Thorburn Australia
Engineering Consultants

Electrical, Control & Instrumentation Engineers

Project Experience

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CLIENT PROFILE

Baralaba Coal

Thorburn Australia has been assisting Baralaba Coal since 2021 at their Train Load Out Facility and lately at their new Coal Processing Plant, where we provided the turnkey Electrical, Instrument and Control design.

The new plant consisted of several conveyors, screening and rotary stacker.

One of the key features was to make the plant as automated as possible to reduce Operator requirements which was achieved with a virtually unmanned control room.

The project engineering cost was $600K and provided all electrical design, generator supply, HA classification, PLC programming, SCADA development, SQL integration, commissioning and handover.

Over the years Thorburn Australia has also provided Baralaba Coal with electrical engineering services including:

- TLO Coal Stacker Commissioning
- TLO HA Classification
- TLO Train Loadout Automation Study
- Generator Upgrades
- CHP Dump Hopper Automation
- Luffing Winch Brake Resistor
- TLO Citect Upgrade

Thorburn Australia continues a strong relationship with Baralaba Coal providing regular consulting and engineering services, including remote dial-in control system assistance.

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Sun Metals Zinc Refinery

Thorburn Australia has had a long association with the Korean owned Zinc Refinery in Townsville assisting with the design and construction of the original $650M plant and now supplying the complete automation (hardware and software) for the $400M plant upgrade in 2020/21.

The plant upgrade included the addition of a new Ferric Oxide processing plant, additions to the Leaching Area and a new Electrolysis Line.

The overall project consists of three main Allen Bradley PLC's with multiple remote IO sites, communications to all drives and motors as well as pass through HART to all instruments. That is, all instrument configuration data is presented live to the SCADA to ensure no mismatches between the instrument, PLC and SCADA system.

The project engineering cost was $1.7M and finished in late 2022.

Over the years Thorburn Australia has also provided SMC with electrical engineering services including:

- Zinc Ferrite Drying Project
- Acid Truck Loading Project
- Port Acid Loading/Unloading Project
- HV SCADA Investigation
- Blower VSD Protection Review
- Leaching HAC Design
- SO2 Blower Panelview Project
- Zinc Ferrite Storage Shed Project
- Grab Cranes Power Supplies
- Jumbo Casting Panelview Upgrade
- Casting PLC Replacement

Thorburn Australia continues a strong relationship with SMC providing with regular consulting and engineering services.

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CLIENT PROFILE

Rio Tinto (Gove)

Thorburn Australia have been engaged by Rio Tinto (Gove Operations) continuously since 2015 when we kicked off the H815 Conveyor Upgrade Project.

Due to the curtailment of the main plant, the site was exporting bauxite directly to ships via front end loaders and temporary dump hoppers on existing conveyor belts. The H815 project saw the re-instatement of key conveyors to allow a continuous feed from the overland system all the way to the ship. Thorburn Australia was there to provide the electrical and control system design for the new system.

Following the successful completion of this project, Thorburn Australia has been called upon to upgrade VSD's, a Sewerage Treatment Plant and now the complete Control System Upgrade.

This latest project has been a program of 15 PLC's replacements over 4 years ($1M), controlling Crushing Plant, Overland Conveyors, Stackers, Reclaimers and a Shiploader.

An entire new Aveva PlantSCADA has been rolled out and a new modern system will allow optimisation and maintainability for the life of the operation.

Our continuous site presence since 2015 has allowed us to work closely with Rio Tinto and provide on-site support for their control systems.

Equipment Utilised:

- Schneider M580 PLC's
- ABB VSD's
- Citect 2016 SCADA
- Aveva PlantSCADA 2022

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Rio Tinto (Weipa)

Thorburn Australia have been active in Weipa since 2014 after assisting with their C2 Conveyor Upgrade. This project was initially an evaluation of the comparative merits of a VSD over a wound rotor motor. The conclusion in this case, was the use of wound rotor motors with new brush lifting equipment.

Thorburn Australia then went on to the electrical and control design for the new system.

Since that time, we have been utilised for various works including:

- SUB50 3.3kV MCC Upgrade
- Various Light & Power Board designs
- Wind Telemetry replacement
- Submersible Pump Upgrades
- Andoom Process Water Pumps
- Andoom Cyclone Feed Pump

The latest projects executed in 2018, are the Andoom Pumps which require the upgrade of 3x300kW Variable Speed Drives and a 1.5MW, 3.3kV VSD.

Familiar Equipment:

- Bailey's DCS
- Siemens HV VSD
- Schneider Altivar VSD's
- Miri Telemetry
- ABB MV Switchgear

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Glencore Copper

Thorburn Australia has provided the Townsville Copper Refinery with engineering and consulting advice since 2011 with the inception of the Port PLC Upgrade Project.

In 2024 Thorburn Australia was awarded the engineering contract to provide the entire refinery with an upgrade path from its existing DCU control system to a contemporary AB PLC and Citect SCADA System ($1.9M).

Thorburn Australia is providing for this project over a 2~3 year period:

- All engineering designs including architectures, risk mitigation (redundant architectures), communication protocols and equipment selection.
- All engineering drawings.
- All new PLC and SCADA programming based on Functional Specifications derived from the existing DCU System.
- Project management, HAZOP and Risk Assessment Services.
- 24Hr around the clock Commissioning Service.

We have also been involved with many minor projects on site including:

- PWLD Ignition/SQL Upgrade Project
- Pinch Press AB PLC Upgrade (PLC5 to Logix including ABB Conductor DCS)
- AB Panelview Conversions
- Casting House HAZOP
- Environmental Water Monitoring Systems (ISCO)

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Glencore Zinc

Thorburn Australia has been servicing the Lady Loretta mine site since it's development in 2012 up until when it went into care and maintenance in late 2015.

We have been involved with many value adding projects to ensure the mine's safe and continuous operation.

Projects have included:

- Control System Upgrade
- HV & LV Power Studies
- Arc Flash Study
- Compressor & Bore Fields PLC's
- Fuel Farm Control System Integration
- Vent Fans

The Vent Fan project was performed in conjunction with Rockwell and Howden, installing 2x610kW, 10 Pole Mine Ventilation Fans and associated control system and instrumentation.

Integration of several smaller package plants were required to complete the Factory Talk SCADA System.

Equipment included:

- AB PLC's
- Panel View HMI's
- Factory Talk SCADA
- Miri Telemetry
- AB Powerflex VSD's

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Incitec Pivot

Thorburn Australia has been closely associated with IPL since 2008 when Shane Thorburn was instrumental in the delivery of the Gypsum Booster Pump Station for the Phosphate Hill Plant.

This project was one of the largest undertaken by the client on this site since its construction. Due to the on-going need to continually expand its gypsum stockpiles, a third stage was added to the existing gypsum slurry pumping system. To achieve this, the third stage had to be placed remotely from the plant therefore requiring an entire new electrical infrastructure be built.

The project consisted of a new 11kV Feeder, 2.5km of Direct Buried HV Cable, 2MVA Transformer, 375kW VSD Pumps and associated Substation, MCC, DCS and Instrumentation.

Thorburn Australia have also worked on other IPL sites including the Mooranbah Dyno Plant and Mt. Isa Sulphuric Acid Plant.

Projects have included:

- SynGas Turbine Vibration Monitoring
- RCM Strategy Updates
- Power Station Control System Risk Assessment
- HV Circuit Breaker Remote Operation
- Control System Audits
- Various secondments of personnel to all sites.
- Mt Isa 2014 Turnaround
- Mooranbah Newtwork Audit
- Donkey Boiler Installation
- Internal Standard Reviews
- Instrument Hookup Drawing Reviews
- 690V VSD Review

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BHP/BMA

Thorburn Australia has assisted BMA since forming in 2009, starting by developing a water management database to monitor their extensive bore fields and reticulation networks.

Since that time we have assisted BMA, primarily through FuelFix to deliver the electrical and control systems engineering for:

- Caval Ridge Fuel and Lube Farm
- Daunia Ridge Fuel and Lube Farm
- Goonyella Fuel Farm
- Mobile Fuel Skids
- Caval Ridge Coal Wash Plant Commissioning
- Truck Washing Station

Equipment included:

- Cisco Networking Equipment
- Schneider Quantum PLC's
- Schneider Citect (Redundant, Distributed Architecture)
- Rockwell Compact Logix PLC's
- Schneider TesysT Motor Protection Relays
- Schneider Magelis Displays
- Rockwell Control Logix PLC's
- Rockwell Panelview Displays

A hurdle for these projects was the coding required to have the Rockwell PLC communicate with Schneider Tesys Relays. Due to the different vendors, typically, not all the required features are available via communications protocols. By customising the Tesys relays we could provide the full required functionality for the system.

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Queensland Nickel

Thorburn Australia has a long relationship with Queensland Nickel spanning over 15 years. During this time, we have performed many varied projects including our assistance with the YEP (Yabulu Expansion Project).

For owners including Freeport to Alan Bond to BHP Billiton and finally the famous Clive Palmer, Thorburn Australia had been working on this site.

Projects undertaken exclusively by Thorburn Australia include:

- MHP Tippler Implementation (YEP)
- Ball Mill No. 1 PLC Upgrade
- Buner Management System
- 330 System 6 IO Migration
- 367 System 6 IO Upgrade Project (
- 367 Variable Speed Drive Upgrade (80 VSD's)
- 370 Calciner Water Supply Projects
- Samson Feeder PLC Upgrade
- RO Water Treatment Plant
- 320 Bag House System
- 330 3.3kV Starters
- 380 Compact Bagging Station
- Site Wide Control System Network Audit

Familiar equipment utilised on the site includes:

- ABB Operate IT DCS/SCADA System
- ABB / Bailey's System 6
- Siemens S5 PLC
- Modicon 984, 884, 484 PLC's
- Schneider Quantum PLC's
- Citect V7.2
- AB Control Logix, Intouch SCADA
- Nilsen, GEC, Raytheon MV Switchgear
- Invensys Connoisseur Model Predictive Controller
- Assorted Instrumentation

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Trility Water

Thorburn Australia has provided Trility with engineering services since 2010 at their various sites around Townsville:

- Douglas Water Treatment Plant
- Northern Beaches Water Treatment Plant
- Ross River Dam Booster Station
- Haughton River Booster Station
- Bamaga Water Treatment Plant
- Queensland Nickel RO Plant

We have provided general consulting services as well as complete electrical projects such as:

- Douglas HV Switchboards Upgrade Project
- Northern Beaches Construction Consulting
- Ross River Dam 1.2MW, 3.3kV VSD Upgrade
- Earthing & Surge Protection Studies
- Bamaga Arc Flash Study
- Douglas Incomer Switchboard Upgrade
- Switch Room HVAC
- Hypo Dosing Skids
- RO Plant SCADA/DCS Interfacing

Thorburn Australia employees were also instrumental in delivering the $2M Douglas Control System Upgrade including PLC's, SCADA, MCC Switch Boards and general instrumentation.

Equipment encountered includes:

- Schneider ATV, 1.2MW, 11/3.3kV VSD's
- Hawker Siddeley MV Switchgear
- Schneider M340 PLC's
- Citect V7.2
- Instrumentation (Yokogawa, Rosemount, E&H)

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Mount Isa City Council

Mount Isa City Council (MICC) is a remote council in Queensland, adjoining the border of the Northern Territory. Covering an area of 43,310km^2 makes Mount Isa one of the largest cities in the world by area, second only to Kalgoorlie-Boulder in WA.

Thorburn Australia has long been assisting MICC with their Sewerage Collection Network and Treatment Plant. We have provided:

- Pump Station 1,4 & 18 EIC Design
- Sewerage Treatment Plant Upgrade
- Hazardous Area Classifications

The Sewerage Treatment Plant Saw Thorburn Australia provide the complete electrical, instrumentation and control system design for the upgrade plant including:

- ClearSCADA HMI
- Schneider M340 PLC's
- Schneider Altivar VSD's
- Xylem Multismart Relays
- WISA Radio Controlled Valve Stations
- Assorted Instrumentation (Vega, E&H)
- Fibre & Wireless Communications Network

The connection to the MICC Metropolitan Area Network (MAN) has provided a unique opportunity to utilise a city wide wireless ethernet infrastructure.

Being located so far away from any major centres, MICC relies on the use of remote monitoring and configuration from Thorburn Australia offices, saving time and travel costs.

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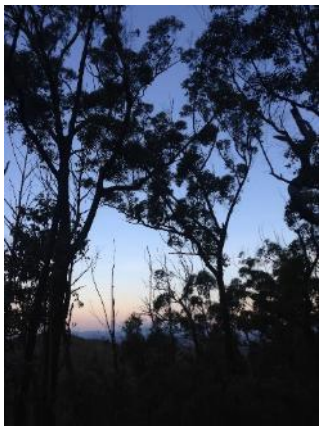

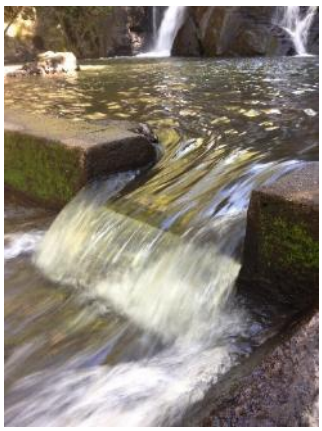

CLIENT PROFILE

Tablelands Council

Tablelands Regional Council (MICC) is a council located in the beautiful tropical hinterland of Cairns. Servicing a wide dispersion of small communities, many remote water and sewerage treatment facilities are required:

- Atherton
- Yungaburra
- Malanda
- Millaa Millaa
- Ravenshoe
- Mt Garnet

Thorburn Australia provides local and remote support for these sites.

Thorburn Australia has recently completed the complete EI&C design and commissioning ($600K) for the new Ravenshoe Water Treatment Plant.

Thorburn Australia has also provided the PLC code, Citect configuration and commissioning for the Ravenshoe Sewerage Treatment Plant.

Familiar equipment included:

- AB Control Logix PLC's
- Citect 2015 (Upgraded from V7.1)
- Aveva PlantSCADA 2022
- Danfoss VSD's
- Schneider VSD's
- Assorted Instrumentation

Support for these sites has been continuous since 2014.

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PROJECT LIST

Various Projects

New Century Resources
On-site control systems support, project works including AB Control Logix PLC's, Citect SCADA, Kingfisher RTUs, E300 and COMAP motor controls.

BP (Now Puma Townsville Port)
Citect configuration and AB Control Logix PLC's. This is an on-going support agreement having over 5 years of service.

Inova Resources (Osborne Mine)
Citect configuration and Quantum PLC's for Mine Winder and Process Plant.

Evolution Mining (Pajingo Mine)
AB Control Logix PLC's and Panelviews for control of the mines 630kW Vent Fans.

YTC Resources (Hera Mine - Cobar)
AB Micro Logix PLC's and Panelviews for control of the mines 710kW Vent Fans.

Townsville City Council (Mount Saint John WWTP)
ClearSCADA and Siemens S7 PLC's. Implementation of new Washpactors, Inlet Band Screens, various pump stations, HAC Audits for Cleveland Bay STP.

MSF Sugar (Atherton Refinery)
Conductor and Infi 90 DCS. Programming, configuration and commissioning assistance for the new $42M upgrade project.

Oceanis (AIMS ATOS Facility)
Siemens S7, dual redundant architecture with WINCC SCADA. Assisted as client representative reviewing and approving all designs, specifications and drawings.

Brisbane City Council (Gibson Island AWWTP)
Commissioning assistance with Quantum PLC's and Citect SCADA.

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PROJECT LIST

CSR (Now Wilmar Ethanol Plant)
ABB Conductor and Infi 90 DCS control system audit including process performance metrics for all PID loops.

Charters Towers Regional Council
Provided control system configuration and commissioning of minor works.

Koppen Construction
Provided engineering checking for the new 99kW Solar Installation.

MMA (Dugald River Mine)
Lightning protection, general distribution and earthing for amenities buildings. Hazardous area auditing for Dangerous Goods Warehouse.

Mount Isa Hospital
Generator upgrade project, including PLC and HMI automation for load shedding and reclosing of non-essential loads.

Queensland Electrical Services
Mt Isa Buffalo Club Solar Farm (289kW), Longreach Air Port Solar (75kW), Irish Club Solar (90kW), Mt Isa Air Port Solar (295kW).

Origin Energy (Mount Stuart Power Station)
Hazardous Area Audits

CuDECO (Rocklands Mine)
Port Power Supply proposal, Rocklands Plant Overland Power Supply Concept Study.

Cloncurry Shire Council
Water Treatment Plant Upgrade Project

SKM (Now Jacobs)
Sarina STP Instrumentation HAC Designs, Luggage Point STP HAC Classification.

Townsville Airport
Aerobridge automation design and commissioning.

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