

**BULGA
OPEN CUT**

GLENCORE

Mr Anthony Barnes
Senior Environment Assessment Officer
Energy and Resource Assessments
GPO Box 39
Sydney NSW 2001

Dear Anthony

**Bulga Coal requests approval to use Anthony Marzsaleck from HEC consulting
to assist in the revision of the Site Water Management Plan**

Bulga Coal is seeking approval from the Secretary to use Anthony Marzsaleck from HEC consulting to review the revised Site Water Management Plan as required in schedule 3 condition 28 (a) of SSD 4960.

Anthony Marzsaleck's curriculum vitae is attached.

Do not hesitate to contact me should you require any further information.

Yours sincerely



Ralph Northey
Environment and Community Manager
Bulga Coal

AREAS OF EXPERTISE

- Water supply design
- Water balance modelling
- Surface water management
- Environmental engineering
- Dam design
- Hydraulic and hydrologic modelling
- Engineering construction

EDUCATION

Master of Engineering Science, University of Queensland – 1987

Bachelor of Engineering (Civil) First Class Honours, University of Queensland – 1984

PROFESSIONAL HISTORY

Director – Hydro Engineering & Consulting Pty Ltd. (Nov-2015 to present)

Principal Water Resources Engineer - Gilbert & Associates Pty Ltd (1999 to Nov-2015)

Manager - Woodward-Clyde Darwin – (1995 to 1996)

Senior Civil/Water Resources Engineer - AGC Woodward Clyde Pty Limited (1989 to 1999)

Civil/Geotechnical Engineer - AGC Woodward Clyde Pty Limited (1987 to 1989)

Water Resources Engineer – AGC Woodward Clyde Pty Limited (1986 to 1987)

EXPERIENCE

Mr Marszalek has over 30 years' experience in projects relating to water resources, mining and civil and environmental engineering. His experience has included planning, design, cost estimation and construction supervision of dams, water supplies, drainage and hydraulic structures, water resource evaluation/feasibility planning, water and sediment control management design and planning, water quality and environmental studies, the design and operation of meteorological, hydrographic and water quality monitoring networks, computer modelling of ground and surface water resources/supplies and study of groundwater recharge systems. Mr Marszalek has experience throughout Australia, South-East Asia and The Pacific.

EXPERTISE

Water Supply

- Appraisal, investigation and design of ground and surface water supply schemes
- Demand estimation
- Supply reliability assessment
- Water supply system modelling
- Pipeline network modelling
- Catchment yield modelling
- Infrastructure design and cost estimation

Water Management

- Site surface water layout/drainage planning, design and integration
- Water balance model development for prediction of water surplus/deficit
- Preparation of water management plans
- Erosion and sediment control design
- Groundwater recharge studies
- Irrigation scheme design/modelling
- Stream impact assessment

Hydraulic Studies

- Flood routing modelling
- Hydraulic studies using 1 and 2-D modelling software
- Creek diversion system and stabilisation works design
- Creek subsidence impact assessment studies
- Design of dams, energy dissipators, erosion protection and sediment controls

REPRESENTATIVE PROJECT EXPERIENCE (RECENT)

- Ashton Coal Mine – NSW (Yancoal). Development and updating of regulatory water management plans (approved by DP&E), development of calibrated water balance model, water balance forecasts, rehabilitated landform drainage design, streamflow monitoring assessment, water impact (trigger) assessments.
- Stratford and Duralie Coal Mines – NSW (Yancoal). Water balance modelling, creek diversion design, development of irrigation, water and rejects management plans and surface water EIS reporting (since initial EIS).
- Hunter Valley Coal Mines – NSW - (Glencore – Bulga, United, Mt Owen, Liddell, Ravensworth, Mangoola, Ulan). Water balance model development, flood and water management studies, EIS/EA surface water impact assessment reporting, site water management plan development/input, drainage design.
- Tahmoor Colliery – NSW (Xstrata Coal NSW). Studies assessing hydrology and water balance of Thirlmere Lakes as part of submission to NSW Government Inquiry, including Inquiry meetings and presentations, EIS surface water impact assessment for mine expansion, calibrated water balance model development.
- Mt Arthur Coal Mine – NSW (BHP Billiton). Water balance modelling for large open cut coal mine, preparation of Environmental Assessment reports, regulatory presentation, preparation of site water management plan and components, flood hydraulic modelling of Hunter River, tailings management planning.
- Mt Pleasant Coal Mine – NSW (MACH Energy). Development of predictive water balance model, preparation of reports to support consent modification, drainage planning and design, pipeline design.
- United Wambo Coal Mine Project – NSW (United JV). EIS water management studies, including mine water balance modelling and water management planning; design of creek diversion.
- Wilpinjong Coal Mine – NSW (Wilpinjong Coal Pty Ltd). EIS water management studies, including mine water balance modelling and water management planning, flood study.
- Metropolitan Coal Mine – NSW (Peabody Energy). Environmental assessment studies for proposed longwall mine extension within Sydney water supply area, including water balance

modelling, catchment yield modelling, meetings with regulatory agencies, input to water management and catchment management plans and follow-up monitoring assessments.

- Kestrel Coal Mine – Qld (RTCA). Flood study for predicted subsided creek impact assessment, including hydrologic and hydraulic (2-D) modelling, design of remedial measures.
- Oaky Creek Coal Mine – Qld (Glencore). Development of calibrated water and salt balance model, preparation of water management plans, surface water management options design, final void water balance and creek dispersion modelling.
- Collinsville Coal Mine – Qld (Glencore). Development of calibrated water and salt balance model, preparation of water management plan and creek flood modelling.
- Rolleston Coal Mine – Qld (Glencore). Preparation of expert reports and appearance as expert witness in Land Court in relation to surface water supply issue.
- Cadia-Ridgeway Gold/Copper Project – NSW. (Cadia Holdings – Newcrest Mining Limited). Water supply and water management system modelling and planning, impact assessment on creek flows, preparation of erosion/sediment control plans, operational review of water and mine waste management, design of major creek diversions (hydrologic and hydraulic modelling), development of calibrated water balance model.
- Cowal Gold Mine – NSW (Barrick & Evolution Mining). Stable drainage design, water balance modelling, surface water impact assessment.
- Century Zinc/Lead Mine – Qld (MMG Ltd). Site water balance modelling for large open cut mine, including regulatory reporting/presentations, assessment of spill risk and consequences and preparation of expert evidence for the Land Court.
- Frances Creek Iron Ore Mine – NT (Territory Iron). Water balance modelling (calibration and forecast) and site water management plan development for decommissioned multi-pit open cut iron ore mine.
- Cedar Creek – Qld (Private client). Flood and impact assessment of filling on adjacent property on flooding potential and sedimentation impacts.
- Chandler Project – NT (Tellus Holdings). Revision of surface water impact assessment (EIS) for proposed secure waste facility in sensitive desert environment, including consideration of access roads, rail and surface infrastructure.

OVERSEAS EXPERIENCE

Key participation in the AusAID sponsored China-Australia Research Institute into Mine Waste in the late 1990s. Undertook several visits to Beijing and rural China to undertake work including:

- Design of surface drainage network for copper mine tailings dam in Anhui Province as part of rehabilitation design for future urban (housing) construction.
- Flood studies for urban tributary of Yangtze River adjacent to copper mine tailings dam. Work included sourcing of data from local authorities, flow prediction and flood level modelling.

AFFILIATIONS AND PROFESSIONAL REGISTRATIONS

Registered Professional Engineer, Queensland.