

COMPANY: ASHTON COAL OPERATIONS PTY LIMITED  
 SITE: Glennies Creek Road  
 Camberwell NSW 2330  
 POSTAL: PO Box 699 Singleton NSW 2330  
 PHONE: +61 2 6576 1111  
 FAX: +61 2 6576 1122  
 EMAIL: info@yancoal.com.au  
 WEBSITE: www.ashtoncoal.com.au  
 ABN 22 078 556 500

3 April 2020

NSW Department of Planning, Industry and Environment  
 PO Box 344  
 Hunter Region Mail Centre NSW 2320

Attention: Mr Mike Young

To Mr Young,

**RE: ASHTON COAL MINE – UPPER LOWER LIDDELL SEAM LONGWALLS 205 TO 208 EXTRACTION PLAN  
 APPOINTMENT OF SUITABLY QUALIFIED AND EXPERIENCED PERSONS**

Ashton Coal Operations Pty Limited (ACOL) operates the Ashton Coal Mine in accordance with Development Consent (DA 309-11-2001-i) and is currently preparing an Extraction Plan for Longwalls 205 to 208 in the Upper Lower Liddell Seam.

Condition 32, Schedule 3 of the Development Consent states:

32. *The Applicant must prepare an Extraction Plan for all second workings on site. This plan must:*

(a) *be prepared by a team of suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;*

ACOL considers that the proposed team is suitable for preparation of the Extraction Plan for Longwalls 205 to 208 in the Upper Lower Liddell Seam. The curriculum vitae of the primary contributing suitably qualified and experienced persons are enclosed.

| Team Member  | Role   |
|--|--|
| Dr Ken Mills<br>Mr Stephen Wilson<br>(Strata Control Technology Operations Pty Ltd)  | Preparation of relevant subsidence components, including prediction of subsidence effects and assessment of potential impacts. |
| Mr Andrew Durick<br>(Australasian Groundwater and Environmental Consultants Pty Ltd) | Preparation of relevant groundwater components.  |
| Mr Tony Marszalek<br>(Hydro Engineering & Consulting Pty Ltd)                        | Preparation of relevant surface water components.  |
| Ms Elizabeth Wyatt<br>(Insite Heritage Pty Ltd)                                      | Preparation of relevant heritage components.   |
| Ms Kalya Abbey<br>(Eco Logical Australia Pty Ltd)                                    | Preparation of relevant biodiversity components.   |
| Mr Josh Peters<br>(Resource Strategies Pty Ltd)                                      | Preparation of management plans and overall Extraction Plan documentation.   |

The following experienced ACOL employees would also be involved in preparation of the Extraction Plan for Longwalls 205 to 208 in the Upper Lower Liddell Seam.

| Team Member  | Role  |
|--|---|
| Mr Phillip Brown<br>(Environment & Community Relations Superintendent) | Responsible for review, sign-off and implementation of the Extraction Plan. |
| Mr Tony Sutherland<br>(Technical Services Manager)                     | Review of management plans and overall Extraction Plan documentation.       |
| Mr Lachlan Crawford<br>(Environment & Community Coordinator)           | Review of management plans and overall Extraction Plan documentation.       |
| Mr Jeff Peck<br>(Registered Mine Surveyor)                             | Preparation of survey plans.  |

In accordance with Condition 32, Schedule 3 of the Development Consent (DA309-11-2001-i), ACOL kindly requests the endorsement of the Secretary of the team outlined in this letter, as suitably qualified and experienced persons for the preparation of the Extraction Plan for Longwalls 205 to 208 in the Upper Lower Liddell Seam.

If further information or clarification is required on any of the above, please do not hesitate to contact me on (02) 6570 9110.

Yours sincerely,



**Phillip Brown**  
**Environment & Community Relations Superintendent**  
**Ashton Coal Operations Pty Ltd**

**Enclosure 1: Dr Ken Mills' Curriculum Vitae.**

**Enclosure 2: Mr Stephen Wilson's Curriculum Vitae.**

**Enclosure 3: Mr Andrew Durick's Curriculum Vitae.**

**Enclosure 4: Mr Tony Marszalek's Curriculum Vitae.**

**Enclosure 5: Ms Elizabeth Wyatt's Curriculum Vitae.**

**Enclosure 6: Ms Kalya Abbey's Curriculum Vitae.**

**Enclosure 7: Mr Josh Peters' Curriculum Vitae.**

**Enclosure 1**

**Dr Ken Mills' Curriculum Vitae**

**Curriculum Vitae  
Kenneth William Mills**

|  |   |
|--|---|
| <b>Position:</b>                             | Principal Geotechnical Engineer / Director  |
| <b>Name of Firm:</b>                         | SCT Operations Pty Ltd  |
| <b>Profession:</b>                           | Consulting Geotechnical Engineer  |
| <b>Date of Birth:</b>                        | 26 September 1958   |
| <b>Years with SCT:</b>                       | 30 years  |
| <b>Nationality:</b>                          | Australian  |
| <b>Membership of Professional Societies:</b> | Member of the Australasian Institute of Mining and Metallurgy<br>Member of Society for Mining Metallurgy and Exploration<br>Member of Australian Geomechanics Society<br>Treasurer of Mine Subsidence Technological Society |



**KEY QUALIFICATIONS**

Ken has over 40 years of experience as a geotechnical engineer in the field of rock mechanics. He has a wide experience in geotechnical research and consulting work, both in Australia and internationally, in the field of underground coal mining. His special interests are in situ stress measurement, subsidence related ground movements, coal mine layout design, controlling caving behavior using hydraulic fracturing, and hydrogeological characteristics of the overburden strata.

Countries of work experience include Australia, New Zealand, UK, Sweden, China, Canada, USA, Mexico, Chile, Sweden, Canada, Ecuador, Colombia, Ghana, Philippines and Papua New Guinea. Ken has worked at numerous underground mines in New South Wales and Queensland on projects relating to measurement of in situ stresses, stress change monitoring, subsidence, pillar stability assessment, overburden caving, and hydraulic fracturing for ground control.

**EDUCATION**

Bachelor of Engineering (Civil) 1st Class Hons, University of Auckland, 1978

Ph.D., University of Auckland, 1985. Thesis Title: In Situ Mechanical Properties of Huntly Coal

## **AWARDS AND HONOURS**

CSIRO Medal 2001 For Research Achievement - Hydraulic Fracturing in Mining.

Illawarra Coal HSEC Excellence Award 2013 in recognition of commitment to the environment.

## **EMPLOYMENT RECORD**

### **1990 – Present**

*SCT Group - Strata Control Technology Pty Ltd and SCT Operations Pty Ltd*

Senior Geotechnical Engineer (Director since 2003)

### **1989 – 1990**

*Applied Rock Mechanics (NZ)*

Geotechnical Consultant

### **1988 – 1989**

*CSIRO Division of Geomechanics (Brisbane)*

Research Scientist

### **1985 – 1988**

*Applied Rock Mechanics (NZ)*

Geotechnical Engineer

### **1985**

*Tonkin and Taylor Ltd (NZ)*

Geotechnical Engineer

### **1980 – 1985**

*Ph.D. research project*

### **1978-1980**

*Waipukurau District Council (NZ) - Junior Civil Engineer*

## **POSITIONS HELD**

Board Member of MSTs 1997-current

Secretary of Mine Subsidence Technological Society 1997-2001

Treasurer (elected 2011)

Foundation Member of Eastern Area Ground Control Group

2003 - 2006

**Enclosure 2**

**Mr Stephen Wilson's Curriculum Vitae**

**Curriculum Vitae  
Stephen Wilson**

**Position:** Consultant / Mine Planner

**Name of Firm:** SCT Operations Pty Ltd

**Profession:** Mine Planner

**Years with SCT:** 6 years

**Nationality:** Australian

**Membership of Professional Societies:** Member of the Australasian Institute of Mine Surveyors

**Qualifications:** Mine Surveyors Certificate of Competency  
Registered Mining Surveyor



**KEY QUALIFICATIONS**

Steve has over 35 years operational experience at various underground mine sites, mainly in the NSW Southern Coalfield. This experience includes more than 25 years in the statutory position of Mine Surveyor, in addition to approximately 10 years as a full-time Mine Planner for both single and multi-site mining companies. His operational experience covers tasks associated with resource recovery, mining applications and asset and hazard management for mine sites in NSW and Queensland.

Since joining SCT Operations in 2014, Steve has been involved in broad range of consulting tasks including mining approval applications, pillar and mining layout design, as well as projects associated with monitoring ground movements and ground water behaviour.

A large portion of his time has been engaged in the analysis of subsidence monitoring results for compliance reporting and estimates of subsidence effects and impact assessments for mining applications in both single seam and multi-seam mining environments.

**Enclosure 3**

**Mr Andrew Durick's Curriculum Vitae**





## Andrew Durick

### Principal Modeller / Director

#### Education

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- Bachelor of Engineering in Environmental Engineering (Hons) from Griffith University, Brisbane, 1995
- Masters of Applied Science (Mathematics) from Queensland University of Technology, Brisbane, 2005
- Diploma of Business in Frontline Management from Open Learning Institute of TAFE, South Brisbane, 2006

#### Memberships

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- International Association of Hydrogeologists, Member, Australian Chapter
- National Groundwater Association (NGWA)

#### Employment history

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|                |  |
|----------------|--|
| <b>Current</b> | <b>Australasian Groundwater &amp; Environmental Consultants Pty Ltd</b><br><b>Principal Modeller / Director</b>    |
| 2001 – 2006    | Department of Natural Resources, Mines and Water, Brisbane<br>Senior Hydrologist                                   |
| 2000 – 2001    | Department of Natural Resources, Brisbane<br>Project Officer – Groundwater Modelling                               |
| 1996 – 2000    | Department of Primary Industries and Department of Natural Resources, Brisbane<br>Environmental Modelling Engineer |

#### Skills

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Andrew is the Principal Modeller and Director of Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). He has over 20 years' experience in groundwater modelling. He has an intimate working knowledge of MODFLOW (industry standard modelling code) having investigated improvements to how the model overcomes non-linearities in the numerical solution of the groundwater flow equation during post graduate study. Andrew has worked in both the public and private sectors. During his 11 years working for the Queensland Government in the capacity of a groundwater modeller, he undertook peer review of consultant's work where assessments of potential impacts to the Great Artesian Basin were concerned. In the last 13 years he has focused on groundwater modelling for the mining sector.

## Skills (continued)

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Andrew's skills include:

- conceptualisation of complex groundwater systems;
- generation and calibration of 3D groundwater flow models;
- implementation of complex mine plans into groundwater flow models through development of in-house modelling software – including aspects of in-pit spoil and longwall goaf;
- ensuring model development and corresponding model output is appropriately aligned to regulatory requirements;
- assessment of model results through sensitivity and predictive uncertainty analysis;
- providing oversight and leadership across all modelling activities undertaken by AGE; and
- auditing and third party review of models developed for impact assessment by industry peers.

## Areas of expertise and selected project experience

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### *Water resource assessment*

Andrew has experience in both regional and local scale assessments for water resource assessment. The early part of Andrew's career was spent undertaking regional modelling projects for water resource planning and water allocation within the Queensland State Government. He has been involved in the generation of models representing some of the major irrigation areas in Queensland, including those for irrigation of sugar cane along the coastline and some irrigation of small crops inland. Most of these projects focused on surface water – groundwater interaction, in response to the problem of conjunctive use and the need to allocate the water appropriately.

Since joining AGE, Andrew has undertaken projects focused on water supply. This has involved modelling of take from aquifers for water supply for both industrial and potable water supplies. Projects for water resource assessment which Andrew has undertaken include:

- Toowoomba Emergency Water Supply – Looking at using Great Artesian Basin units for temporary water supply options. Modelled for impacts and for determining bore spacings for target extraction rates (*Toowoomba City Council*).
- Campo Arenal Borefield – Modelling for assessment of borefield impacts for various pumping scenarios in Argentina (*Xstrata Copper*).
- Pentland – Looking at water supply and a managed aquifer recharge for a biofuel project. (*Renewable Developments Australia*).
- Beachside Coolum – Simulation of artificial lake (*Lend Lease Developments Pty Ltd*).
- Rainbow Shores – Effluent disposal (*Simmonds and Bristow*).
- Upper Haughton Groundwater model – Model simulating changes to groundwater levels from sugar cane irrigation (*The Upper Haughton Growers Group*).
- Yabulu Refinery Borefield – Model to simulate impacts from borefield extraction (*Queensland Nickel Pty Ltd*).

## Areas of expertise and selected project experience (continued)

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### *Mining assessments*

Andrew has undertaken groundwater modelling for numerous mines around Australia. These have been at various stages of mine development, from approvals of greenfield sites, through to extensions of existing operations, and then through to operational models assisting clients with groundwater related management decisions. The assessments have involved processing and analysis of field collected data, producing conceptual models of the groundwater systems, and then converting those conceptualisations into models, be it analytical or numerical.

Andrew has developed models and techniques for the assessment of groundwater inflow to both open cut and underground mining areas, with simulation of in pit spoil for open cut pits and goaf/fracture development associated with longwall mines. The techniques developed by Andrew allow for the prediction of mine inflow from individual geologies, which is important for addressing the regulatory requirements.

Beyond coal and metalliferous mines, Andrew has also undertaken work for sand dredging, where some clever techniques were developed to simulate the water balance of a dynamically moving dredge pond. This assessment involved linking MODFLOW to a simple water balance model (in MATLAB) to investigate the water supply requirements for the elevated pond and the changes to the regional water table.

Andrew's experience in mining related assessments (subdivided into mining types) includes:

### *Coal*

- Model development for a **new mine** including cumulative impacts from neighbouring mines: Watermark Coal Project (*Shenhua Watermark Coal Pty Ltd*), Eagle Downs Coal Mine (*Bowen Central Coal Joint Venture*), Drake Coal Mine (*QCoal Pty Ltd*), Cameby Downs (*Syntech Resources Pty Ltd/AARC*), Broughton Coal Mine (*U&D Mining Pty Ltd*), Moranbah South (*Hansen Bailey on behalf of Anglo American Metallurgical Coal Pty Ltd*), Moorlands Coal Project (*Environmental and Licensing Professionals Pty Ltd*), Codrilla Coal Mine (*Bowen Basin Coal Joint Venture*), Eastern Creek – Newlands (*KBR, and their client Xstrata*), Saraji East (*BHP Billiton Mitsubishi Alliance Coal Operations Pty Ltd*), Drayton South Revised Mine Plan (*Hansen Bailey on behalf of Anglo American Coal*), Maules Creek (*Aston Resources Limited*), Cameby Downs Expansion (*Syntech Resources Pty Ltd*), Eagle Downs FEL3 (*Eagle Downs Coal Mine*), Harrybrandt Project (*AustralAsian Resource Consultants Pty Ltd on behalf of Yancoal Australia Limited*).
- Model development for **existing mines**/existing model updates: Crinum/Kestrel (*BHP Billiton Mitsubishi Alliance [BMA] and Rio Tinto Coal Australia*), Wilpinjong (*Wilpinjong Coal Pty Ltd*), Ensham Underground (*Ensham Resources Pty Ltd*), Crinum North water licence (*BMA*), Coppabella Underground (*McCollum Consulting*), Sonoma Final Void inflows (*QCoal Pty Ltd*), Boggabri Coal Mine Expansion (*Boggabri Coal*), HVO North – Carrington West Wing (*Coal & Allied*), Burton Pit Spoil Dewatering Design (*Thiess Pty Ltd*), Mt Thorely Warkworth Mine Expansion (*Warkworth Mining Limited*), Newlands Regional Groundwater Modelling (*Glencore*), Bulga Mine Model Update (*Glencore*), Ulan Coal Mine (*Glencore*).
- Coal projects where Andrew has **overseen** modelling and provided advice include: Meteor Downs South, Rolleston Mine, Minyango Coal Mine, Rocky Hill, Taraborah, HVO North/South, West Muswellbrook, Wambo Coal Mine, Mt Arthur North Open Cut, Ellensfield Mine, Elimatta Coal Mine, Dartbrook, Middlemount, Mangoola.

## Areas of expertise and selected project experience (continued)

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### *Metalliferous*

- Ernest Henry Mine – Model development and calibration, conceptualisation around the Mt Margaret Fault (Ernest Henry Mining Pty Ltd);
- Cadia East – Assessments of impact on groundwater from underground block caving mine (Newcrest Mining Limited/Cadia Valley Operations);
- Cloncurry Copper Project – Model of proposed mining using existing Ernest Henry model (EXCO Resources Ltd);
- Pisolitte Hills – Bauxite mine – Model development for predicting impacts of mining on Wenlock River (Cape Alumina Limited);
- Phonsavan (Laos) – Assessment of groundwater issues associated with proposed mining (Pan Aust); and
- Dargues Reef – Model produced to simulate the impacts from the underground gold mine (RW Corkery/Cortona Resources Pty Ltd).

### *Coal Seam Gas*

- QGC model review – Third party review of the modelling undertaken by Golder Associates (Queensland Gas Company Pty Ltd);
- Berwyndale and Argyle Gas Fields data review (Queensland Gas Company Pty Ltd); and
- Paranui Pilot Project, ATP769 – Modelling for a UWIR (Westside Corporation).

### *Other mining*

- Grand Cote Zircon Project, Senegal – Simulation of sand dredge pond and impacts to surrounding regional aquifer (Mineral Deposits Ltd).

### *Groundwater contamination assessments*

Groundwater contamination assessments undertaken by Andrew at AGE have involved either assessments of seepage from mine related infrastructure or from industrial use of chemicals that have made it to the groundwater environment. Example projects include:

- Alumbreira – Modelling of sulphate plume from the mine TSF and pumpback system (Minera Alumbreira Ltd); and
- Army Aviation Centre Oakey – Simulation of PFAS (PFOS & PFOA) resulting from firefighting foam contamination (Department of Defence/AECOM), 2016, 2017, and 2019.

### *Other impact assessments*

Non-mining related groundwater assessments undertaken by Andrew include:

- Kidston Mine Hydro Power project – Modelling of adjacent pit lakes as balancing storages for a hydro-power scheme to assess any groundwater issues from increasing pit water levels (Entura Hydro Tasmania for their client Genex Power);
- Wyaralong Dam – Model for determining dewatering rates required during construction of dam wall (Queensland Water Infrastructure Pty Ltd);
- Port of Abbot Point Expansion Groundwater Studies and Abbot Point Gateway Growth Project;

## Areas of expertise and selected project experience (continued)

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- Alcan Gove Pond 6 – Assessment of seepage through pond wall (*Rio Tinto Alcan Gove*);
- Toowoomba Bypass Tunnel – Model to assess dewatering of proposed tunnel (*Connell Wagner Pty Ltd*); and
- Laguna Quays Airport – Assessment of changes to groundwater levels due to runway and drainage (*Laguna Australia Pty Ltd*).

### *Peer review/expert witness/due diligence*

Given his experience in groundwater modelling, Andrew is often approached to review work from other consultants as part of a formal third party or peer review. Some of the reviews undertaken by Andrew have been for the purposes of legal proceedings.

- New Acland Coal Mine Stage 3 – Legal advice and provision of evidence in court, 2015 to 2016 (New Hope Group/Clayton Utz).
- Darwin vs Pacific Fisheries – Review of model and preparation of evidence. This matter was settled prior to the court date (K&S Darwin).
- Twin Waters West – Review of modelling for Joint Expert Report on groundwater issues related to housing development (Sunshine Coast Regional Council).
- Crinum Longwall model review – Peer review of modelling identifying model was not fit for purpose (BHP Billiton Mitsubishi Alliance [BMA]).
- Wyaralong Dam EIS and Traveston Dam EIS – Review of groundwater assessments for proposed dams, focusing on data availability, field testing results and conclusions made by the consultants (Queensland Water Infrastructure Pty Ltd).
- Condamine Alluvium – Peer review of modelling undertaken by another consultant (Klohn Crippen Berger Pty Ltd).
- The Range Coal Mine – Due diligence on inflow estimates and identification of issues in the estimate and recommendations for data collection (Reach Environmental Pty Ltd).

## Training

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- 16<sup>th</sup> Australian Groundwater School, Sydney, 1997;
- Hydrogeology of Fractured Rocks – Adelaide, 2000;
- Kepner Tregoe Project Management Course, 2002;
- Surface water – groundwater interaction, Darwin, 2002;
- FEFLOW Groundwater Modelling Course – Brisbane, 2007;
- Corporate communication, presented by Bernard McKenna, 2012;
- Calibration, Uncertainty and MODFLOW-USG in Groundwater Vistas, Sydney, 2013;
- Professional indemnity insurance, Planned Cover, 2015; and
- First Aid and CPR, Purple Heart First Aid Training (current).
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## **Publications/conference papers**

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- Durick, A.M. (2004) Analysis and improvement of the nonlinear iterative techniques for groundwater flow modelling utilising MODFLOW. Masters by Research thesis, Queensland University of Technology.
- Arunakumaren, Jerome; Durick, Andrew and Doherty, John. (1999) A Suite of Software Utilities for Efficient Groundwater Flow Modelling Water 99: Joint Congress; 25th Hydrology & Water Resources Symposium, 2nd International Conference on Water Resources & Environment Research; Handbook and Proceedings. Barton, ACT: Institution of Engineers, Australia.
- Arunakumaren, Jerome; Durick, Andrew and Jensen, Gary. (1999) A Practical Approach to Include Regional Soil Water Processes in Groundwater Flow Modelling. Water 99: Joint Congress; 25th Hydrology & Water Resources Symposium, 2nd International Conference on Water Resources & Environment Research; Handbook and Proceedings. Barton, ACT: Institution of Engineers, Australia.
- Arash Mohajeri, Dr. Pavel Dvoracek, Andrew Durick. (2015) Comparison of different techniques for simulating post-mining voids in groundwater recovery models, Australian Groundwater Conference, Canberra, 2015.
- Kuhanesan S., Durick A.M., Werner A.D., Weeks S.W. and Murphy S.F. (2005) Report 3: Groundwater flow modelling of the Pioneer Valley. Groundwater amendment to the Pioneer Valley Water Resources Plan project. Department of Natural Resources and Mines, Queensland Government, Brisbane.
- Murphy S.F., Kuhanesan S., Foster L.H. and Durick A.M. (2005) Report 1: Conceptualisation of groundwater Resources for the Pioneer Valley flow model. Groundwater Amendment to the Pioneer Valley Water Resources Plan Project. Department of Natural Resources and Mines, Queensland Government, Brisbane.
- J Hillier J Doherty, J Arunakumaren K Bajracharya, E Bengtson S Kuhanesan, D Scriven, A Durick. (June 1997) "Economic and environmentally sustainable use of various water supply sources for irrigation", Land and Water Australia.

**Enclosure 4**

**Mr Tony Marszalek's Curriculum Vitae**



## ANTHONY MARSZALEK

### 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 impact 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
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#### 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)

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- 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). Calibrated 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, presentations to regulatory agencies, input to water management and catchment management plans and on-going 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.
- Confidential Project - Qld. Flood and water balance studies for proposed final voids adjacent to major river, including beneficial use options.
- 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.
- BHP Mitsubishi Alliance – Multiple sites. Development of water balance models for existing and planned regraded final voids.
- 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.
- Gunnedah Solar Farm – NSW (Overland Sun Farms). Flood assessment for proposed solar farm near Namoi River as part of EIS.

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## AFFILIATIONS AND PROFESSIONAL REGISTRATIONS

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Registered Professional Engineer, Queensland.

## TECHNICAL PAPERS

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'Preventative and Remedial Environmental Engineering Measures to Control Acid Mine Drainage in Australia', *Engineering Tomorrow Today - The Darwin Summit, National Engineering Conference, Darwin, NT, 21-24 April 1996*, The Institute of Engineers Australia.

'The Bribie Island Aquifer: A Case Study'. Co-authors L.T. Isaacs and W. Kotecki. *International Conference on Groundwater Systems Under Stress, Australian Water Resources Council Conference Series No. 13, Brisbane 11-16 May 1986*.

'Managing Water on Waste Dumps During a Mining Operation'. Co-author M.C.Lee. *ACMER Workshop on Water Management in the Mining and Quarrying Industries, Brisbane, 24-25 February, 1999*.

'Quantification Of Mine-Related Effects On Streamflows'. Co-authors L.M.Gilbert & W.C.Boughton. *AusIMM Water in Mining Conference 2006, Brisbane*.

**Enclosure 5**

**Ms Elizabeth Wyatt's Curriculum Vitae**

|                        |  |
|------------------------|--|
| <b>Elizabeth Wyatt</b> | <p>Principal Archaeologist<br/>Director Stratum Archaeology Pty Ltd</p> <p>Email: liz.wyatt@stratumarchaeology.com.au<br/>Mobile: 0448064483</p> <p>PO Box 898 Toronto NSW 2283<br/>Suite 2G1, Level 2, T&amp;G Building<br/>45 Hunter Street Newcastle NSW 2300</p>   |
| <b>Qualifications</b>  | <p>2006 Graduate Diploma of Arts Hons (Archaeology Prehistoric &amp; Historic)<br/><i>University of Sydney NSW Australia</i></p> <p>2004 Bachelor of Science (Geology)<br/><i>University of Newcastle NSW Australia</i></p>  |
| <b>Career Summary</b>  | <p>Over 14 year's experience working as an archaeological consultant in NSW specialising in Aboriginal and historical archaeology.</p> <p>I have a reputation as a trusted professional who delivers compliant yet pragmatic advice and solutions. I'm experienced in navigating through complex and culturally sensitive matters, while achieving compliant outcomes.</p> <p>As a capable communicator, I've built and maintained relationships with a broad range of clients and stakeholders, including indigenous communities, regulators and private and public sector clients.</p>   |
| <b>Key Skills</b>      | <p>Project coordinator and manager on Aboriginal and historic archaeological projects, predominately in the Hunter Valley, Newcastle, Central Coast, Port Stephens, Mid North Coast and Mid -West regions of NSW.</p> <p><u>Overview of key responsibilities</u></p> <p>Project management and coordination to ensure work is delivered within timeframe and budget and compliant with the relevant legislative frameworks, including:</p> <ul style="list-style-type: none"> <li>• <i>National Parks and Wildlife Act 1974</i> (as amended), and <i>Environmental Planning and Assessment Act (1979)</i>, NPW Regulation and the relevant Codes of Practice and regulatory authority guidelines;</li> <li>• NSW Heritage legislation (<i>Heritage Act 1977</i>) and associated guidelines.</li> </ul> <p>Prepare technical reports as standalone documents and for inclusion in assessments to government bodies such as Environmental Impact Statements, Review of Environmental Factors and Integrated Development Applications.</p> <p><u>Aboriginal cultural heritage projects</u></p> <ul style="list-style-type: none"> <li>• Prepare Aboriginal Cultural Heritage Assessments in accordance with the <i>Guide to Investigating, Assessing and Reporting on Aboriginal</i></li> </ul> |

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### *Cultural Heritage in NSW.*

- Prepare Aboriginal Heritage Impact Permit applications
- Aboriginal archaeological survey, test investigations, recording and assessment of Aboriginal objects and sites in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* and the principals of *The Burra Charter*.
- Aboriginal community consultation in accordance with the NPW Regulation and *Aboriginal Cultural Heritage Consultation Requirements for Proponents*
- Develop and implement effective mitigation measures and management strategies in consultation with Registered Aboriginal Parties, proponents and regulatory agencies.
- Aboriginal archaeological salvage excavations, artefact recording, analysis and reporting.
- Prepare Aboriginal Cultural Heritage Management Plans for State Significant Developments (SSD).
- Implementation of ACHMP and AHIP management and mitigation methodologies including archaeological salvage, reporting and analysis and ongoing Aboriginal community consultation and liaison in accordance with permit and approval conditions.
- Prepare Aboriginal archaeological Due Diligence Assessments in accordance with *Due Diligence Code of Practice for Protection of Aboriginal Objects in NSW*.
- Co-ordination of Aboriginal community consultative forums as part of ongoing management approvals.

#### Historic archaeological projects

- Historical archaeological assessment, reporting and excavation work.
- Proponent and regulatory authority liaison.
- Preparation of Statements of Heritage Impact and exemption permit applications to the Heritage Branch.
- Historical photographic archival recording.

#### Clients and Stakeholders

- Aboriginal stakeholders involved in Cultural Heritage management (particularly within the traditional boundaries of the Awabakal, Wanaruah, Guringai and Darkinjung) including Local Aboriginal Land Councils, Traditional Owners, Native Title Registrants, Aboriginal community Elders and Knowledge Holders.
- State government agencies (Australian Rail & Track Corporation, Hunter Water, Roads & Maritime Service).

|                        |   |
|------------------------|---|
|                        | <ul style="list-style-type: none"> <li>• Local government bodies (Newcastle, Central Coast, Lake Macquarie and Cessnock councils).</li> <li>• Extractive resources industries (coal mining and sandstone quarrying)</li> <li>• Educational institutions (University of Newcastle).</li> <li>• Private entities (land developers, planning consultancies and individuals).</li> </ul>  |
| <b>Recent Projects</b> | <ul style="list-style-type: none"> <li>• 2019- current SSD Aboriginal Cultural Heritage Assessment and Aboriginal community consultation application to DPIE increase in production, Entire Concrete Batching Plant, Cameron Park NSW</li> <li>• 2018-Present Aboriginal Cultural Heritage Assessment and Aboriginal Heritage Impact Permit Application and Salvage Excavations, Stages 5-13 Radcliffe Land Residential Subdivision Wyee Land Pty Ltd</li> <li>• 2019-Present Aboriginal Cultural Heritage Assessment and Aboriginal Heritage Impact Permit Application, Road Upgrade Works, Sunshine Parade Sunshine, Lake Macquarie City Council</li> <li>• 2019 – Present Aboriginal Cultural Heritage Assessment and Aboriginal Heritage Impact Permit Application Amenities and Carparking Upgrade Works, Shingle Splitters Point Reserve Balcolyn NSW, Lake Macquarie City Council.</li> <li>• 2018 SSD Aboriginal Cultural Heritage Assessment proposed construction of Bioresources Facility, University of Newcastle, NSW.</li> <li>• 2016-Present Ongoing archaeological excavation under AHIP for stormwater upgrade works, Avoca Beach. Central Coast Council.</li> <li>• 2011-Present Project Archaeologist, Yancoal Ashton Coal Operations Ltd Camberwell. Undertaking ongoing archaeological salvage works, analysis and reporting as part of ongoing approval conditions. Additional survey and due diligence assessments as required. Ongoing artefact analysis program with project RAPs. Co-ordination of biannual community consultation forums.</li> </ul> |



**Enclosure 6**

**Ms Kalya Abbey's Curriculum Vitae**





## Kalya Abbey SENIOR ENVIRONMENTAL CONSULTANT

Kalya joined ELA in 2016 in the Mudgee, NSW office, working within the planning and approvals team. Kalya was appointed as the Mudgee Region Manager in 2018. Kalya's interests lie in strategic environmental and land use planning at a regional level. She project manages a range of projects from small scale local government planning requirements, through to major project approvals and operational monitoring programs.

Kalya holds a Bachelor of Science in Agriculture, majoring in land and water resource management from Charles Sturt University. She has experience in environmental regulation and compliance, environmental impact assessment, approvals and planning, mine site environmental management, project management and environmental auditing. Kalya has worked with a wide range of stakeholders including industry, community and government. She has 12 years experience in environmental management across a range of industries as both a consultant and government regulator.

Prior to joining ELA, Kalya worked with the Queensland Department of Environment and Heritage Protection where she was employed as a Senior Environmental Officer, working in environmental regulation and compliance for the Mackay, Whitsunday and coalfields regions. She was previously employed as a Senior Environmental Adviser for a Queensland based environmental consultancy.

Kalya's experience covers a diverse range of environmental management areas and industries, including local government, mining and extractive industries, ports, coastal development, heavy industry, civil projects, water and waste management and rehabilitation. Kalya has been extensively involved with the preparation of Environmental Impact Statements (EIS), environmental approvals, management plans, compliance audits, monitoring and reporting.

### QUALIFICATIONS

- Bachelor of Science (Agriculture), Charles Sturt University
- Certificate IV in Project Management, Australian Institute of Management

### PROJECT EXPERIENCE

#### PLANNING AND MANAGEMENT

- Ulan Coal Mines Modification 4 Offset Analysis and Credit Retirement Strategy (Ulan Coal Mines Pty Limited 2020)
- Central West Local Land Services Biodiversity Prioritisation Study (CWLLS 2019 – 2020)
- Crudine Ridge Wind Farm preparation and review of Biodiversity Management Plan (CWP Renewables 2018-2019)
- Wollar Road Upgrade Review of Environmental Factors, Biodiversity Assessment and Munghorn Gap Blackspot Assessment (Mid-Western Regional Council 2019)
- Roadside vegetation management implementation (Temora Shire Council 2019)
- Proposed cemetery planning and background studies (Queanbeyan-Palerang Regional Council 2018)
- Statutory approvals, Peak Gold Mine (New Gold Inc 2017)
- Cudgegong River Flying-fox Camp Management Plan, Mid-Western Regional Council (2017)
- Environmental Management Plan, Blayney Shire Council Bridge Replacements (VEC 2017)
- State Assessment and Referral Agency project officer (Queensland Government 2013)

- Plan of Operations, Millennium Coal Mine (Peabody Energy Australia, 2009-2013)
- Exploration environmental planning and approvals (Macarthur Coal 2008 – 2011)
- Hamilton Island Waste Management System (Hamilton Island Enterprises 2010)

#### **IMPACT ASSESSMENT**

- Uungula Wind Farm Environmental Impact Statement (CWP Renewables 2018-2020)
- Crudine Ridge Wind Farm Modification, Biodiversity Development Assessment Review and Independent Planning Commission hearing (CWP Renewables 2018-2019)
- Moolarben Coal Mines Biodiversity Development Assessment Review (Moolarben Coal Operations 2019)
- Ulan Coal Mines Modification 4 Environmental Impact Statement (Ulan Coal Mines 2018)
- Mount Pleasant Operation Modification Fauna Assessment (MACH Energy 2017)
- Moolarben Coal Mine Modification Biodiversity Assessment Review & Biodiversity Offset Strategy (Moolarben Coal Operations 2017)
- Fauna Impact Assessment, Wambo Coal Mine Modification (Wambo Coal Pty Ltd 2017)
- Environmental impact assessment and approvals, Bluff Coal Project (Carabella Resources 2013)
- Environmental Impact Statement Codrilla Coal Mine (Macarthur Coal 2011)
- Environmental impact assessment and approvals, Styx Basin (Currawong Coal 2011)

#### **OPERATIONS AND COMPLIANCE**

- Wilpinjong Coal Mine Annual Biodiversity Monitoring (2016 – 2020)
- Compliance audit, Thomas Borthwick & Sons abattoir (Queensland Government 2014)
- Compliance audit, Hay Point Coal Terminal (Queensland Government 2014)
- Compliance audit and compliance program, Whitsunday Sands development (Queensland Government 2013 – 2014)
- Environmental Approval and Financial Assurance audit, Millennium Coal Mine (Peabody Energy 2009 – 2013)
- Secondment - Site environmental management and compliance, Hay Point Coal Terminal Expansion (Bechtel/BMA 2010)

**Enclosure 7**

**Mr Josh Peters' Curriculum Vitae**

## JOSH PETERS

project management  
NSW and QLD regulatory approvals  
commonwealth regulatory approvals  
environmental impact assessment  
ecological management  
heritage assessment  
subcontractor management  
environmental management  
environmental management plans

### EDUCATION

University of New England, Bachelor of Environmental Science

### QUALIFICATIONS

Certified as a General Environmental Practitioner and Impact Assessment Specialist by the Environment Institute of Australia and New Zealand Inc. (EIANZ)

### PROFESSIONAL HISTORY

- Resource Strategies Pty Ltd, Senior Environmental Manager, 2006 - current
- Resource Strategies Pty Ltd, Environmental Project Manager, 2002 - 2006

### EXPERIENCE

Josh has specialised in the management of environmental assessments for the mining and resource sectors over the past 16 years. He has worked on large-scale developments in New South Wales and Queensland. Josh has specific experience in EIS development, liaison and negotiation with regulatory authorities, management of public assessment processes, subcontractor management, ecological management and assessment, heritage management and assessment, rehabilitation and offset strategy development and extraction plan preparation. Josh has specific experience with the NSW and QLD State assessment processes/legislation and the Commonwealth assessment process/legislation.

In particular, this experience has included:

- Developing mitigation and monitoring strategies. This has included briefing proponents, public and government stakeholders on mitigation and monitoring strategies and then augmenting the strategies based on feedback received.
- Managing various processes and assessments in accordance with government policies and guidelines. This includes understanding and responding to changes in government policy, as well as communicating the changes to proponents and stakeholders.
- Briefing stakeholders (including public, private and government stakeholders) on environmental assessment issues and processes. This has included presenting at public meetings, community consultative committees, government briefings and internal company briefings.

This experience has been obtained through successful leading or involvement with, among others, the Bulli Seam Operations, Metropolitan Coal Project, Wambo Coal Project, Wilpinjong Coal Project, Cadia Gold Mine projects, Mount Pleasant Coal Mine, Sunrise Scandium Project, Dendrobium Underground Coal Mine, Moolarben Coal Complex, Yarrabee Coal Mine, Stratford and Gloucester Coal Projects, Snapper Mineral Sands Project, Tasman Extension Project, Atlas Campaspe Mineral Sands Project, Crayfish Mineral Sands Project, Tarrawonga Coal Project, Vickery Coal Project, the decommissioning and rehabilitation of the Timbarra Gold Mine and various modifications to above listed projects.

These major projects have also been supported by subsequent secondary assessments/approvals, including for offsite supporting infrastructure, management plan/strategy development, water licensing, permits relating to Aboriginal and historic heritage, mining lease renewals/applications, Native Title considerations/agreements, biodiversity offsets, etc.

### ***Environmental Approvals***

Josh has gained experience in the preparation of a range of regulatory approval documents. He has either lead or been a key team member in delivering the following assessment/approval requirements for the relevant projects listed above:

- Environmental Impact Statements/Environmental Assessments for new mining projects.
- Approval Condition Negotiation and Response to Submissions.
- Review of Environmental Factors for exploration and linear infrastructure (roads, powerlines, railways).
- EPBC Act assessments and negotiation.
- Development and variations to Environmental Management and Monitoring Plans.
- Project/Environmental Approval Modifications to existing projects.
- Biodiversity Offset development and security.
- Development of Extraction Plans.

### ***Ecological Assessments***

Josh has gained experience in the management of various ecological assessments throughout NSW and Queensland. He has delivered high quality assessments and offset packages that satisfy the relevant State and Federal requirements and principles.

- Threatened species investigations and impact assessments.
- Understanding and communicating legislative changes relating to biodiversity assessment.
- Design and negotiation of offset strategies.
- Preparation of management plans.

### ***Heritage Assessments***

Josh has managed numerous Aboriginal Cultural Heritage Assessments throughout NSW in differing landscape and legal risk environments.

- Strategic guidance through the various consultation processes with a focus on removing successful legal challenge.
- Managing stakeholder relationships, including Aboriginal parties and regulatory expectations and understanding.
- Assessment of Local, State, Federal and World Heritage listed heritage values.

### ***Consultation and Negotiation Processes with Government and Non-government Stakeholders***

Josh has extensive experience in consultation and negotiation processes with government and nongovernment stakeholders including local, state and federal authorities. This has included presentations to government authorities, consultation regarding the approach taken to environmental assessments and their findings. A large proportion of the projects have involved politically, socially and legally complex environmental approval processes.

### ***EPBC Act Assessments***

Josh has considerable experience in the preparation of *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) assessments to the Commonwealth Government. The focus of these has been a robust assessment under the relevant Federal guidelines and legislation. This has included initial Referrals as well as subsequent assessments via Bilateral assessments, full Federal Environment Impact Statements and Preliminary Documentation reports.