

# THE 53rd SYDNEY MINING CLUB

# GREENPEACE VS THE FUTURE OF AUSTRALIAN OIL SHALE

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# <u>SLIDE #1 – GREENPEACE VS THE FUTURE OF AUSTRALIAN OIL SHALE</u>

Thank you Julian and good afternoon ladies and gentlemen.

As is apparently the practice for these sessions, the flyer for my speech is deliberately provocative, pitting as it does, SPP and Greenpeace in a high stakes battle that will decide the future of a modern oil shale industry in this country. While this may somewhat overstate the situation, there is no doubt that Greenpeace is opposing the development of fossil fuels throughout the world and that includes a major campaign against the development of a new shale oil industry here in Australia. My main objective in speaking to you here today is to tell the real story about our developments in Gladstone and to point out why Greenpeace's arguments are grossly distorted and should be rejected.

Before I comment on the specific issues concerning Greenpeace, I propose firstly to put the Stuart Project into an historical context, in particular the resurgence of non-conventional oil developments such as the oil sands in Canada and now oil shale in Australia. I will then describe the Stuart Project and what we have accomplished and outline the current issues we face with respect to marketing our products in Australia. It's in our marketing that Greenpeace and our recent approach to the Commonwealth Government come into the picture. I'll conclude with a review of how we are positioning ourselves from a sustainability perspective which we recognise is critical to earning a "licence" to operate and to grow in the current age.

# <u>SLIDE #2 – HISTORY OF SPP AND GLADSTONE OIL SHALE</u>

Firstly a few comments on the history of Southern Pacific Petroleum and Gladstone oil shale.

## 1968 - SPP and CPM founded by Sir Ian McFarlane

In 1968, Sir Ian (then plain Ian) McFarlane formed 2 companies Southern Pacific Petroleum to explore for oil and Central Pacific Minerals to explore for minerals. It was at the time necessary to have separate entities to carry out such exploration if advantage was to be taken of then available tax deductions. There were significant cross shareholdings so that shareholders in each company could share in the success of the other which also had the totally coincidental effect that control could be quite tightly held by Ian and a number of supporters he had garnered through his time as a senior partner with Morgan Stanley in New

York. Although the tax reasons for this structure changed during, I think, the 70's the structure itself was not so easy to change and was, in the event, not carried out until early this year. Central Pacific Minerals is now for all intents and purposes a wholly controlled subsidiary of SPP which is now the only listed company.

### 1973 - First oil shock (US\$ 2.90 to \$11.65) - Yom Kippur war

Given the very significant increase in the oil price following the Yom Kippur war, Ian was very attracted to the possibility of shale oil, evidence of which his exploration team had found in Queensland, with good access to deep water ports and other infrastructure which he had correctly identified as being of critical importance if shale oil was ever to be a commercial proposition.

#### 1974 – Discovery of Rundle deposit

An expanded exploration effort was soon rewarded in 1974 with the discovery of the huge Rundle deposit, and over the next decade 7 more shale oil discoveries of world class were made inland from the Queensland coast, from as far north as Proserpine to south of Gladstone. Based on a cut-off grade of 50 litres of oil per tonne of shale and excluding significant tonnages of shale at depth and relatively high waste to ore ratios, the total resource discovered is 20.2 billion barrels which, to put it into some context, approximates the remaining conventional oil reserves in the United States.

#### 1979 - Second oil price shock \*US\$13 to \$34/bbl) - Iranian Revolution

While these discoveries were being made, further upheavals in the Middle East – particularly in Iran – pushed oil prices of US\$30 and above and oil majors were desperately trying to gain access to alternative sources of energy and in particular were looking at oil shales of which there were known to be huge reserves, particularly in Colorado.

#### 1980 – Exxon secures 60% of Colony Oil Shale Project in Colorado

In 1980 Exxon acquired a 60% interest in the Colorado Colony project, with an implied value of US\$0.85/bbl in the ground.

## 1980 – Exxon secures 50% of Rundle Joint Venture in Australia

In the same year Exxon entered into an agreement with SPP, and acquired a 50% interest in the Rundle deposit by paying more than US\$25 million up front, agreeing to pay SPP a further US\$25 million each year until Phase 1 production commenced, agreed to fund the Page 3 of 17

initial project costs and allowed SPP to elect for Exxon to pay all development costs for Phase 1 and 2 and to be repaid by SPP out of production. They were heady days and, not surprisingly, SPP shares soared from A\$0.50, topping out at A\$110 per share.

#### 1982 – Exxon terminates Colony Project

After the early excitement, the economics of developing Colorado shale began to look very unattractive indeed, both because of the location of the deposits and the extent of the overburden. It is fair to say that these shales had few if any of the logistical or depositional advantages of the Queensland shales, and when the projected development costs for a 50,000 bbl/day plant escalated to US\$6-8 billion, and with weakening oil prices in prospect, Exxon shut down their Colony project on which they had already spent more than a billion dollars.

#### 1984 – Exxon completes Rundle commerciality study (fluidised bed technology)

Notwithstanding the lower price projections, Exxon stayed with the Rundle project, committing to spend A\$30 million over 1982 – 1984 to complete a Commercialisation Study to build confidence in their fluidised bed technology and associated costs. However when this study indicated costs of more than US\$2.5 billion for a 74,000 bbl/day plant, (significantly less than for Colorado but still higher than originally projected) they not surprisingly concluded that it was not economic to proceed until crude oil markets and prices improved.

#### 1985 – Third oil price shock (US\$31.75 to \$10/bbl)

This began to look further and further away when Exxon's negative view on oil prices proved to be true and the price plummeted towards US\$10 in 1985.

#### 1985 – Exxon pays SPP A\$44.5 million to restructure Rundle Project

Exxon had, by this time, already invested A\$122 million in studies and payments to SPP and paid SPP a further approximately A\$45 million and completed a A\$10 million work program in consideration for deferring indefinitely their further obligations.

### 1986 - SPP selects ATP technology for testing

Exxon of course had other fish to fry, but other than the divorce (or more accurately the estrangement) payments received from Exxon, SPP really only had their shale oil resources and an enormous amount of technological knowledge about those deposits and possible

methods of recovery. But of course what they also had was the quite extraordinary persistence and tenacity of Sir Ian McFarlane and the team he had built around him.

They went about looking at other technologies to reduce the costs of production and after considering a number of alternatives, fixed upon retorting technology developed by a man called Bill Taciuk for use in the Alberta oil sands. This so-called Alberta-Taciuk Processor (or ATP) was adapted and extensively tested on Stuart oil shale at a scale of 80 tonnes/day in a large pilot plant in Calgary.

## 1990 – Stuart State 1 Project designed

This led to the design of the Stuart Stage 1 plant in 1990 which design ......

#### 1991 - Federal Government provides excise rebate support

..... was persuasive, the following year, in obtaining Federal Government support in the form of an excise rebate (more of which later on!).

#### 1995 – Suncor secures 50% of Stuart Joint Venture

These developments led to one of the main players in the Canadian oil sands industry, Suncor taking up, on favourable terms to SPP, a 50% interest in the Stuart Joint Venture.

## 1997 - Stuart Stage 1 construction start by Bechtel

Construction by Bechtel was started in 1997, .....

#### **1999 - Construction completed**

..... completed in 1999, .....

#### 1999 – Suncor takes over commissioning

..... when Suncor took over the commissioning .....

### 1999 - Odour emissions identified

..... at which time it was almost immediately identified that the earlier pilot plant work had not properly identified the extent of odours produced, which on a number of occasions, during early commissioning, were unacceptably high from the standpoint of the Company, the community and the regulatory authorities.

#### 2000 – Odour emissions assessed and reduced

This led to a major program over 18 months to better understand the odour formation mechanism, during which time we operated the plant for only 23 days, primarily to gather emission data. However by late 2000, we had understood the causes of the odour problem and had taken steps to reduce and, where possible, eliminate the causes.

## 2001 - Suncor exits Stuart and SPP takes over operatorship

With the odour problems properly identified and dealt with, commissioning trials resumed in earnest, but in the midst of this process, Suncor decided to exit the joint venture in early April 2001. As Suncor has expressed on a number of occasions, their decision was not primarily driven by any developments here but rather it was the result of issues more directly associated with their own oil sands developments in Canada. We much regretted their decision, particularly as to timing but, in the event, outcomes in a number of areas since their withdrawal have been most encouraging.

## **2001 – Production ramp-up beings**

The manner in which our people, many of whom of course were previously employed with Suncor, worked to assume operational responsibilities at Gladstone has been quite remarkable and, with production being progressively ramped-up during 2001.....

## 2002 – ATP technology proven in Stage 1

..... it can be accurately said that the primary objective of Stage 1 has been achieved, with the ATP technology having now been proven.

This is not to say of course that all our challenges have been met and our problems overcome – far from it, but it is to say that we have made great progress and come an enormous way since Exxon withdrew and, even more recently, since Suncor withdrew.

Before commenting further on current and likely future developments, and recognising that this is a Mining Club and that there should therefore be some geologists and metallurgists in the room, I thought I should make some comments on the resources, the geology and the actual production process.

# **SLIDE #4 - AUSTRALIA'S WORLD SCALE OIL SHALE RESOURCES**

Looking firstly at the resources – as I have already mentioned, Stuart is one of ten world scale deposits to which we have title in Queensland and which contain oil shale resources of over 20 billion barrels.

These deposits contain some of, if not, <u>the</u> world's highest quality oil shale resource in terms of oil yield and amenability to a new generation of oil recovery technology. The deposits are also near the surface and can be mined with low-cost open pit operations. Deepwater ports and existing infrastructure are also nearby facilitating cost-effective development and transportation.

Shale oil resources at Stuart are about 2.6 billion barrels based on an average grade of 0.59 barrels per tonne (at zero moisture). By comparison, the average yield from the oil sands is about 0.5 barrels per tonne.

# <u>SLIDE #5 – STUART SCHEMATIC X-SECTION</u>

Both Stuart and the adjacent Rundle deposit form part of the preserved Tertiary sediment fill of the Narrows Graben - which dips to the north-east about 40 km long and 5 km wide and contains sediments up to 1,000 m thick. The oil shale sequences of interest lie within the Rundle Formation which was formed in a hydrologically closed freshwater lake. Algae deposited in the fine muds provided the organic source of kerogen, or the actual oil in the shale.

Six of the eight stratigraphic members of the Rundle Formation contain oil shale with a combined thickness of about 400 m. An unconsolidated overburden layer ranging in thickness from 15 to 25 m overlies the oil shale resource.

The oil shale at Stuart is typical of other Queensland oil shales which, in-situ are composed of 15 to 25% kerogen, 20 to 25% water and 50 to 65% predominantly clay mineral matter.

# <u>SLIDE #6 – STUART STAGE 1 PROCESS FLOW</u>

This slide just shows the shale being mined from an open-pit, crushed, dried and fed into the ATP retort where the kerogen is firstly driven off at about 500° C into a gaseous phase for subsequent recovery and partial upgrading, with the remaining petroleum coke in the shale being burned to provide the necessary heat for the whole retorting process. The spent shale is then returned to the pit for emplacement. Contrary to earlier expectations, because of the significant water content in the fresh shale that is also driven off in the process, there is only a modest swell factor, and final pit contouring does not provide a problem.

# **SLIDE #7 - STUART SHOWCASING BREAKTHROUGH ATP TECHNOLOGY**

The most significant feature of the Stuart project is its use of the ATP, based on rotating kiln technology used in hot minerals processing. The ATP consists essentially of a horizontal rotating vessel containing two concentric kilns through most of its length. The inner kiln has two sealed compartments for pre-heating and retorting the shale. The outer kiln provides a combustion zone for the petroleum coke on the shale and conduit for the combusted shale to move in an opposite direction down the length of the kiln to transfer heat to the incoming shale.

Compared with other considered technologies, the ATP has a number of positive attributes including:

- simple robust design
- energy self-sufficiency (in a stable operating mode)
- dry process (no tailings ponds), and
- near atmospheric pressure operation

The Stuart Stage 1 demonstration plant includes a single ATP retort representing a 75 times scale-up of the Calgary pilot plant. The retort measures 62.5 m in length and 8.2 m in diameter and weighs 2,500 t. Under normal operating conditions it rotates at 4 rpm on pressurised oil-film bearings. The ATP in Stage 1 is designed to process 6,000 t/d of shale feed to produce 4,500 bbl/d (715 m<sup>3</sup>/d) of shale oil products.

The raw shale oil produced from the ATP, which is in the form of a vapour, would constitute a relatively light, "sweet" crude with a 42° API gravity, 0.4 wt% sulphur and 1.0 wt% nitrogen. To meet the needs of the market, we further process and upgrade the raw oil at the plant site prior to sale.

## **SLIDE #8 - STUART PHASED DEVELOPMENT STRATEGY**

Turning then to the phased development strategy which is being pursued at Stuart and which is designed to mitigate technical and financial risk and provide opportunities to incorporate technology improvements along the way.

The knowledge gained from Stage 1 is being used to improve the design, construction and operation of the next stage, which will scale up the ATP throughput capacity by four times. This first commercial phase (Stage 2) is being designed to process 23,500 tonnes/day of shale and produce 15,500 barrels/day of oil with first oil targeted for early 2006. Further commercial phases, incorporating multiple ATP's at the Stage 2 module size or larger, would follow with a target total oil production from Stuart of around 200,000 barrels/day.

# <u>SLIDE #9 – OIL SHALE COULD REVERSE AUSTRALIA'S GROWING OIL SUPPLY</u> DEFICIT

As you will be aware, it has been impossible to pick up a newspaper or watch the evening news in recent weeks without seeing the escalating conflict in the Middle East.

This is a serious and tragic situation not only for those directly affected but, as the conflict continues to destabilise a region which is fundamental to the world's current oil supplies, it has major implications for all oil-dependent countries, which includes Australia.

Most experts agree that the Persian Gulf will remain the key source of oil supply to the world, with unmatched capability to meet growing world demand. Australia is therefore among those many countries which should and, we believe, it does place an enormous strategic importance on sourcing domestic oil.

In this respect, Australia's potential exposure to any dislocation within a major oil producing area is increasing in view of its declining capacity to generate its own supplies of conventional oil, as this slide indicates.

Australia is being exposed to a growing oil supply deficit that, not only will have an adverse effect on our balance of payments and therefore the value of our foreign exchange, but must be serviced by oil imports from the Persian Gulf and other developing countries. This is evident in this ABARE outlook which forecasts net imports growing from around 180,000 barrels per day currently to over 600,000 barrels per day by 2019-2020, which will represent more than 50% of supply.

This slide also indicates that a fully developed oil shale industry can give this country the very real capacity, not only to meet our own energy requirements, but the opportunity to trade oil excess to those requirements as part of a major new export industry.

## SLIDE #10- PROVEN ANALOGY IS OIL SANDS

It is within this global oil supply context that the successful commercial development of oil sands in Canada has taken on an even greater importance as a strategic source of domestic oil for North America.

This slide illustrates the remarkable reduction in oil sands mining costs that are being achieved as the technology continues to develop and as the scale of the industry grows. Huge investments in excess of A\$20 billion are being made in oil sands mining to triple production to one million barrels of oil per day by 2010.

Continuing success there demonstrates again that the development of a major oil shale industry in Australia is both feasible and highly desirable in terms of addressing our own deteriorating oil supply outlook.

It is instructive to note the steady reduction in the cost of oil sands oil production, as technology continues to develop. We expect that our own production costs will similarly improve as we refine our processes. All the relevant evidence points strongly to the fact that our costs will be highly competitive with the Canadian experience.

I trust this rather long discussion of the world context for our business has been helpful. I can't emphasise enough that the old paradigm of the 1980s that crude prices had to be US\$30 per barrel or more to make non-conventional oil production economic, has long since been disproved. The oil sands industry has done it at less than half the price, with full costs of less than US\$15 and we can do it. When we succeed, it will be significant for all Australians.

# **SLIDE #11 – A\$340M STUART DEMONSTRATION MODULE OPERATIONAL**

The Stuart Stage 1 project is a fully integrated mining and upgrading operation, as shown in this slide, similar in many respects to the Canadian oil sands mining operations. To date, we have invested A\$340 million in Stage 1.

The ATP is located in the upstream part of the plant producing raw shale oil vapour. The downstream balance-of-plant includes the oil recovery and upgrading sections which produce two saleable products: an exceptionally high quality hydro-treated naphtha product with less than 1 ppm of sulphur and nitrogen; and a light fuel oil product. Products are stored in tanks at the site and shipped by tanker from a jetty located just 3 km from the plant. I'll say more about oil product marketing in a few minutes.

The challenges in commissioning a first-of-a-kind plant of the complexity and scale of Stage 1 shouldn't be underestimated.

# **SLIDE #12 - STAGE 1 PRODUCTION**

As I have already mentioned, operational results since SPP took over full responsibilities and 100% ownership at Stuart in April 2001 have been excellent. We still have many challenges, but bringing together a first class operational group is fortunately not one of them.

As this slide shows, oil production has been on a steady ramp up over the past year. We have now produced over 400,000 barrels of oil from Stage 1, more than 90% of which was produced over the past year under our operatorship. We achieved our best ever performance in the first quarter of 2002, producing 110,000 barrels of oil, about one half of our total production in 2001.

We now have sufficient operational experience on Stage 1 to declare the ATP technology proven at its 75 times scale up from prior pilot tests. This has established the technical, operational and environmental basis on which to advance to a commercial operation of which the proposed Stage 2 project is the initial step.

We are targeting to achieve oil production of 650,000 barrels in 2002 and up to the nominal plant capacity of 1.4 million barrels in 2003 and future years. A de-bottlenecking and reliability improvement program is underway to achieve these higher rates post 2002. One of these improvements will be a new shale dryer. The current dryer in the Stage 1 plant has been found to be a large source of odour emissions at higher dryer temperatures and throughput rates. We have therefore been self-restricting plant rates to 65-70% of capacity to reduce odour emissions from the current dryer.

# SLIDE #13 - 85% ODOUR REDUCTION

As I also earlier commented, we now understand the causes of the odour problem and odour emissions have been reduced by over 85% to be within normal acceptable standards. That is not to say that our plant is not odourless - it is demonstrably not – but it is to say that it is well within the required standards for a large industrial project. The 85% reduction achieved in odour emissions as measured at the main stack in the plant is shown in this slide. When these emissions are dispersed into the atmosphere, ambient levels of odour in the adjacent community are below the strictest national and international odour standards as verified by Australia's leading odour experts.

There are many residents in the immediate vicinity of the plant for whom this fact is of little comfort. This is obviously an unhappy situation for such residents and we will continue to work with the Government and the community to strive to address the broad issues associated with growing industrialisation in the area. We will also continue to seek ways to further improve environmental performance in both current and future plants. However, we do ask to be judged on our current performance and on our ability to resolve the problems once they had been identified.

Similarly, operational changes were put in place to reduce the possible formation of dioxins to be below world standards. It should be noted that, of those dioxins that will be formed in the combustion process, more than 99.9% will be returned to the pit where they are contained in a stable form and not released to the environment, either to the air or to the water-table.

It should be noted that our early poor performance with respect to emissions, which has since been turned-around, provided fertile ground for Greenpeace to raise anxiety levels in the community with misinformation and disinformation as part of their campaign to shut us down. This has required a very active communication program with all stakeholders to describe the improvements we have achieved and the fact that we now meet or are below all relevant environmental guidelines for emissions at the Stuart Plant. This is a significant accomplishment for a first-of-a-kind plant and these lessons learned are being incorporated into the Stage 2 design.

In common with most of today's industry participants, we are not only targeting compliance with environmental regulations, but are continuing to search for ways to further improve environmental performance.

# **SLIDE #14 - MARKETING HIGH QUALITY OIL PRODUCTS**

I'd like to turn now to product marketing issues and the role the Commonwealth Government plays in supporting the R&D phase of the Stuart Project.

In the Stage 1 technology demonstration project, we produce two saleable products. About 40-45% of our production is a low sulphur light fuel oil suitable for sale to the large fuel oil spot market in Singapore.

To date, we have sold four cargoes of fuel oil totalling 172,000 barrels to Singapore at prices that are at a premium to other fuel oils in this market. This is a good market for us.

The other 55-60% of our production is an essentially sulphur-free naphtha that can be processed in conventional oil refineries to produce high yields of light transportation fuels - petrol, diesel and jet fuel. The low sulphur content of 1 ppm makes it the cleanest oil

available to Australian refineries. Its benefits in producing cleaner transportation fuels are unarguable.

Shale oil derived naphtha has now been certified as an acceptable refinery feedstock to make jet fuel by the world's two leading standard setting authorities in the US and UK and by the Royal Australian Air Force. This achievement resulted from a major testing program supported by Caltex and extensive reviews with these agencies.

Naphtha is our most valuable product since it attracts an excise tax rebate from the Federal Government under the legislation that was enacted in 1991. The rebate only applies to Stage 1 at Stuart, is capped at an annual amount, is payable only to the extent we are able to successfully produce naphtha and is currently due to expire at the end of 2005. Although the legislation speaks to the <u>production</u> of naphtha, the regulation was written such that the rebate can only be claimed if the naphtha is processed to make petrol in a refinery in Australia. There's the rub.

Due primarily to Greenpeace harassment and threats of consumer boycotts against the four Australian refiners, we have been unable to sell our naphtha in Australia except for an initial cargo of 50,000 barrels to Caltex in August 2001.

As a result, we have built up an unsold inventory of 185,000 barrels of naphtha that is being stored in Gladstone, Sydney and Melbourne, with a value of more than A\$14 million.

This is clearly not a product quality or commercial issue. We know that Caltex's experience with the product was favourable and we know that there are ready markets for it in Asia that can be accessed immediately. The problem is that offshore sales currently do not attract the excise rebate, a situation we have asked the Federal Government to remedy on account of Greenpeace's distortion of the market and their attempt to hijack energy policy in this country. Greenpeace's aim is to stop development of Australia's oil shale industry, in turn part of their ultimate objective of eradicating the use of all fossil fuels.

It should be stressed that in these discussions with the Commonwealth, we are not seeking a new support arrangement. Rather, we have requested an amendment to the existing excise mechanism by which the Commonwealth provides its already committed support for research and development into oil shale development in Australia.

With the Commonwealth having already played a significant role in the industry's development, it would be a travesty for Greenpeace's intimidation of refiners (which can, I suggest, be viewed as a form of secondary boycotting) to succeed in blocking this project, which the government had already declared a project of national interest; and particularly during a demonstration phase which is giving such encouragement to believe that oil from shale can play a critical role in addressing Australia's oil sufficiency problem.

That is why we remain confident, given the Commonwealth's strong policy support for our industry, that we will receive an effective amendment to the excise regulation.

Notwithstanding the need for this amendment and Greenpeace's ongoing campaign, we are continuing our discussions with refiners in Australia, the logical customers for our naphtha.

# **SLIDE #15 - BUILDING A SUSTAINABLE INDUSTRY**

I would like to conclude by making a few comments on our environmental performance, past, present and future in the context of our broad sustainability strategy in SPP.

I should state at the outset that we accept that, if commercial production of oil from shale is to proceed, we must meet the environmental standards set for all comparable industries in this country. The strategic implications of oil self sufficiency for Australia are so important that we very strongly believe that governments should be, and should be seen to be, totally supportive of Stuart and future oil shale developments. However we do not suggest that this support should be at the expense of good environmental management.

We do not look for special dispensation as to plant emissions whether they be odour, noise, dioxin, or greenhouse gas related emissions. What we do look for is recognition and acceptance that, in the development of a new and important industry, we be given the opportunity to demonstrate that we can operate within normal acceptable standards.

In this respect, the hard-won reductions in emissions from the Stage 1 plant are a major accomplishment which puts us on a sound footing to grow the business in an acceptable way.

Turning to the issue of greenhouse gas emissions, there have been well publicised claims by Greenpeace in their campaign to prevent us selling our product, that oil produced from shale Page 15 of 17 is the most greenhouse gas polluting fossil fuel on earth and that it is four times more carbon intensive than conventional oil. Both these assertions are demonstrably wrong.

In as much as the pumping of oil from underground reservoirs requires relatively little energy, it is hardly surprising that the energy intensive retorting of the shale does indeed produce more carbon. However, it is in the combustion of the fuel in its ultimate use where the significant production of carbon takes place, and in this combustion phase, the cleaner oil from shale produces less carbon than does the lightest conventional oil and significantly less carbon than that produced from heavier oils.

With respect to the production process, engineering design work for commercial oil shale development indicates that there are attractive opportunities to reduce net carbon emissions by better utilising plant fuels and what would otherwise be waste heat from the ATP process.

Based upon the above, we project that the greenhouse gas intensity of oil shale on a full fuel cycle basis (production, refining and final combustion) can be reduced to less than 40% - not 400% as asserted by Greenpeace - higher than conventional oil, with this difference being able to be offset by carbon sequestration, primarily through reforestation.

The work we have been doing on reforestation has been reviewed by independent consultants who confirm that, if required, we can - within the overall economics of commercial scale production - offset that remaining gap so that carbon production from the production and use of oil from shale can be the equivalent or less than that attributed to conventional oils.

Further I should stress the fast – conveniently and totally ignored by Greenpeace – oil from shale produces the cleanest transportation fuels, with demonstrable and tangible benefits to air quality.

With respect to environmental groups, I should point out that we have in the past and will continue in the future to seek dialogue and meet with groups who have a particular interest - favourable or unfavourable - in our activities. We believe that such exchanges can be only positive in identifying areas of mutual interest. This has however proved to be a real challenge with groups that are more interested in propagating misinformation and disinformation in order to meet their own objectives of phasing out the use of fossil fuels.

Oil shale development can also provide major benefits to the other two elements of the triple bottom line, the economy and society.

Australia's oil needs, generate 65,000 permanent jobs and provide a huge benefit of A\$15 billion per year to our balance of payments.

The location of the deposits will result in significant benefits for regional development generally and importantly, for the aboriginal communities in the region.

It has been a long time coming but we are now in production of an excellent oil from Queensland's huge shale resources; this can be achieved with acceptable environmental impacts; the technology has been proven and, with the necessary economies of scale, can be demonstrated to be economic at oil prices considerably lower than any which we are likely to see in the future; and it is fundamentally an Australian home-grown industry of world-wide scale and importance. For each and all of these reasons, it must be and will be developed.

Thank you.