing time and money into product development to ensure that they are able to supply and produce the most successful environmental monitoring products and services to the market.

ART has extensive experience in the construction of radio towers and the high access rigging industry, throughout Australia and internationally. The team provides a wide range of products including guyed masts, free-standing radio towers, trailer-mounted quick deploy masts, communication systems and communication huts.

Their technicians have experience with a broad range of modern electronic communication systems.

The key areas of service include:

- Temporary communication site solutions
- Masts and towers
- Wind monitoring systems
- Communication systems

For more information contact Australian Radio Towers, 119-125 Quarry Road, Murwillumbah NSW 2484, phone 02 6672 6200, email sales@australianradiotowers.com, website www.australianradiotowers.com

Platinum Traffic Services commenced work on the Boco Rock Wind Farm in March 2014.

Offering professional and comprehensive services, the team at Platinum Traffic Services provided extensive traffic control solutions that were required at various stages throughout the project. Their services were paramount, particularly when the bulky cranes were entering and moving around the site.

Many of the surrounding roads are rural and it was important to consider the movement of livestock on and around the transport route.

Boasting a dedicated team of over 100 employees, Platinum Traffic Services have been providing a seamless solution to the construction and haulage industry, for more than 7 years.

Platinum Traffic Services offer an extensive list of capabilities, some of which are listed below:

- Qualified traffic control crews
- 24/7 emergency response crews
- Crash attenuator hire
- Traffic control plans

- Traffic management plans
- Vehicle movement plans
- Pedestrian management plans
- Traffic reports
- Equipment hire: VMS Boards, Arrowboard Hire, Water and Concrete Barriers, Light Towers, Portable Traffic Signals
- Council and RMS permits for all road works
- Labour hire
- Category G accredited service

With offices across NSW, Platinum Traffic Services provide capabilities that are not only cost effective, but are also reliable in many different circumstances. Their team ensures a prompt response to your work site and project needs.

Platinum Traffic Services have also worked on projects for Lend Lease, Leighton and Australand.

For more information contact Platinum Traffic Services, Unit 24, 13 Swaffham Road, Minto NSW 2566, phone 1300 787 835, fax 1300 787 329, email admin@platinumtraffic.com.au, website www.platinumtraffic.com.au