POWFE AND WATER AUTHORITY
NORTHERN TERRITORY

GRANITES-TANAMI GROUNDWATER ASSESSMENT

PROPOSALS

MARCH 1989
SUMMARY

PROPOSAL No 1

Senior Hydrogeologist, Mr George Domahidy, to work "in-house" for 700 hours at the all-inclusive rate of $67.14 per hour. Upper limit fee: $47,000

PROPOSAL No 2

Principal-Hydrogeologist, Dr Roger Passmore, and Hydrogeologist, Mr Keith Berry, to work "in-house" for 200 and 500 hours respectively at all-inclusive rates of $79.60 and 47.76 per hour respectively. Upper limit fee: $39,800
1. INTRODUCTION

This proposal is in response to an invitation from the Water Directorate, Power and Water Authority (NT) to submit a proposal to supply a senior hydrogeologist or groundwater engineer to work "in-house" assessing the groundwater resources of the Granites-Tanami Mining Region.

The requirement is for approximately 700 hours of work to be completed by 31 August 1989. We understand that the consultant will be based in Alice Springs and will work with the Water Resources Group there.

2. SCOPE OF WORK

In summary, the scope of work proposed by the Water Directorate is:

(A) Prior to consultant's arrival, existing bore data will have been placed onto computer and a base geological map will have been prepared.

(B) After consultant's arrival, field surveys will be conducted to define the aquifers using LANDSAT imagery and, perhaps, geophysical surveys. The data will be used to construct a hydrogeological map and commentary.

3. PERSONNEL OFFERED

Rockwater offers Mr. George Domahidy, whose curriculum vitae is presented herewith as Attachment A. Mr. Domahidy has worked as a geologist and hydrogeologist for 11 years. These include 5 years in charge of groundwater supply and mine geology at the Agnew Nickel Mine, Western Australia, and 5 years as a hydrogeologist and senior hydrogeologist with Rockwater.
Mr Domahidy is particularly suitable for the Granites-Tanami groundwater assessment for the following reasons.

1. He was the field hydrogeologist in charge of developing groundwater supplies for the Tanami Gold Mine in the Northern Territory. Operations included discussions and site inspection with Traditional Owners, selection of groundwater exploration and production bore sites, field supervision of bore construction and test-pumping, and report preparation.

2. Mr Domahidy has worked on several other groundwater projects in the Northern Territory. These include White Range, Cosmo Howley, and Mt Todd. They comprised locating and testing groundwater supplies for mining projects.

3. Mr Domahidy's strong geological background will be advantageous in hydrogeological mapping. He has extensive experience in the geological interpretation of air photographs and LANDSAT imagery. Mr Domahidy is familiar with geophysical techniques related to groundwater, and will be adept at organising any surveys that might be undertaken.

4. Computer techniques are used routinely at Rockwater for data plotting, aquifer analysis, and modelling. Mr Domahidy works with these, and will be capable of utilising PANA's Intergraph system.

4. PROPOSAL

Rockwater shall provide Senior Hydrogeologist, Mr G Domahidy, to work "in-house" with the Water Resources Group in Alice Springs, Northern Territory, for approximately 700 hours of work to be completed by 31 August 1989.

All inclusive rate: $67.14 per hour.

Estimated cost: 700 hours at $67.14 per hour $47,000

Details of the costing can be provided on request; the base consulting rate is $48.50/hr and the remainder is to cover expense items.

The stated rate includes the following:

1. travel to Alice Springs and return;
2. accommodation, meals, and expenses in Alice Springs;
3. sedan vehicle for travel around Alice Springs and trips to Darwin.
The following items are expected to be provided by the Power and Water Authority:

(1) 4WD vehicle (plus fuel) and camping equipment for field investigations;

(2) normal PAWA travel allowances for field investigations and required trips to Darwin;

(3) all job-related equipment and materials.

Work arrangements will be subject to agreement, but we envisage that Mr Domahidy will work seven days a week for periods of 4 or 5 weeks and then have a break of about one week.

DATED: 28 March 1989

ROCKWATER PTY LTD

J. R. PASSMORE
Principal Hydrogeologist
ATTACHMENT A

CURRICULUM VITAS

NAME:
George Charles Domahidy

DATE OF BIRTH:
30th April 1951

NATIONALITY:
Australian

QUALIFICATIONS:
B App Sc, Curtin University of Technology

MEMBERSHIP:
International Association of Hydrogeologists

PRESENT POSITION:
Rockwater Pty Ltd
Senior Hydrogeologist

EXPERIENCE:
1985 - 1989 (Present)
Groundwater exploration, testing and evaluation of process water supply for gold treatment at Cosmo Howley, Tanami, White Range, and Mt Todd, Northern Territory, and Pajingo, Queensland.

Development of groundwater supplies for mineral processing at Mt Pleasant, Southern Cross, Marvel Loch, Leonora and Kalgoorlie.

Mine dewatering evaluation and deep dewatering bore construction at Telfer. Monitoring and sampling of waste/water disposal from tailings dam, Telfer Gold Mine, Western Australia.

Design and implementation of mine dewatering systems, Horseshoe Gold Mine, Mt Pleasant, Southern Cross and Leonora, Western Australia.

Preparation of bore specifications, tender and contract documents for installation of production and monitoring bores at Warnbro and Mandurah, Western Australia.

Supervision of the construction and testing of high-production artesian and sub-artesian bores for irrigation purposes in the Perth Basin, Western Australia.

Assessment of dewatering history of Muja Open Pit, Collie.

Supervision of bore construction and groundwater monitoring, Secret Harbour, south of Rockingham.

Permeability testing of superficial aquifers on Swan Coastal Plain, Western Australia.

1979 - 1984
Agnew Mining Co.
Senior Mine Geologist, and Water Management Geologist.

Supervision of mapping and sampling of underground development.
Planning, supervision and evaluation of surface and underground diamond drilling programme.

Groundwater investigation and supervision of bore construction and testing for town and mine water supply at Agnew.

Management of production and quality of Agnew water supply.

Geological evaluation of potential open-pit including geotechnical and ore reserve studies.

1978 - 1979
Noranda Australia Ltd
Geologist
Prospect evaluation - Mt Clement Pilbara.

Geological and geophysical mapping and sampling Yilgarn, Pilbara and Eastern Goldfields, Western Australia.

Windarra Nickel Project
Grade Control Officer.

Supervision of grade control from South Windarra Open-Pit.

Monitoring and evaluation of open-pit dewatering.

1977 - 1978
GRANITES - TANAMI GROUNDWATER ASSESSMENT

ALTERNATIVE PROPOSAL FOR HYDROGEOLOGICAL CONSULTING

MARCH 1989

1. INTRODUCTION

This alternative proposal refers to the provision of hydrogeological consultancy in assessing the groundwater resources of the Granites - Tanami Mining Region.

The requirement is for approximately 700 hours of work to be completed by 31 August 1989. We understand that the consultant(s) will be based at Alice Springs and will work with the Water Resources Group there.

We have made a proposal to provide a Senior Hydrogeologist for 700 hours of work; as an alternative, we propose that we provide a Principal Hydrogeologist for 200 hrs and a Hydrogeologist for 500 hours.

2. SCOPE OF WORK

In summary, the scope of work proposed by the Water Directorate is:

(A) Prior to the consultant's arrival, existing bore data will have been placed onto computer and a base geological map will have been prepared.

(B) After consultant's arrival, field surveys will be conducted to define the aquifers using LANDSAT imagery and perhaps geophysical surveys. The data will be used to construct a hydrogeological map and commentary.

3. PERSONNEL OFFERED

Rockwater offers Dr Roger Passmore and Mr Keith Berry whose curricula vitae are presented herewith as Attachment A. Dr Passmore is the Principal Hydrogeologist of the firm and Mr Berry is a hydrogeologist who specialises in quantitative assessment by modelling, and field hydrogeology.

Dr Passmore has worked as a hydrogeologist for 27 years. These include 7 years with the Geological Survey of Western Australia and 15 years with
Rockwater. He normally conducts the initial field investigations on Rockwater projects and this was the case for Tanami, Moline, White Range, and Mt Todd groundwater development projects. Dr Passmore would contribute to the Granites-Tanami project his experience in appraising terrain and assessing aquifer potential by field inspection, air-photographs and Landsat image interpretation, and use of geophysics.

Mr Berry has three years professional experience (five years, if his MSc project is taken into account). He has worked on number of groundwater exploration programmes (see Attachment A) including Moline in the Northern Territory. In addition to field investigations, Mr Berry is particularly adept at quantitative assessment of aquifers and computer modelling. His familiarity with computers will contribute in the utilisation of PAWA’S Intergraph System.

4. PROPOSAL

Rockwater shall provide Principal Hydrogeologist, Dr J R Passmore and Hydrogeologist, Mr K Berry, to work "in house" with the Water Resources Group in Alice Springs, Northern Territory. The Principal Hydrogeologist will contribute 200 hours, comprising 80 hours at the beginning of the project and 120 hours at the end.

He will participate in the initial field survey and setting up the incorporation of data into the hydrogeological map. Towards the end of the project the Principal Hydrogeologist will be engaged in data compilation, assessment, and report writing.

The Hydrogeologist will work on the project for ten consecutive weeks, contributing a total of 500 hours.

All inclusive rates: Principal Hydrogeologist $79.60/hr Hydrogeologist $47.76/hr

Estimated Cost: 200 hours @ $79.60/hr $15,920
500 hours @ $47.76/hr $23,880

Total $39,800

Details of the costing can be provided on request; the base consulting rates are $61/hr and $37/hr, the remainder is expense items.

The stated rates include the following:
1. travel to Alice Springs and return
2. accommodation, meals, and expenses in Alice Springs
3. sedan vehicle for travel around Alice Springs and trips to Darwin
The following items are expected to be provided by the Power and Water Authority:

1. 4WD vehicle (plus fuel) and camping equipment for field investigation
2. normal PAWA travel allowances for field investigations and required trips to Darwin
3. all job related equipment and materials

Work arrangements will be subject to agreement, but we envisage that six or seven days a week will be worked.

DATED: 28 MARCH 1989

J R PASSMORE
PRINCIPAL HYDROGEOLOGIST
ATTACHMENT A

CURRICULUM VITAE

Name: John Roger Passmore

Date of Birth: 30 March 1939

Qualifications: Bsc (Hons), Adelaide University

PhD, University of Western Australia


Positions:

1974 - present

Rockwater Pty Ltd

Principal Hydrogeologist, Director

Management of all groundwater projects of Rockwater Pty Ltd. Selected projects are:

- Development of groundwater supplies for mining projects at Tanami, McInnis, White Range, and Mt Todd in the Northern Territory. Groundwater exploration and testing at Plenty River and Moly Hill, Northern Territory.

- Development of water supplies and quantitative analysis of aquifers in the Perth sedimentary basin at Gingin, Eneabba, Yanchep, Busselton, and Mandurah. Groundwater basin monitoring and management, including annual reporting to Government authorities in some cases.

- Water supplies and dewatering investigations for Duchess Phosphate Mine, Queensland.

- Water supply and dewatering design and implementation, at Pit 1A and others at the Telfer Gold Mine, Western Australia.

- Water supply and dewatering, design and installation of bores for 15 gold mining projects in the Eastern Goldfields of Western Australia.

- Two months field engagement in Malaysia and Thailand, assessing the groundwater resources of the Golok River Basin. Contribution to a major water resources study of the Basin by the Snowy Mountains Engineering Corporation.

- Study of groundwater for the city water supplies at Kota Bharu, Northern Malaysia. Design and supervision of a groundwater evaluation programme for expanding supplies to meet the year 2010 requirements. In Association with Syed Muhammad Hooi Dan Binnie Sdn. Bhd.

1971 to 1974

McPhar Geophysics Pty Ltd

Chief Hydrogeologist
Responsible for assessing groundwater potential, test pumping and aquifer analysis; supervision of a drilling and testing of artesian bores; field investigations, pumping test analysis and bore field design; supervision of ground resistivity surveys over water bearing calcrete and alluvium.

Projects include: Evaluation of the coastal limestone aquifer at Yanchep Beach - Two rocks, WA; an irrigation project in the West Kimberley area, bores for mineral sand mining, planning and implementation of open-pit dewatering.

1969 to 1971
Anaconda (Aust) Inc

Geologist

Groundwater investigations and mineral exploration at Widgiemooltha and Sir Samuel, Western Australia.

Supervision of diamond drilling and alluvial testing of a gold deposit at Porgera, New Guinea.

1962 to 1969
Geological Survey of Western Australia

Hydrology Section, Geologist

Supervision of rotary and cable tool drilling at 4 localities in WA. Regional mapping and bore site selection for townships and cattle properties in the East Kimberley Region of WA. Research into salt water intrusion in the coastal aquifers in the Rockingham District. Supervision of a major groundwater evaluation project (the Agaton Project), comprising 20 bores to more than 300 metres depth near Moora in the Perth Basin.
CURRICULUM VITAE

Keith Allan Berry

Date of Birth

9th April 1962

Qualifications

BSc, Geology, Auckland University
Master of Science, Auckland University

Other Training

Centre for Research in Groundwater Processes (SA): Groundwater Flow Modelling Course

Present Position

Rockwater Pty Ltd
Hydrogeologist

Experience

1987-(Present)

Dewatering Studies: Computer simulation of aquifer systems and assessment of dewatering requirements. For mines at Telfer, Eneabba, Jangardup, Black Flag and Robe River - operation of numerical models, including data analysis, conceptual model set-up, calibration, and simulation.

Groundwater Exploration and Development in Sedimentary Basins: Supervision of drilling, testing and rehabilitation of deep bores (to 700 m) at Eneabba (WA). Supervision of exploration programme at Bald Hill (WA).

Groundwater Exploration and Development in Crystalline Rock Terrains: Supervision of exploration programmes at Bottle Creek, New Celebration (WA), Pajingo (Qld), and Nome (NT). Supervision of installation and testing of production bores at Tarcoola (SA), Transvaal and Goongarrie (WA).


Environmental Studies: Computer simulation of a plume of contaminated groundwater from a tailings dam at Harbour Lights. Computer simulation of salt water encroachment and effects on the shallow sedimentary aquifer at Handurah of a proposed canal development.

1985 - 1987

Rockwater (NZ) Ltd
Hydrogeologist

Wainui Road Hill Site, Matatoki: Simulation of leachate movement from tailings and sulphide concentrate disposal site, using computer-based solute transport and groundwater flow models.

Papakura City Council: Evaluation of a computer-based method to be used for geological mapping.

1984-1986

ARA Water Resources Division/Auckland University, Research Student.

Master of Science Thesis: 'Stratigraphic, Structural and Geophysical Studies of Neogene Sediments of the Manukau Lowlands'. Thesis research was sponsored by the Auckland Regional Authority, to develop a structural and palaeo-geographic model of the Pliocene Kaawa Shelf Bed, an important aquifer in the Manukau area.

1983-1984

NZ Goldfields, Paeroa
Field Geologist (Vacation Employment)

Surface and underground mapping and sampling, core logging and draughting, for an epithermal gold prospect.

1980-1981

NZ Forest Service
Northland District Office, Kaikohe
Assistant to District Technician.

Collection, reduction, and summary of field data, also mapping and financial estimates.