Queensland Land and Resources Tribunal Expert Testimony

Greenhouse Gas Emissions Offset Opportunities: *Newlands Coal Mine Wollombi No 2 Surface Area Project*

Land and Resources Tribunal File No: AML 207/2006; ENO 208/2006

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15 January 2007

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Introduction

This report has been prepared for the Queensland Conservation Council Inc to provide advice on the costs associated with offsetting the greenhouse gas emissions from a proposed mine expansion in Queensland. The report is to be presented to the Land and Resources Tribunal (File No: AML 207/2006; ENO 208/2006).The Newman Coal Mine expansion is proposed by Xstrata Coal Queensland Pty Ltd, Itochu Coal Reserves Australia Pty Ltd, ICRA NCA Pty Ltd, Sumisho Coal Australia Pty Ltd (The Group). My letter of instructions is attached as Appendix 1 and my curriculum vitae is attached as Appendix 2.

This report investigates the range of possible offsets available to The Group and, where possible, estimated costs based on current market rates for the total emissions for the operating of the mine and the subsequent utilisation of the coal.

The emissions calculations were provided by Dr Hugh Saddler[1] at 84.0 million tonnes of CO_2e (Mt CO_2-e) over the fifteen year life cycle of the plant or an average of 5.6 MtCO_2-e annually.

Assumptions

For the purposes of this report I have assumed that:

- The price of carbon has been based on current prices and referenced where appropriate.
- The annual greenhouse gas emissions from the mining, transport and use of the coal from the mine are estimated at 5.6 Mt CO_2-e per annum for the 15 year life of the mine and 84.0 Mt CO_2-e in total.
- Total direct emissions from the mining operations for 15 year life of the mine (Fuel, coal seam methane leakage, electricity use, explosive emissions, etc) are estimated at 1.37 Mt CO_2-e.(0.91 Mt CO_2-e/yr).
- The price of retail carbon of $15AUD as been used for this report.

Carbon Offsets

Companies and individuals throughout the world are either voluntarily or in some case being regulated to take account of their total greenhouse gas emissions.

Some companies have a limited capacity to create offsets and look for other companies who can create offsets through sequestration, energy efficiencies or low emission energy production. When the offsets are quantified and monitored to an agreed standard then a trade can occur. The trade of these offsets allows for efficient investment in cost effective offset projects and investors reaching their emissions goals. The emergence of a number of carbon offset schemes where verification and monitoring standards are regulated by scheme administrators has created a number of markets for the trade of carbon offsets. Schemes often impose emission targets for participant's based on allowable emissions and energy saving targets, failure to comply can mean penalties or loss of endorsement.

[1] Saddler Dr Hugh Saddler (12 January 2007), *Greenhouse gas emissions associated with the proposed Newlands Wollombi No. 2 Project; Report prepared for an objections hearing in the Queensland Land and Resources Tribunal.*

Carbon Offset Markets

There are several key markets operating for the trade of carbon offsets. This report looks briefly at the six most applicable to this case.

Kyoto Markets

Parties to the agreement of the Kyoto Protocol are bound to meet national targets for greenhouse gas emissions. The targets were designed for industrialized nations to limit the concentration of atmospheric pollutants to a level that would avoid an unacceptable level of climate change. This meant a reduction in emissions for most developed countries. Countries were given allowances for emissions and are able to increase emissions if they can balance them with offsets from either the Joint Implementation (JI) or the Clean Development Mechanism (CDM)[2]. Australia has been set a target of 108% of 1990 levels but has not ratified the agreement and although supposedly on track to meet targets Australia is not party to the agreement. This restricts the ability of Australian Projects to access the Kyoto Market.

Current Price $4.50 US[3] ($ 5.75 AUD)[4] per tonne of carbon dioxide equivalent (CO_2).

European Union Emissions Trading Scheme

The European Union Emissions Trading (EU –ETS) is a cap and trade approach where allocations have been made to industrialized countries who if they exceed their emissions targets will be fined for each tonne of CO_2-e they exceed there allocation. This market has had some teething problems with widespread concerns over the high allocations released for phase 1 (2005 – 2008). In the latter half of 2006 as producers became aware of the imbalance in the market prices took a severe fall from around € 30 euro / tonne CO_2-e to € 9 euro / tonne CO_2-e. This fall has continued with the price on 12 January 2007 at €4.05. Phase 2 (2008-2012) is expected to have tighter allocations and according to market analysts this will cause an increase in the price back to around the € 30 / tonne CO_2-e mark.[5]

The market was valued at 14.6 billion Euro in 2006[6] ($24.1B AUD)

Current Price € 4.05[7] ($10.13 AUD)[4] per tonne of CO_2-e .

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[2] Joint Implementation: Countries can trade Emission Reduction Units (ERU) which are certified by Annexure B countries Clean Development Mechanism – Countries can trade Certified Emissions Offsets (CER) from non annexure B countries when certified by the CDM Executive Board.
[3] www.CO2e.com
[4] http://www.x-rates.com/calculator.html#
[5] UBS Investment Research 8/01/2007 European Emissions Trading System
[6] 12.01.07 - Carbon Market Europe 12 January Newsletter - Carbon Market Europe Point Carbon http://www.pointcarbon.com
[7] www.pointcarbon.com
[4] http://www.x-rates.com/calculator.html#

New South Wales Greenhouse Gas Abatement Scheme (GGAS)

The GGAS is a cap and trade approach administered by the Independent Pricing and Regulatory Tribunal. Under the GGAS large energy users and large energy produces (known as benchmark participants) are bound by legislation to a maximum per capita emission in tonnes CO_2-e. Should a benchmark participant not reach their emission target then they must either pay a fine or source a similar number of NGAC(s) (New South Wales Greenhouse Gas Abatement Certificate) to Offset their surplus emissions. This has led to the development of a number of offset project in New South Wales. Benchmark participants must offset their emission with offsets that have been generated in the same (accrediting period) (year). This is coupled with a decreasing per capita emissions cap.

Current Price (Spot Market): $12.00(AUD)[8] per tonne of CO_2-e.

NGACS have become popular in the voluntary market with non benchmark participants purchasing them. The retail sector of the carbon market is also on selling them to companies and individuals for up to $23.95AUD per tonne of CO_2-e.

Greenhouse Friendly (Australia)

The Greenhouse Friendly Program is a de-facto market where participants access government endorsed carbon neutral carbon branding for products and services. The scheme is a voluntary one that allows participants to enter agreements on trading offsets to neutralise a product or services emissions. The scheme is verified by an independent panel of verifiers appointed by the scheme administrators (The Australian Greenhouse Office).

Current Price: (approx): $6.00 (AUD) per tonne of CO_2-e.

Chicago Climate Exchange (CCX)

The Chicago Climate Exchange (CCX) is a voluntary greenhouse gas registry. The self regulated membership have entered binding agreements to reduce their greenhouse gas emission by 4% rising to 6% by 2010 from a baseline set between 1998 through to 2001. Carbon Financial Instruments (offsets) are traded through the registry to help balance members emissions.

Current Price $4.50 US ($ 5.75 AUD)[9][10] per tonne of CO_2-e.

[8] The Katoomba Group Ecosystems Market Placehttp://www.ecosystemmarketplace.com/
[9] http://www.x-rates.com/calculator.html#
[10] Chicago Climate Exchange Jan 8 2007, 2006 Vintage

Voluntary (Retail) Market

The voluntary market operates outside of mandatory or government backed schemes, this has led to a number of standards being developed to guide the verification of voluntary offsets. These standards include those from government backed or endorsed schemes satisfying the requirement s pf these schemes does not necessarily mean inclusion in them, providers often get independent verification to add credibility to their project. The most common standards include

- The Kyoto Protocol CDM and JI Mechanism
- Greenhouse Friendly
- CDM Gold Standard
- NSW Greenhouse Gas Abatement Scheme
- The Greenhouse Gas Protocol
- Chicago Climate Exchange
- Australian Standards
- International Standards

The application of these standards varies considerably therefore affecting price. Prices can range from a few dollars to over $US 30 a tonne for the purpose of this report a figure of $15AUD per tonne of CO_2-e as been used.

The following table (Table 1) has been created to show the approximate costs associated with purchasing offsets.

Table 1: Summary of offset prices with annual and total costs

Market	Price per tonne of CO_2-e (AUD)	Annual Offset Cost (times 5.6 Mt CO_2-e) $('000)	Total Offset Cost (times 84 Mt CO_2-e $('000)	Per tonne coal used Annual (AUD)
Kyoto (CDM/JI)	$ 5.75	32,000	483,000	16.95
EU-ETS	$ 10.13	56,728	850,920	29.86
GGAS	$ 12.00	67,000	1,008,000	35.37
GHF	$ 6.00	33,600	504,000	17.68
CCX	$ 5.75	32,200	483,000	16.95
Retail (estimate $15.00)	$ 15.00	84,000	1,260,000	44.21

Average per tonne coal used Annual $26.84(AUD)

Sources of Offsets

The development of the carbon offsets market has seen a rapid growth in the number of and sophistication of offset products across a broad range of industries. The guiding principle when purchasing or creating offsets is to have a net effect on the atmosphere. This can be achieved in a number of ways such as removing carbon from the atmosphere through new vegetation, preventing the release of emissions through clean energy generation or reducing the fossil fuel dependencies of operations.

The source of offsets should also be a consideration, with some purchasers preferring to match emission sources with similar offset projects (such as offsetting methane emissions through investment in a methane destruction project).

The Group may chose to utilise one or a number of the available options in a blend to reflect the point source of emissions.

A summary of the advantages and disadvantages of offset sources is provided in Table 2 on the following three pages.

Table 2 - Advantages and disadvantages of offset sources

Offset	Description	Advantages	Disadvantages
Purchase Carbon Offsets to an agreed standard eg NGAC, CDM, JI, CCX, GHF	Purchase Credits from Brokers or suppliers with independent verification of carbon accounting and auditing. Can be sourced from any or all of the offset options. Range of standards and eligibility criteria give a good range of choice and prices.	Ready made credits. Can select a range of offset sources.	Can be seen to be paying to pollute. Standards and price vary greatly
Renewable Energy Certificates (RECs)	Regulated and government backed scheme where generation of renewable energy creates certificates that can be transferred.	Ready regulated markets. Supports clean and developing technologies. Best for reducing electricity emissions.	Can be seen as double counting. Not available in some schemes. Caution to be shown if offsets mandatory. Competitive Market.
Forestry (conservation)	Reafforestation and afforestation projects that reinstate native vegetation for the purpose of creating additional environmental outcomes as well as carbon sequestration. Multiple providers with multiple standards. These are generally permanent non harvest projects with a mix of species often planted on private land. Highest value credits. Have an underlying property right that allows the creation and transfer of forestry rights.	Can generate excellent marketing opportunities. Helps create pathways for adaptation to climate change. Additional environmental benefits. Social benefits for landholders. Australia is well placed to measure and monitor sequestration activity. Only proven technology to remove carbon dioxide from the atmosphere.	Often expensive, varying standards and price, maintenance obligation. Caution should be given to standards applied. Some concerns over maintenance periods. Relatively expensive.
Forestry (commercial)	Commercial (harvest) projects that guarantee the ongoing maintenance of vegetation on site. Multiple providers with multiple standards. Many providers claim additional environmental outcomes although not as strong as conservation based projects. Highest value credits have an underlying property right that allows the creation and transfer of forestry rights.	Only proven technology to remove carbon dioxide from the atmosphere.	Often expensive, varying standards and price, maintenance obligation Caution should be given to standards applied. Some concerns over maintenance periods. Relatively expensive. Concerns over leakage – pushes problem elsewhere.
Avoided Deforestation	By protecting at risk remnant vegetation providers reduce the amount of emissions being released into	Relatively inexpensive (if acceptable).	Concerns over leakage – pushes problem elsewhere.

Offset	Description	Advantages	Disadvantages
	the atmosphere. Generally backed by a long term conservation covenant. Very good for protecting vulnerable and threatened vegetation communities. Standards and prices can vary and avoided deforestation is not recognised in many schemes.	Protect native vegetation. Good PR possibilities. Limited market supply. Reduces deforestation, an important contributor to climate change	Not currently in Kyoto mechanism. Caution should be given to standards applied. Some concerns over maintenance periods. Prices vary. Concerns over Additionality.
Soil Carbon Sequestration	By changing land management to increase the amount of carbon stored in the soil, offsets can be generated. Not recognised in many schemes but the push is on to have it recognised. A typical project sees the change from traditional land management to minimum or no tillage systems providing ongoing production improvements and soil carbon storage.	High potential sequestration rates. Lots of available areas. Relatively inexpensive.	Permeance concerns – soil is a volatile pool, can restrict land management options, difficult to accurately measure and monitor. No set standards (CCX has a voluntary standard) No legislation in Australia (except WA) to create underlying property right for transfer of carbon (WA only under eligible forests).
Fossil Fuel replacement/reduction **Purchase Bio diesel** **Ethanol Blended Fuel**	Fuel additives such as bio-diesel and ethanol allow for a blending of fossil fuels with renewable fuels. Considerations must be given to the cost of purchasing and transporting fuel blends as well as leakage and change in land management to produce fuel.	Has additional benefits such as reducing other pollutants. Supports developing technologies. Can lead to less dependency on fossil fuel.	Inefficient, leakage concerns, limited application to many industrial process Can mean modifying fleet and/or supply chain. Known to void some machinery warranties.
Bio generation	Through the establishment and sustainable harvest of plantations (especially Mallee species) to feed gasification plants.	Creates ongoing sustainable energy supply. Technology constantly improving. Reduce emissions form sale or use of clean energy. Carbon sequestered in forest resource. Provides local labour. Can be done anywhere on national grid.	Often expensive to establish. Varying standards and price. Maintenance obligation.

Offset	Description	Advantages	Disadvantages
Methane Capture and Destruction – Livestock	Although called methane capture and destruction from livestock, projects can include modifications to feed supplies to reduce methane production in ruminants. Also includes capitalising on animal waste treatment processes that captures methane and converts to electricity.	Due to high GWP[11] of methane it is an efficient method of reducing emissions.	Some concerns over Additionality.
Methane Capture and Destruction – Coal Seam	Captures methane emissions from coal seams and either destroys (flaring) or converts to electricity generation. Specific analysis of individual mining operations need to be investigated.	Due to high GWP of methane it is an efficient method of reducing emissions.	Some concerns over Additionality in operating mines.
Methane Capture and Destruction - Landfill	By sealing landfills, methane from decomposing organic matter can be destroyed (flaring) or converted to electricity generation.	Monitoring and calculations easy. Can turn methane to energy. Due to high GWP of methane it is an efficient method of reducing emissions.	Some concerns over Additionality.
Destruction of Industrial Gasses	Through chemical and industrial processes greenhouse gasses can be restricted from entering the atmosphere. Can be expensive to establish but also provide an ongoing source of offsets.	Easy to measure and monitor.	Limited supply. Concerns over some projects Additionality.
Geo Sequestration	Gasses emitted from generation or industrial process are captured, compressed and then injected into underground storages such as depleted gas and oil wells. This can increase yields from such reserves.	Potential to be cost effective method. Potential to store vast amounts of carbon.	Often limited suitable geology near operations (not know specifically for Newmans). Unproven/effectiveness unknown.

[11] *Global Warming Potential – GWP Each of the Greenhouse Gasses is given a GWP. The potential of the gas to cause increased global warming is indexed to one tonne of Carbon Dioxide (CO_2) and expressed in terms of t/CO_2e (Carbon Dioxide equivalent) eg Methane has a GWP of around 28. This means one tonne of Methane released has the same impact as releasing 28 tonnes of CO_2.*

Further points to consider when sourcing emission offsets:

- Is there a requirement to match emission events with offsetting events?
- Level of offsets - offsets can be seen as a 'license to pollute' by some sectors of the community. Companies should first try to reduce the amount of emissions prior to entering into offset arrangements. For example, the Cities for Climate Protection Program sets a maximum level for participating councils to claim offsets; the rest of their emission reduction targets must come form energy efficiency or other reduction processes.
- Leakage - Leakage is used to describe the situation when a project is initiated and leads to a reduction in emissions at one point but only moves the old practice and subsequent emissions to another point. An example is when a land use change project converts land from grazing to forestry. Whilst the forestry offsets are legitimate, if the stock (cows etc) has been moved to another location then there is no saving on the stock emissions. Another example is when avoided deforestation in one country simply means an increase in the deforestation of another county.
- Additionality - Additionality is a term used to refer to the requirement of some schemes or standards to show that the offsets delivered by a project are "above and beyond business as usual". This is designed to ensure that investors are not simply gaining financial advantage from undertaking typical business practices. The aim is to ensure that carbon reduction projects are in fact reducing the atmospheric carbon pool through increased investment and technological development rather than normal business saving activities.
- Source - the source of offsets can vary greatly, as shown in Table 2. Selecting the right offset to match the companies operations and risk profile is an important consideration, especially when looking at significant investments and the right to trade offsets.
- Transferability - if other technologies or practices lead to a reduction in required offsets then the companies may like to trade them. In this case, they will need to have an underlying property right.
- Targeting offsets to point source emissions – Table 3 provides an example of neutralising emissions from similar offset projects.

Table 3- Targeted emissions offsets summary table

Target Emission Source	Offset Options
Coal Seam Methane	Purchase from or invest in methane destruction projects
Consumption of Electricity	Purchase of Green Energy Investment in green energy production facilities
Fuel Consumption	Utilisation of Bio fuel
Explosive Emission	Forestry Offsets

Considerations

In determining suitable offsets and associated costs, there needs to be agreement on the legitimacy of offsets and how those offsets will be quantified, reported and maintained. The first step in the process is to agree on the project specific requirements of any offset activity. The following section of the report focuses on the key considerations when investigating a responsible approach to offset emissions from production and use of products.

Determine Offset Requirements

The first step is to reduce the point source of emissions and then determine the level of offset requirements. This could be a percentage of total emissions or targeted emission sources

The key questions are:

- what are the aims of the offset program?
- what is an acceptable cost?
- what standards need to be applied to any offset project?

Running own investment portfolio vs purchase verified credits

The second important consideration is to determine (based on risk assessments, company profile, market expectations and regulatory requirements) the comparative advantages of purchasing offsets or investing in self managed or partnership projects.

Matching emission events with offset events

Due to the long lead time of some offset projects (such as forestry), it is possible that the mine will initially be a net emitter of gasses and, as the sequestration project develops, it will 'catch up' to the emissions. Other projects that involve substantial infrastructure development and/or contractual arrangements may not be delivering offsets until the mine expansion occurs. Should this be the case there will need to be a guarantee on delivering the offsets and clear understanding of the responsibilities of the parties to any agreement should a project fail.

It may be ideal to have a mixture of projects that will lead to an emission balance. This may mean purchasing offsets in the first stage of operations whilst investing in a sequestration or methane destruction project to offset later year's emissions.

Conclusion

Using current market data and the emission figures provided to me it would cost between $483 million (AUD) and $1.26 billion (AUD) to offset the total expected emissions of 84.0 Mt CO_2-e from the mining, transport and use of the coal from the mine. Offsetting only the direct emissions from the mining operations, of 1.37 Mt CO_2-e, would cost between $7.9 million and $20.6 million. The lowest cost per tonne was for the Kyoto or CCX offsets which added approx $16.00 to each tonne of coal used up and the highest was $43.00 per tonne coal used for retail, with an average of $26.84.

Due to these significant investment requirements there is considerable scope for The Group to invest in projects either in house or in a partnership arrangement.

Undertaking carbon offsets for the expansion of the Newlands Coal Mine would set a new standard for sustainable development and put The Group at the forefront of the industry.

Prior to any regulatory or voluntary commitment to reducing and offsetting emissions, stakeholders should agree on the standards and specific requirements. The basis for the agreement should be that the offset and emission reductions targets will not increase the amount of CO_2-e in the atmosphere.

The Group may also chose to iinvestigate international opportunities for creating CERs creation through Kyoto mechanisms at point source of emission

By offsetting the end use of coal at the point of extraction it is possible that the end user may be able to claim carbon credits from using greenhouse neutral coal. Qualified advice on the possibilities of gaining carbon credits through the CDM mechanism should be sought at the point of use.

Some of the opportunities and advantages of investing in offsets

- Offsets can lead to an opportunity to capitalise on ethical investment groups as being a model of sustainable development
- Investments could form part of a longer term strategy to develop new technology and support developing industry
- The Group can also be targeted to local industries – such as sourcing bio-diesel and sequestration projects from local producers
- The Group can develop knowledge and capacity and then export it to the wider mining industry,
- Offsets can lead to marketing opportunities for clean coal
- Long term renewable energy projects such as bio energy can lead to ongoing income streams beyond the lifetime of the mining operations.

Acknowledgments

Australian Carbon Traders has read and acknowledged that they have received, read and understand the directions of the Practice Direction (no 11 of 2000) forwarded by The Environmental Defenders Office. I have made all the inquiries which I believe are desirable and appropriate and no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Tribunal.

This report has been prepared by Ben Keogh, Managing Director of Australian Carbon Traders. Mr Keogh has formal qualifications in Forestry and Natural Resource Management from Melbourne University. Mr Keogh has also undertaken works on carbon offsets projects for clients including the Melbourne 2006 Commonwealth Games Organising Committee, the Central Victorian Greenhouse Alliance, The Westernport Greenhouse Alliance, Landcare Australia and several private companies. Mr Keogh has attended advanced training in the Use of the National Carbon Accounting Toolbox in Canberra. His curriculum vitae is attached as Appendix 2.

Ben Keogh
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APPENDIX 1 – LETTER OF INSTRUCTIONS

ENVIRONMENTAL DEFENDERS OFFICE (QLD) INC.

Level 9, 193 North Quay
(corner Herschel St)
Brisbane QLD 4000

Telephone: (07) 3211 4466
Facsimile: (07) 3211 4655
E-mail: edoqld@edo.org.au
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ABN 14 911 812 589

13 December 2006

Ben Keogh
Australian Carbon Traders
PO Box 1020
Castlemaine Victoria 3450

Dear Ben,

Queensland Conservation Council Inc ats Xstrata Coal Queensland Pty Ltd & Ors

Objection to Mining Lease Application for Newlands Coal Mine Expansion

We act for the Queensland Conservation Council Inc ("QCC") in relation to an application lodged by Xstrata Coal Queensland Pty Ltd for a coal mine expansion at Newlands Coal Mine. QCC will argue, in the Land & Resources Tribunal, that the coal mine expansion should not be approved without imposing conditions to avoid, reduce or offset the greenhouse gas emissions from the mining, transport and use of the coal.

Background

Xstrata Coal Queensland Pty Ltd ("Xstrata") and its joint venturers[1] have applied for a mining lease under the *Mineral Resources Act* 1989 (Qld) ("MRA") and an environmental authority (mining lease) under the *Environmental Protection Act* 1994 (Qld) ("EP Act") for an open cut coal mine (ML 4761). The applications are for an additional surface area for extension of the Newlands Coal Mine, Wollombi No 2 Surface Area, at Suttor Creek approximately 129 km west of Mackay, known as the Newlands Wollombi No. 2 Project ("the Newlands Coal Mine Expansion").

The mine will produce up to 2.5 million tonnes per annum ("Mtpa") of run of mine ("ROM") black coal for a nominal annual average of 1.9 Mtpa product coal over a 15 year mine life, or 28.5 Mt of coal in total.

The coal from the mine will be transported to domestic and/or export markets for electricity production (thermal or steaming coal) and/or steel production (metallurgical or coking coal).

Subject expert opinion, we calculate that the greenhouse gas emissions from the full fuel cycle[2] of mining, transport and use of the 28.5 Mt of coal from the mine for electricity

1. Itochu Coal Resources Australia Pty Ltd, ICRA NCA Pty Ltd, and Sumisho Coal Australia Pty Ltd.
2. Total emissions resulting from the use of a fuel including those emissions associated with the production and transport of the fuel.

production or steel production will be approximately 72.18 – 96.44 Mt of carbon dioxide equivalent ("Mt CO2–e") according to the calculation methods recommended by the Australian Greenhouse Office.[3] The majority of the greenhouse emissions from these projects will occur overseas when the coal is used.

Expert evidence

The key evidentiary issues QCC will address in expert evidence are:

1. What is global warming and climate change, how serious a problem is it, and how does the mining, transport and use of coal contribute to these processes?
2. The likely greenhouse gas emissions from the mining, transport and use of the 28.5Mt of coal from the mine (possibly just by using the Australian Greenhouse Office Workbook).
3. The contribution that the likely greenhouse gas emissions from the mining, transport and use of the coal from the mine will make to climate change and potential impacts of this.
4. The reasonable and practicable means to avoid, reduce or offset the likely greenhouse gas emissions from the mining, transport and use of the coal from the mine, including the costs of these measures being imposed.
5. The likely impacts of climate change on the Queensland economy.

We would very much value your assistance as an expert for QCC to address issue 4 with respect to possible offset measures. Dr Hugh Saddler from Energy Strategies Pty Ltd will be advising on the calculation of greenhouse gas emissions from the mining, transport and use of the coal. In the meantime, for the purposes of a draft report, please consider offset measures based on our current estimate of 72.18 – 96.44 Mt of carbon dioxide equivalent. As soon as we have Dr Saddler's estimates, we will forward them to you.

In addressing possible offset measures, please consider the types of offset measures available and the costs of offsetting.

Documents

We refer you to the following documents:

1. The Land and Resources Tribunal Guidelines for expert witnesses (Practice Direction No 11 of 2000) – copy enclosed.

2. The objection dated 7 November 2006 lodged by QCC – copy enclosed.

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3. Australian Greenhouse Office (AGO), *Australian Greenhouse Office Factors and Methods Workbook*, (AGO, Canberra, August 2005). Available at http://www.greenhouse.gov.au/workbook/pubs/workbook.pdf (viewed 12 December 2006). Based on the formula, Greenhouse Gas Emissions (GHG) (t CO_2–e) = Q x EC x EF/1000; where**:** Q = the quantity of fuel burnt in tonnes; EC = the energy content of fuel in GJ/tonne or GJ/kL; EF = the relevant emissions factor. According to Table 1, p 6 of the AGO workbook, the energy content of washed black coal for Queensland electricity generation is 27.0 GJ/t and the full fuel cycle emissions factor is 93.8 kg CO_2-e/GJ. The energy content of coal used in the steel industry is 30.0 GJ/t and the full fuel cycle emissions factor is 112.8 kg CO_2-e/GJ.

3. Directions made by the Land and Resources Tribunal on 27 November 2006 – copy enclosed.

4. Further and better particulars filed by QCC – copy enclosed.

5. Extracts from the EIS for the Newlands Coal Mine dated December 2005, as follows:
   i. Executive Summary – pages ES-1 to ES-9
   ii. Table of Contents – pages i to xxxv
   iii. Introduction – pages 1-1 to 1-12
   iv. Description of the Project – pages 2-1 to 2-29
   v. Greenhouse Gas Inventory – page6-16 to 6-17

6. Xstrata's disclosed documents in relation to the greenhouse gas calculation. The documents are itemised in the Applicant's List of Documents dated 12 December 2006, also enclosed.

7. *Factual and Legal context of the QCC objection in the Queensland Land & Resources Tribunal to the Newlands Coal Mine Expansion* prepared by Chris McGrath, barrister.

Timeframe

There is a very tight timetable for the proceedings as follows:

1. Experts' affidavits are to be filed by **15 December 2006**;
2. Experts within similar field of expertise are to confer by **18 January 2007** with a view to resolving or narrowing any matters upon which they disagree;
3. Experts within similar field of expertise are to file and joint report by **22 January 2007** setting out the matters upon which they agree and any matters upon which they disagree, and the reasons for any disagreement;
4. The matter is set down for hearing in the Land and Resources Tribunal over three days commencing **31 January 2007**.

It may well be that the other parties will not rely on evidence from experts within your area of expertise and there will be no need for a joint meeting or joint report. At this stage, we do not know whether you will be required for cross-examination.

Your duty to the Tribunal

We emphasise that, in accordance with the attached guideline for expert witnesses:

- You have overriding duty to assist the Tribunal on matters relevant to your area of expertise;

- You are not an advocate for QCC; and

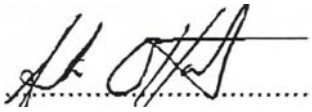
- Your paramount duty is to the Tribunal and not to QCC.

We also emphasise that neither QCC nor its lawyers seek to influence your views in any way and we ask for your independent opinion to assist the Tribunal. Consequently, please note that any statements of fact or opinion in this letter of instructions, the above documents, or anything given or said to you by QCC or its lawyers relevant to the issues in your report do not constrain you in any way and are not intended to influence your views. We ask you to form your own opinion about the relevant facts and circumstances for the purposes of your report.

QCC is gathering an excellent team of experts and is conducting fundraising to contribute towards the costs of the experts. At this stage it is very difficult to estimate the amount that QCC will have towards your costs. At a bare minimum QCC have accounted for a minimum of $2,000 for each expert, however, intend to raise a higher amount. The experts who have agreed to act so far are either acting completely pro bono or at reduced rates. Before undertaking work over $500.00, please advise your hourly rate and provide an estimate of the total hours you expect will be involved in the preparation of your report. Please also forward a copy of your curriculum vitae for our records.

If you have any queries, please do not hesitate to contact me on (07) 3289 7991.

Yours sincerely



Anita O'Hart
Solicitor

Environmental Defenders Office (Qld) Inc

APPENDIX 2 – CURRICULUM VITAE OF BEN KEOGH

PERSONAL DETAILS

NAME:	Benedict Edward KEOGH	
ADDRESS:	Australian Carbon Traders PO Box 1020 Castlemaine, Victoria, 3450, Australia	
CONTACT DETAILS:	Work phone Email	0425 877 676 ben.keogh@australiancarbontraders.com

EDUCATIONAL BACKGROUND

1998-2001	*The University of Melbourne (Dookie)* Bachelor of Applied Science in Resource Management
1996 - 1997	*The University of Melbourne (Creswick)* Diploma in Forestry
1995	*Holmesglen College of TAFE* Advanced Certificate in Resource Management

EMPLOYMENT EXPERIENCE

March 2005 – present *Australian Carbon Traders Pty Ltd*

Chief Executive Officer

Major Projects:
Landcare Australia Currently undertaking major consultancy with to design and implement a conservation based carbon sequestration pool operating within the NSW Greenhouse Gas Abatement Scheme. Duties include landholder consultation, project design, preparing and submitting funding applications, staff management, budget, preparation of project plans, site assessments, coordination of sub consultants, strategic planning, reporting. Outcomes include gaining funding from Federal Govt to pilot project, sale of 10,000 tonnes CO_2e to Vic Govt, entering into agreements to offset Melbourne Town Hall Emissions, securing two corporate sponsors and offsetting the emissions from the 2006 WOMAD festival.

Westernport Greenhouse Alliance
Develop Project Plan for 10 hectare conservation site at Bunyip Victoria.

Sunrise Energy
Design conservation based carbon sequestration offsets project for Climate Friendly Schools

Queensland Environmental Defenders Office
Provide expert testimony regarding greenhouse gas offset options

December 2004 – March 2005	*Port Phillip & Westernport Catchment Management Authority*

Project Coordinator – 2006 Commonwealth Games Tree Planting Program
DUTIES: Provide overall coordination and implementation of the Commonwealth Games Tree Planting Coordination. The Tree Planting Program offset 110,000 tonnes of CO_2e emitted from the running of the 2006 Commonwealth Games. Duties included coordinating 49 sites in 17 locations throughout Victoria. Specific areas of responsibility included client liaison, executing property rights agreements, budgeting, reporting, risk analysis, strategic planning and carbon modelling. Total Budget 1.1M. Outcomes include, 110,000 tonnes CO2e offset, 49 sites, 17 locations, 2600 volunteers, 450+ hectares revegetated.

December 2003 – December 2004	*Sinclair Knight Merz*

Natural Resource Scientist – Consultant

MAJOR PROJECTS INCLUDE:

Central Victorian Greenhouse Alliance Carbon Sinks project
Project Manager – A high profile project aimed at developing carbon sequestration sinks through biodiversity plantings in the North Central Catchment. This project requires consultation with industry and community leaders, data analysis, document preparation, media releases and working with the 17 member organisations.

Recovery Status of Streams and Catchments in East Gippsland affected by 2003 Bushfires

Project Manager – responsible for the coordination and compilation of report for DSE and Treasury.

North Central Targeted Dryland Salinity Program
Involved in the development and review of the targeted dryland salinity projects for the DPI in the North Central Catchment. Required to assist in the compilation of Project Area Guidelines for 10-targeted sub catchments.

Onkaparinga Land Use Study
The Onkaparinga land use change project was commissioned to investigate the impact of changing land use scenarios in the Onkaparinga catchment of South Australia. Involved in the analysis of data and interpretation of the impacts land use change trends will have on environmental flows in the Onkaparinga River.

Omeo Restoring the Balance Program
Evaluation of various components of the program; assisted in development of evaluation framework and conducted evaluation.

July 2001 – November 2003 *Department Natural Resources and Environment*

Project Leader – Dryland Whole Farm Planning
ROLE: To develop and implement a process for continuous improvement in sustainable land management.
DUTIES:
Dryland Whole Farm Planning
Arcview support for Kerang Office
OH&S Representative (regional and local)
Develop GIS as a tool for land use change
Land capability analysis
Stakeholder consultation
OUTCOMES: The development of the FARMAP program. The results of this program have been instrumental in the development of the framework for the investment and implementation of the Loddon Murray Land and Water Strategy for the next 30 years. FARAMP was given the NIR 2002 Innovation Award.

November 2000 – May 2001 *Environmental Consultants International (ECI)*

Consultant

DUTIES: To conduct arbor audits of power distribution networks; identify and source tenders; assist in compilation of tenders and conduct general sales and marketing with a view to expansion into forestry based industries.

June 1999 – July 2001 *Swinburne TAFE*

Sessional Lecturer – Forestry (part-time)

DUTIES: To prepare and deliver learning modules in Forest Utilisation and Farm Forestry to second year Natural Resources Diploma students.

January 98 – December 2003 *Cobwell Station*

Forest Operations Manager

DUTIES: Manager of portable saw mill, staff supervision, log quotas, tree marking, marketing, delivery, logistics, the sustainable development of a privately owned forest resource, liaison with sawmills and other associated operators, regulatory compliance.

August 1997 - August 1998 *State Forests of NSW (Deniliquin)*

Plantation Officer - Hardwood Plantations

DUTIES: To liaise with clients, contractors and government bodies (federal, state and local) to develop and maintain hardwood plantations on private and public land. Involved plantation silviculture, soil science, herbicide application, fertiliser application, ordering and receiving of goods, supervision of work crews, public relations, creation of management plans and documentation of processes.