

7 April 2006

Senate Rural and Regional Affairs and Transport References Committee
SG.62
Parliament House
CANBERRA ACT 2600

Attention: The Secretary

INQUIRY INTO AUSTRALIA'S FUTURE OIL SUPPLY AND ALTERNATIVE TRANSPORT FUELS

1. Introduction

1.1 The Australian Petroleum Production & Exploration Association (APPEA) is the peak national body representing the collective interests of companies engaged in petroleum exploration, development and production in Australia. APPEA welcomes the opportunity to provide input to the Senate Committee's inquiry into Australia's future oil supply.

1.2 APPEA notes that the Committee has announced that the following shall form the basic terms of the inquiry:

Australia's future oil supply and alternative transport fuels, with particular reference to:

- a. projections of oil production and demand in Australia and globally and the implications for availability and pricing of transport fuels in Australia;*
- b. potential of new sources of oil and alternative transport fuels to meet a significant share of Australia's fuel demands, taking into account technological developments and environmental and economic costs;*
- c. flow-on economic and social impacts in Australia from continuing rises in the price of transport fuel and potential reductions in oil supply; and*
- d. options for reducing Australia's transport fuel demands.*

1.3 The comments and information provided in this submission shall be focussed primarily towards item (a), as APPEA is not in a position to provide detailed commentary on the other terms of reference.

1.4 Submission Recommendations:

Recommendation 1: The Committee notes that petroleum (through both oil and gas) will continue to play a crucial role in the overall energy mix in the Australian economy.

Recommendation 2: The Committee notes the deteriorating trade position in petroleum and related products.

Recommendation 3: The Committee supports research into alternative fuel supply sources and technologies, together with the need to increase the overall petroleum exploration effort in Australia as an important means of stimulating future oil supplies.

Recommendation 4: The Committee notes Australia's relatively poor ranking on an Expected Monetary Value basis and that policy settings should be directed towards improving Australia's relatively as an investment destination on a risk adjusted basis.

Recommendation 5: The Committee recommends the development of a standard set of production forecasts across government agencies to assist in the future development of policy settings and the assessment of economic impacts.

Recommendation 6: The Committee recommends that government data collection processes be reviewed in consultation with industry.

Recommendation 7: The Committee recognises the imminent deterioration in Australia's trade balance arising from falling domestic production of petroleum liquids.

2. Energy Use in Australia

- 2.1 A reliable and competitively priced supply of petroleum is essential to both the Australian economy and to meeting community needs and maintaining our lifestyle. Petroleum (oil and gas) is the energy source for over 50 per cent of Australia's primary energy consumption (Chart 1), while liquid petroleum supplies nearly all our transport energy requirements. This contribution is expected to remain at significant levels well into the foreseeable future (Chart 2), with the major change being an expected increase in the contribution made by natural gas to the overall energy mix.

Chart 1: Share of Primary Energy Consumption - 2004/05

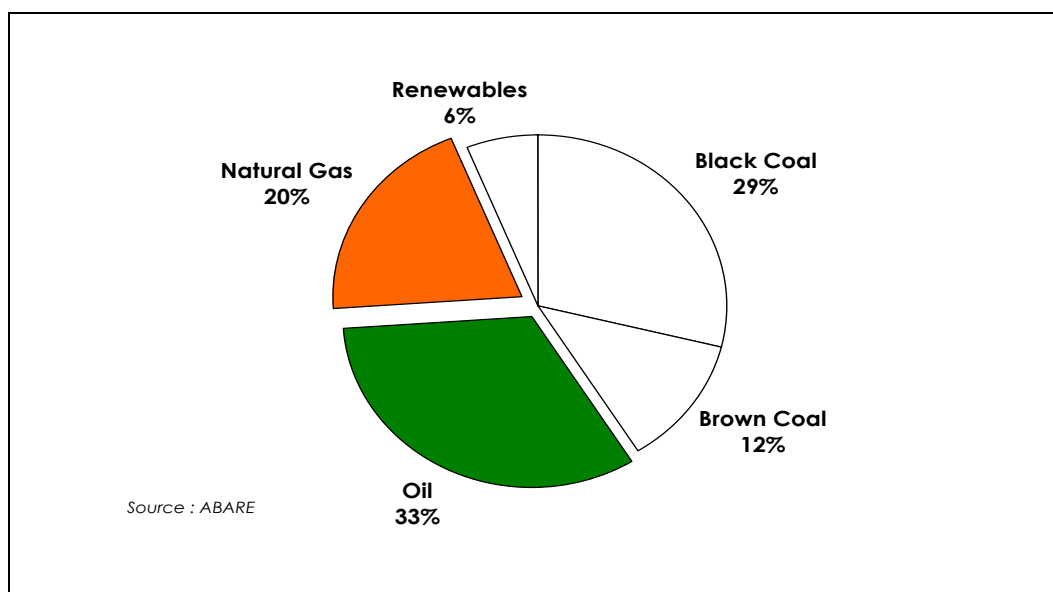
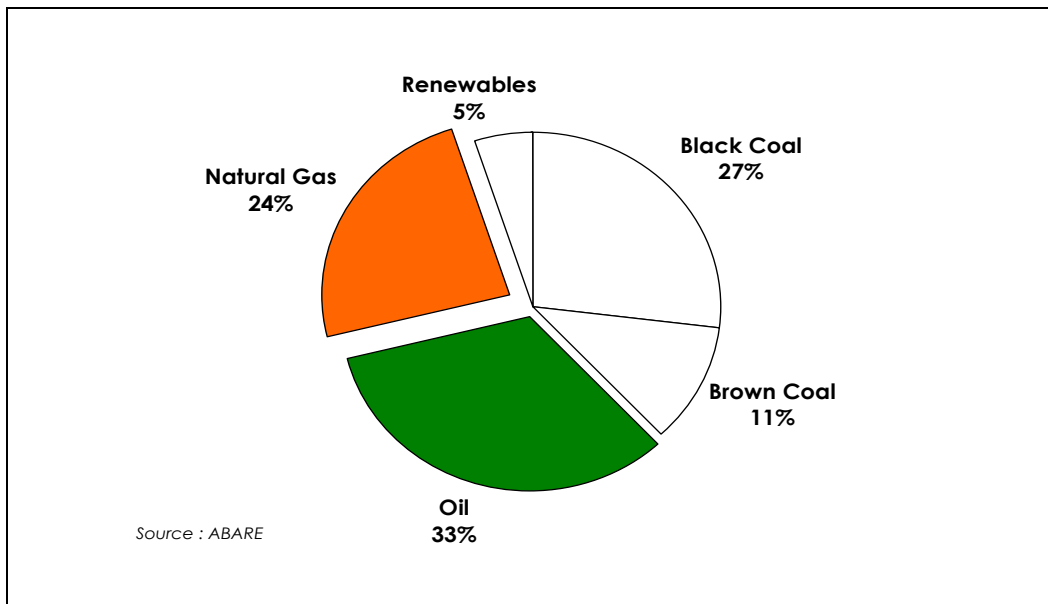


Chart 2: Forecast Share of Primary Energy Consumption - 2019/20

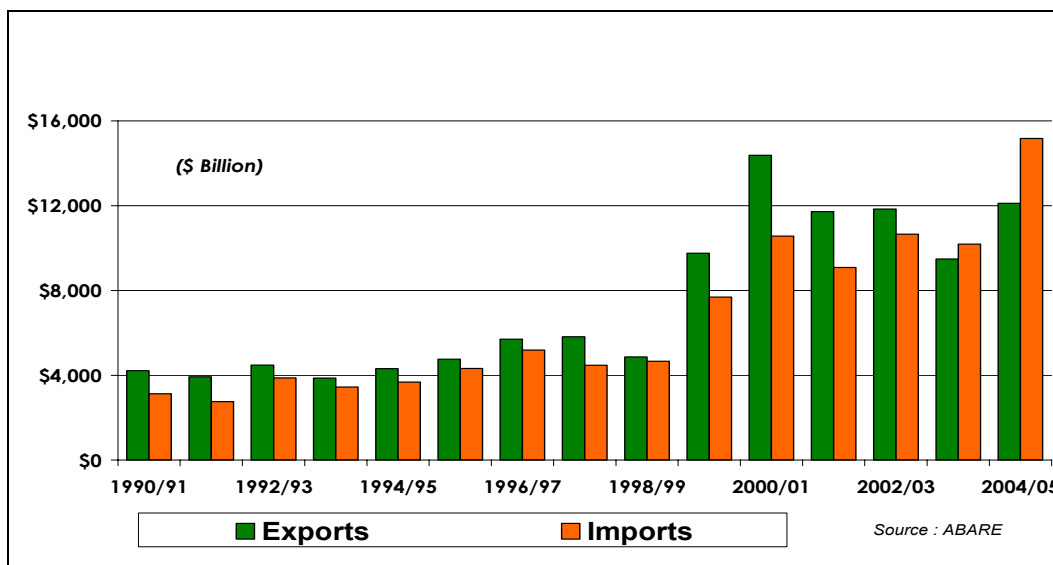


Recommendation 1: The Committee notes that petroleum (through both oil and gas) will continue to play a crucial role in the overall energy mix in the Australian economy.

3. Trade Balance in Petroleum & Petroleum Production

- 3.1 Historically, Australia has been a net exporter of oil, gas and petroleum derived products. This has allowed the nation to generate valuable export earnings and, in turn, made a significant contribution to our overall trade balance (and economic) position. There has, however, been a dramatic turnaround over the last two years as a consequence of both a rise in international energy prices and a fall in the level of domestic crude oil production (Chart 3).

Chart 3: Historical Trade Balance in Petroleum & Petroleum Products



- 3.2 In 2004/05, imports exceeded exports of petroleum by more than \$3 billion. For the year 2005, the amount increased to around \$4.7 billion.

Recommendation 2: The Committee notes the deteriorating trade position in petroleum and related products.

4. Petroleum Exploration in Australia

- 4.1 Exploration is a key determinant of future oil and gas supplies in Australia. There are a number of indicators that can be used to measure exploration activity. Chart 4 highlights the trend in exploration expenditure in the period 1970 to 2005. It is presented in nominal and real dollars (2004 terms) to highlight the trend over the period. As can be noted, expenditure has gradually risen over the last decade, but is still well below the amounts recorded in the early 1980s in real terms.

Chart 4: Exploration Expenditure, 1970 to 2005

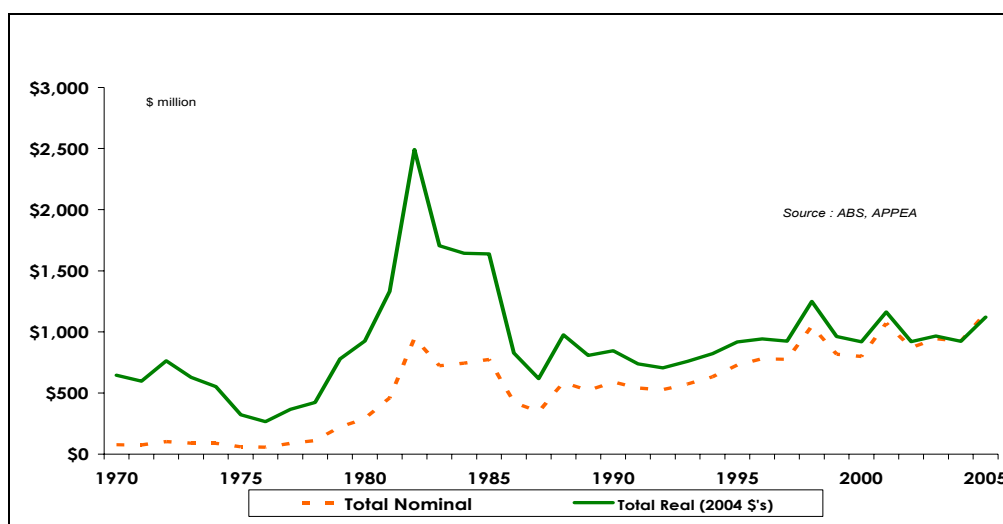
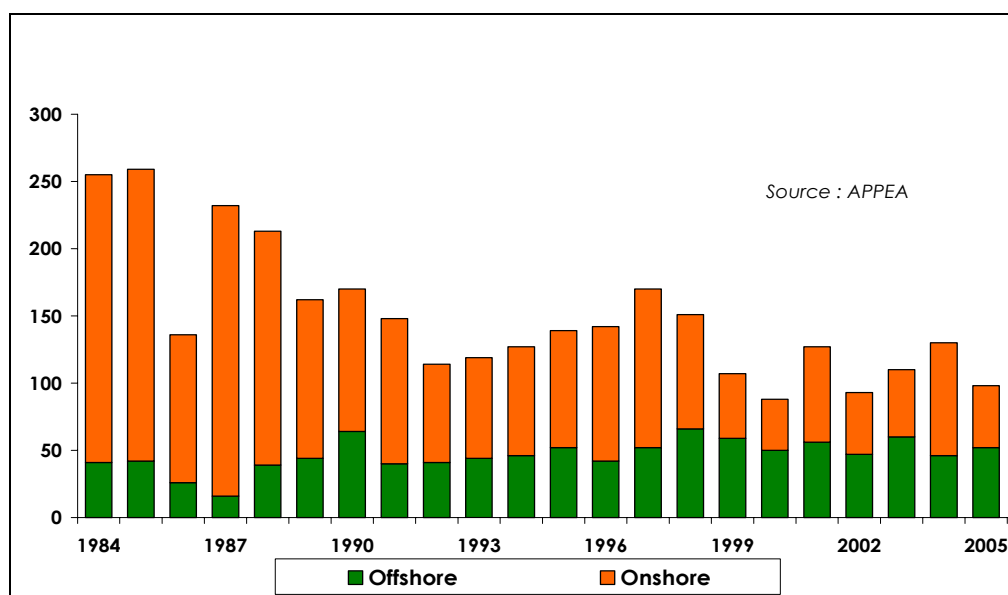
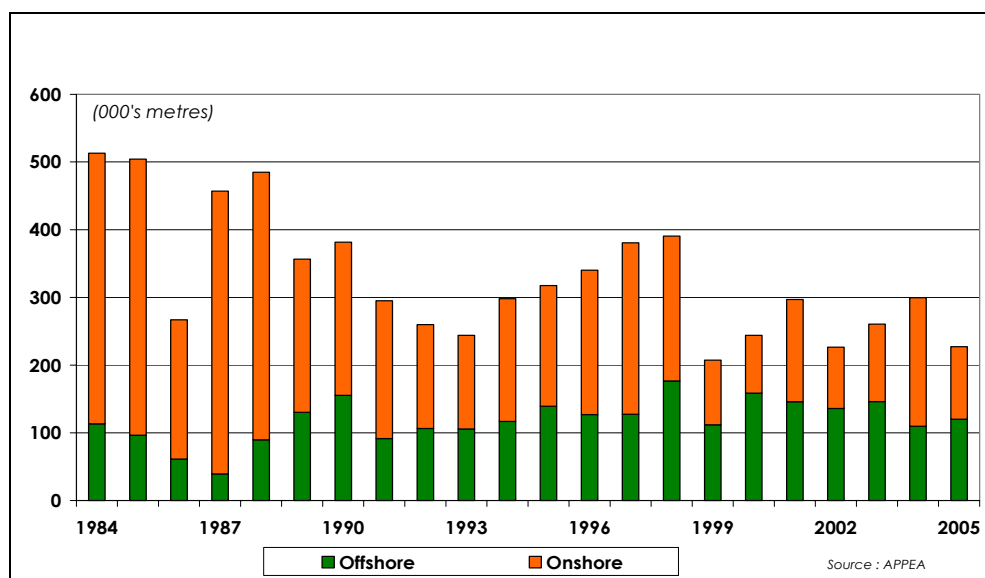


Chart 5: Exploration Wells Drilled, 1984 to 2005 (Number of Wells)



- 4.2 While the level of exploration expenditure has trended slightly upwards over the last decade, there has been a notable reduction in the number of wells drilled (Chart 5). This trend reflects in part the significantly higher costs associated with exploration activity. It highlights the fact that the quantum of funds expended on exploration needs to be increased, not held constant in real terms. Similarly, the metres drilled associated with exploration activity (Chart 6) has also shown a noticeable downward trend.

Chart 6: Metres Drilled (thousands of metres)



- 4.3 APPEA recognises that Australia's future demand for petroleum liquids will potentially be met from a range of sources and technologies, including from gas-to-liquids, coal-to-liquids and compressed natural gas. The commercialisation of new technologies (in terms of both technical processes and competitiveness) will naturally take some time, and will require a strong research and development commitment that needs to be encouraged by governments. Important roles will be played by both conventional fuel sources and new technologies.
- 4.4 Given the likely decline in future oil production (see below), there is a need for a commensurate increase in the level of exploration activity so as to reduce the adverse economic effects of increasing oil imports. While the recent marginal improvement in the level of exploration spending is encouraging, APPEA believes it is significantly less than necessary in the face of declining production.

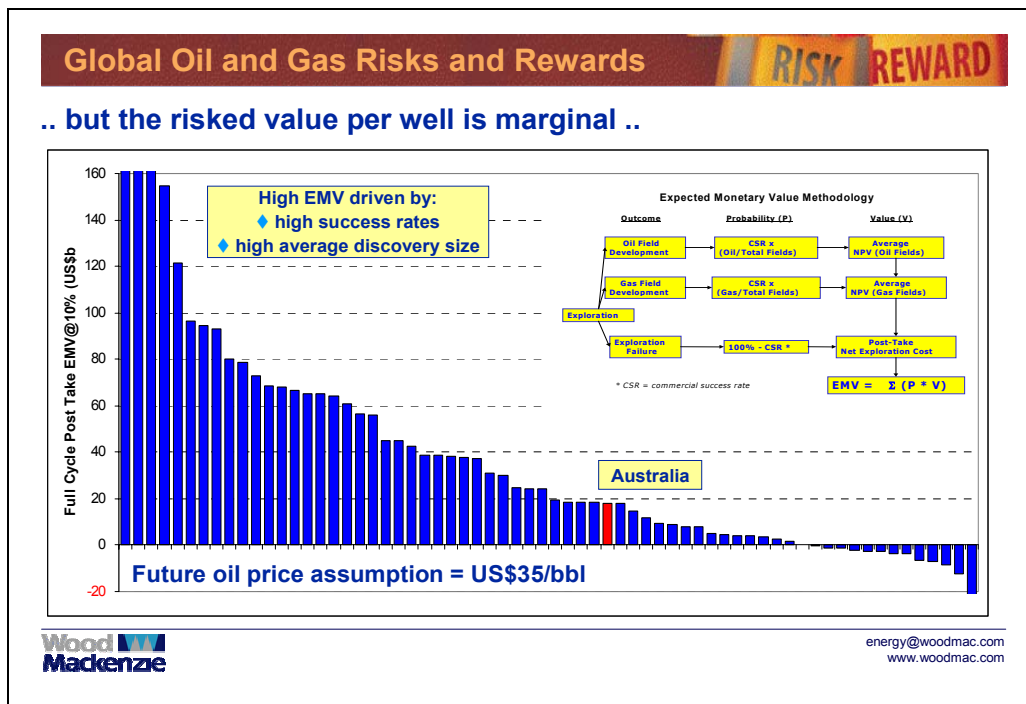
Recommendation 3: The Committee supports research into alternative fuel supply sources and technologies, together with the need to increase the overall petroleum exploration effort in Australia as an important means of stimulating future oil supplies.

5. Factors Impacting on Exploration Decisions

- 5.1 There are many factors that directly and indirectly influence a company's decision to explore, and therefore a country's ability to attract exploration funds. A useful tool for comparing the relative attractiveness of competing international investment destinations for petroleum exploration is the 'Expected Monetary Value' (EMV) analysis. EMV estimates the full risked value of an exploration decision, taking into account not only tax terms, but also the technical and

commercial environment and the risks that are applicable to each prospect. Exploration companies generally apply this technique in allocating exploration resources. Chart 7, which was prepared by internationally recognized petroleum consultants Wood Mackenzie Ltd, highlights that Australia ranks very poorly to other nations in terms of its overall attractiveness for exploration. This chart measures the approximate value associated with drilling an exploration well in different countries.

Chart 7: Risk Ranking – Expected Monetary Value of Exploration Decisions



- 5.2 According to the work undertaken by Wood Mackenzie, offshore Australia ranked 6th in terms of total global exploration and appraisal investment and accounted for approximately 3.5 percent of the total world wide expenditure in the period 1994 to 2003. In terms of exploration and appraisal wells drilled, offshore Australia was the 5th most active area. As such, Australia has generally enjoyed relatively high levels exploration activity in offshore areas which has result resulted in the discovery of just over 1 billion barrels (oil equivalent) of commercial reserves. This represented one percent of the global commercial reserves during the period.
- 5.3 On a commercial success rate basis however, the offshore Australia region ranked 41st globally when compared to other region (Chart 7). The offshore Australia region success rate for commercial oil discoveries was 6.5 percent (that is on average one in fifteen exploration wells drilled in the study period resulted in a commercial petroleum discovery in offshore Australia). This compares to a global average success rate of 17 percent. If Australia's technical reserves (those resources that have been discovered but that are not considered to be currently commercial) could be developed, Australia's success rate would increase to 24 percent. In addition to the low success rate, the average commercial discovery size in offshore Australia was small compared to other regions (28 million barrels for oil and 197 billion cubic feet for gas).
- 5.4 The implications of the above factors is that overall, Australia rates poorly as a result of low average commercial discovery rates and relatively small discovery sizes. This framework presents significant challenges from a policy context.

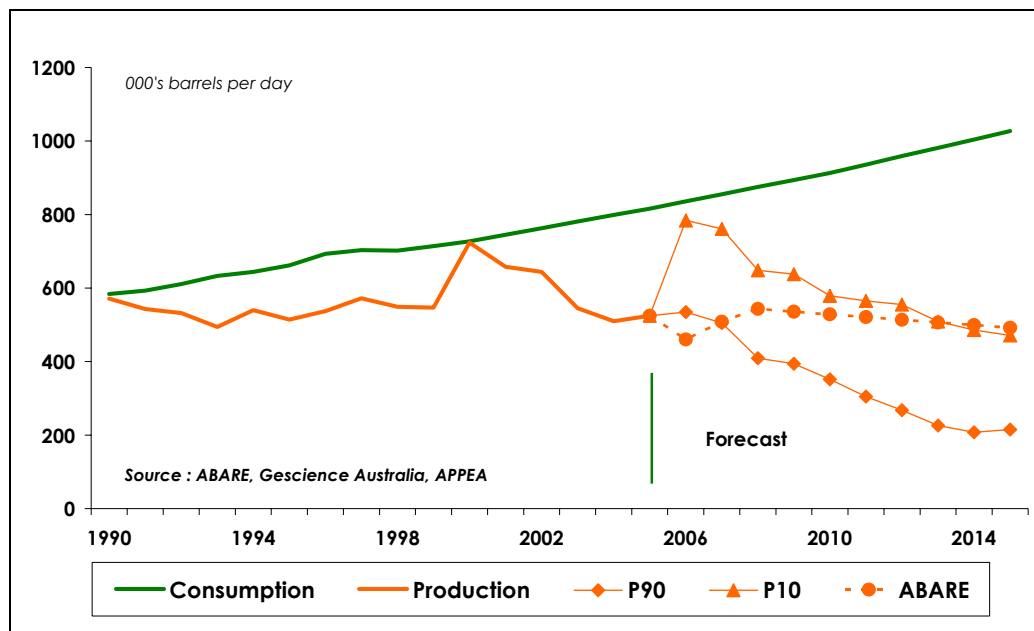
Recommendation 4: The Committee notes Australia's relatively poor ranking on an Expected Monetary Value basis and that policy settings should be directed towards improving Australia's relatively as an investment destination on a risk adjusted basis.

6. Future Production Trends & Trade Consequences

Crude Oil & Condensate

- 6.1 The Committee has received a number of submissions that have highlighted possible future trends in oil production. While APPEA is not in a position to forecast future production levels, both Geoscience Australia and the Australian Bureau of Agricultural and Resource Economics (ABARE) have presented the Committee with a number of potential supply scenarios.

Chart 8: Forecast Crude Oil & Condensate Production (000's barrel per day)



- 6.2 Chart 8 plots both historical production, together with the most recent Geoscience Australia and ABARE production forecasts. The Geoscience Australia forecasts are based on a high probability case (P90), which assumes a 90 per cent level of success, and low probability case (P10), with a 10 per cent change of success. As is clearly noted, there is a significant divergence in production forecasts. What is clear, however, is that even under the most optimistic of scenarios, the level of petroleum liquids production is expected to fall considerably short of domestic demand – this will have clear and direct implications for both energy security and Australia's balance of trade (with consequent broader economic implications).

Recommendation 5: The Committee recommends the development of a standard set of production forecasts across government agencies to assist in the future development of policy settings and the assessment of economic impacts.

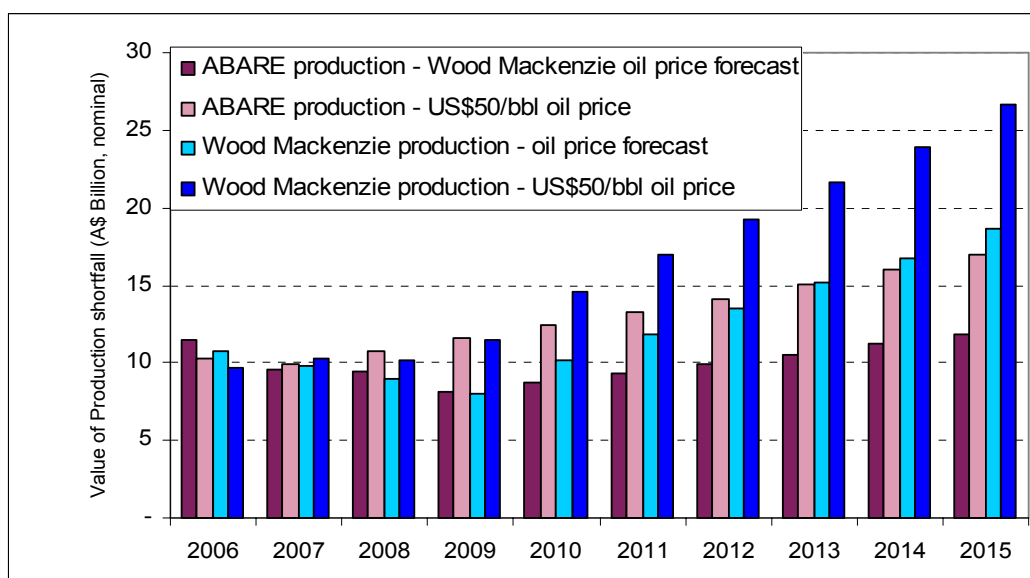
- 6.3 In addition to the divergence in forecasts, APPEA has been concerned for some time about the accuracy of historical production data that has been collected

and published by Government agencies. In particular, APPEA has been unable to reconcile the lower production information that has been published by ABARE when compared with APPEA's own surveys of member companies (APPEA currently publishes quarterly oil and gas production data). An on-going discrepancy of up to ten per cent has been evident at times. APPEA considers that an agreed and comprehensive set of data is required as the basis for on-going decision making.

Recommendation 6: The Committee recommends that government data collection processes be reviewed in consultation with industry.

- 6.4 An analysis recently conducted for APPEA by Wood Mackenzie has estimated the possible trade balance shortfall arising from the decline in domestic oil production. Table 1 estimates that the shortfall could be in the range of \$12 billion to \$25 billion per annum by the year 2015 (and significantly higher for later years).

Table 1: Balance of Trade Consequences – Supply Shortfall



- 6.5 In the context of imports, it is important to recognise the current sources of our crude oil and refinery feedstock supplies are from Asia and the Middle East (Table 2). Singapore is the primary country from which we currently import petroleum products.

Table 2: Source of Crude Oil and Refinery Feedstock (2004/05) (ABARE)

Country	% Contribution
Vietnam	25.2
Malaysia	18.3
Indonesia	12.8
Other	12.3
Saudi Arabia	11.9
UAE	7.4
PNG	6.6
New Zealand	2.5
Singapore	2.5
Other Middle East	0.6

Recommendation 7: The Committee recognises the imminent deterioration in Australia's trade balance arising from falling domestic production of petroleum liquids.

- 6.6 In terms of domestic production, new sources of oil may come from a number of areas, including:
- growth in the reserves of existing fields;
 - yet to be discovered fields; and/or
 - enhanced oil recovery.
- 6.7 There remains significant potential for growth in Australia's reserves base. Geoscience Australia estimates potential for growth of around 1.064 billion barrels from existing fields and a further 1.131 billion barrels from enhanced oil recovery. There remains great potential for large increases in reserves from sedimentary basins in Australia that currently have no production (many of these areas remain under-explored and data is limited at best).
- 6.8 Geoscience Australia's submission to the Inquiry, together with the material provided by CSIRO, provide important background on future domestic supply opportunities. The key will be to ensure policy settings are established to capture these opportunities.

Natural Gas

- 6.9 Natural gas production has increased substantially over the last four decades and ABARE forecasts a considerable expansion of gas demand in Australia in the years to 2020. While total gas resources potentially exceed the amount of gas required for well into the future, APPEA does not believe that it should always be assumed that supply will simply expand to meet demand. Not all reserves are commercial and therefore may not be producible. The long distances involved in transporting some of this gas to markets has a significant impact on the economics of gas developments.
- 6.10 The growth in sales of liquefied natural gas (LNG) has the potential to provide an important source of export income for Australia. Nevertheless, the contribution that such sales can make to the overall expansion in imports that will arise to meet our liquid fuels needs is small in comparative terms.
- 6.11 Australia has large reserves of gas which may, in the future, supply alternative fuels to the Australian market. Alternative fuels utilising gas-to-liquids technology may become commercially viable, however policies should always be directed towards ensuring that gas is directed towards its highest value use. The community's return on the use of the resource it owns will be maximised under this framework.

7. Factors Impacting on the Delivery of Future Energy Supplies

- 7.1 The Australian petroleum industry operates within competitive domestic and international markets. There are many challenges confronting the industry (and governments) that will influence the industry's ability to deliver reliable and competitively priced energy supplies. In addition to those outlined above, the following issues will also need to be addressed:
- increasing costs of exploration, development and production – this will be particularly relevant in Australia due to our geographic isolation;

- the continued provision of pre-competitive data and research by agencies such as Geoscience Australia which forms a key element of the exploration framework;
- decreasing availability of appropriately skilled labour and equipment to meet growing demand;
- increased competition for exploration and development capital as more countries seek to develop petroleum industries and established provinces seek to slow their respective rates of decline;
- threats to Australia's reputation for low sovereign risk arising from intervention in markets and uncertainties in approvals processes;
- continuing strong investment into research and innovation to ensure that we maintain an edge over competitor nations;
- reduced margins and incentives for investment resulting from low domestic gas prices and rising costs; and
- the competitiveness (or lack thereof) of aspects of Australia's fiscal framework and the need to ensure that tax settings provide an adequate risk/reward balance for investors and the community.

APPEA would be pleased to expand on any of the issues discussed above.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Belinda Robinson', with a stylized, cursive script.

Belinda Robinson
CHIEF EXECUTIVE