Chapter 4

Threats to Australia's liquid fuel security

4.1 Australia's growing dependence on oil imports and declining refining capacity raised questions regarding the security of Australia's' fuel supply and the continued feasibility of Australia's market-based approach. This chapter considers the threats to Australia's liquid fuel security including external threats to the international supply chain as well as internal supply, storage and distribution considerations.

Geopolitical factors

4.2 Caltex and other fuel suppliers argued that so long as Australia has well established and secure flows of oil and petroleum products as a consequence of multiple ports and shipping routes connecting the refineries, it is not vulnerable to supply shortages.[1] Caltex noted in this regard that sources of crude oil are diverse and include Australia, New Guinea, Malaysia, West Africa and Vietnam. Sources of petroleum products are also diverse. While much of the bulk comes from Singapore, product is also available from South Korea, Japan, India and if necessary, Europe.[2] Caltex estimated that 30,000 crude oil and product tanker voyagers are taken globally each year through major shipping routes. Therefore, it argued that, 'we don't see that a terrorist attack on shipping routes would have any material impact on Australian fuel supply'.[3]

4.3 The 2011 NESA identified geopolitical risks and long global supply chains as two areas of risk to our liquid fuel security. The liquid fuels shock scenario considered disruptions to supply from our largest importing source for refined petroleum products – Singapore. The modelling demonstrated that the global market and international supply chain could provide Australia with adequate and reliable supplies, albeit at higher prices. An immediate interruption to the Singaporean supply chain is estimated to increase global product prices by around 18 per cent on average in the first month, while prices decline somewhat from this spike in the second and third months.[4]

4.4 These views were supported by a 2011 liquid fuels vulnerability assessment undertaken by ACIL Tasman. The study found that a shutdown of Singapore for a period of 30 days would result in a short term rise in petroleum product prices but that there would still be sufficient availability of petroleum products to support economic activity.[5] The study did note, however, that the impact on affordability would be more

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1 Caltex, *Submission 26*, p. 5; Mr Andrew Warrell, Australian Institute of Petroleum, *Committee Hansard*, 9 April 2015, p. 7.

2 Caltex, *Submission 26*, p. 5.

3 Caltex, *Submission 26*, p. 5.

4 Department of Resources, Energy and Tourism, *National Energy Security Assessment 2011*, p. vii.

5 ACIL Tasman, *Liquid fuels vulnerability assessment*, Department of Resources Energy and Tourism, October 2011, p. 119.

significant for sectors heavily dependent upon petroleum fuels or road transport including agriculture, which would likely be worse off.[6]

4.5 NRMA made the point that, even though the government has confidence in the resilience of the fuel supply chain, it has not published any evidence that there are sufficient Australian-controlled sources of fuel to support essential needs in the event of overseas supply interruptions. It noted that the NESA, upon which this confidence is based, only considered two scenarios in reaching that assessment and none of them involved regional conflict or interruption of the supply chain such as infrastructure failure.[7] NRMA concluded that:

> Given the lack of publicly-owned fuel stocks, the lack of mandated industry stocks, the lack of mandated reporting on industry stocks and the very limited public analysis of supply chain risks, it is difficult to see how Government could currently provide us with that evidence.[8]

4.6 Many other submitters emphasised the potential impacts of Australia's growing oil import dependence on the country's fuel security, future investment and economic growth.[9] They highlighted the risks of geopolitical upheaval, including conflicts and natural disasters in oil producing and refining countries as well as along shipping routes, on the security of Australia's liquid fuel supply chains.[10] In this regard, the point was made that Australia's vulnerability has been identified by terror group, Al Qaeda, which has published a map of critical petroleum shipping routes.[11]

4.7 NRMA noted that political instability in the Middle East, dwindling domestic fuel stocks and Australia's capacity to produce specialist fuels for its Defence Forces has been eroded. As a case in point, NRMA explained that F44, which is a type of fuel required by the Australian Navy, will cease to be produced in Australia when the planned closure of the BP refinery in Brisbane takes place.[12]

4.8 According to Defence Magazine, in terms of securing a sustainable and secure fuel supply, Defence is engaged in the development of an integrated energy security policy in coordination with the public service. Defence acknowledged the security challenges brought about by growing reliance on commercial supply chains as well as the consequences for capability and technology choices in the report. As the combined

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6 ACIL Tasman, *Liquid fuels vulnerability assessment*, Department of Resources Energy and Tourism, October 2011, p. 120.

7 National Roads and Motorists' Association, *Submission 18*, p. 7; Air Vice Marshal Blackburn (Retired), National Roads and Motorists' Association, *Committee Hansard*, 2 February 2015, p. 73.

8 National Roads and Motorists' Association, *Submission 18*, p. 7.

9 Australian Workers' Union, *Submission 20*, p. 2; Biofuels Association of Australia, *Submission 32*, p. 2.

10 Engineers Australia, *Submission 2*, p. 1; Mr David G. Lamb, *Submission 4*; Queensland Resources Council, *Submission 15*, p. [2].

11 Biofuels Association of Australia, *Submission 32*, p. 2.

12 National Roads and Motorists' Association, *Submission 18*, p. 2.

cost of Defence's liquid fuels comprise the second largest component of its sustainment budget and is set to increase, such reliance raised serious budgetary as well as security questions.[13]

4.9 NRMA noted that a significant supply disruption to Australia's shipping lanes or trade routes such as a natural disaster, accident, commercial failure, act of terror or war, could imperil Australia's ability to provide for essential services and its military forces.[14] Similarly, Engineers Australia argued that:

> Liquid fuel in transit to Australia through some of the world's geopolitical hotspots is not fuel security, it is wishful thinking.[15]

4.10 Another concern raised in evidence in relation to the supply chain was that of the growing dominance of national oil companies such as Petro China and Saudi Aramco over both the production and refining of oil at the expense of private oil companies.[16] Engineers Australia noted that national oil companies or their host governments control almost 80 per cent of the world's proven-plus-probable reserves of convention and unconventional oil.[17]

4.11 Engineers Australia explained the potential consequences of these global dynamics for Australia:

> Australia's persistent faith in global supply chain stability could be sorely tested in the future if such national oil companies make decisions based on national energy security interests rather than commercial interests.[18]

Contaminated fuel and internal fuel supply disruptions

4.12 In terms of fuel supply, the attention of the committee was drawn to the consequences of contaminated fuel supply. On 30 May 2014, Perth experienced a temporary diesel shortage when BP received a shipment of imported diesel that had slight discolouration.[19] According to Mr Graham Blight, NRMA Fuel Security and Alternate Fuel Ambassador, the fuel shortage that eventuated 'upset the running of the transport industry' until another shipment arrived. Mr Blight further noted that more recently, aircraft at Melbourne Airport had to be rescheduled and refuelled at another airport as a consequence of the late arrival (by three days) of fuel ships.[20]

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13 Michael Brooke, 'Energy security fuel for thought', *Defence Magazine*, Issue 114, 2014, pp 3-4.

14 National Roads & Motorists' Association, Benchmarking Australia's Transport Energy Policies, December 2014, p. 2, Document tabled at 2 February 2015 public hearing.

15 Engineers Australia, *Submission 2*, p. 3.

16 Engineers Australia, *Submission 2*, p. 1.

17 Engineers Australia, *Submission 2*, p. 2.

18 Engineers Australia, *Submission 2*, p. 2.

19 'Short term diesel fuel shortage in Perth after BP import query, *Perth Now*, 30 May 2014.

20 Mr Graham Blight, National Roads and Motorists' Association, *Committee Hansard*, 2 February 2015, p. 70.

4.13 The committee was informed of two other incidents in Victoria whereby motorists and the trucking industry ran out of fuel within a week. The Truck Industry Council (TIC) explained the circumstances:

> Firstly in December 2012, when the refinery at Altona was closed for scheduled maintenance, while at the same time the state's second refinery in Geelong was unexpectedly shut down due to electrical problems arising from a storm. Then in October 2013 issues surrounding safety grounded many fuel delivery tankers. In both cases many retail outlets in regional Victoria ran out of fuel quickly and were without diesel for up to a week, as well many Melbourne outlets were similarly affected.[21]

4.14 BAA made the point that such disruptions are likely to worsen as Australia's reliance on the import supply chain grows.[22] It further noted that the combined effect of Australia's reliance on imports coupled with a lack of local liquid fuel storage infrastructure revealed the depth of Australia's vulnerability to supply disruptions.[23]

4.15 In states and territories with no refineries (South Australia, Northern Territory, Tasmania and NSW (by 2014) all liquid fuels must be imported. However, ports can be subject to disruption from a range of incidents including accidents, equipment failures, industrial action, natural disasters and terrorist attacks.[24]

4.16 NRMA also raised questions about fuel supply in the event of a container ship running aground. Air Vice Marshal Blackburn (Retired) informed the committee that government analysis of the Port of Adelaide revealed that were a container ship to run aground at the entry to the port, off-loading the ship and its removal would take up to 14 weeks. The port retains up to 12 days of fuel stocks. The report revealed that, while the port remained blocked, only 10 per cent of Adelaide's fuel demand would reach Adelaide City after the first two weeks of supply ran out. Therefore, the state would have to survive on 10 per cent of its demand for up to 10 weeks.[25] Air Vice Marshal Blackburn (Retired) explained the consequences:

> If you lose 90 per cent of your fuel to a capital city for eight to 10 weeks, I have got to tell you that that is absolute chaos. It is not war. That is because there are single points of failure through our supply system.[26]

4.17 Mr Mark McKenzie, CEO of the Australasian Convenience and Petroleum Marketers Association (ACAPMA) highlighted the flow-on consequences of supply disruptions. He informed the committee that recently, a large transport fleet was grounded because of safety concerns. Mr McKenzie explained the consequences:

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21 Truck Industry Council, *Submission 23*, p. 2.

22 Biofuels Association of Australia, *Submission 32*, p. 2.

23 Biofuels Association of Australia, *Submission 32*, p. 2.

24 National Roads and Motorists' Association, *Submission 18*, Attachment 1, p. 14.

25 Air Vice Marshal Blackburn (Retired), National Roads and Motorists' Association, *Committee Hansard*, 2 February 2015, p. 73.

26 Air Vice Marshal Blackburn (Retired), National Roads and Motorists' Association, *Committee Hansard*, 2 February 2015, p. 73.

> That resulted in short supply in a number of regional areas, because they are effectively a virtual pipeline. So, when you consider supply from port to pump, you have actually got rolling pipelines that are there all the time. Therefore, issues associated with how that fleet is managed and the controls in and interruption to that fleet can interrupt supply. In some areas, it can be fewer than five days that we are talking about where you then get to the situation where you run very short of product.[27]

4.18 According to Caltex, where supply disruptions have been experienced they have generally been related to refinery failures or natural events such as cyclones. It argued, however, that market forces ensure reliability, as a fuel supplier who can't assure supply will lose business to local or overseas competitors.[28] Despite acknowledging the occurrence of recent disruptions, Caltex concluded that Australia does not have a fuel security or fuel reliability problem.[29] It suggested that, to ensure that the fuel supply chain suffers least impact from an extreme event, adequate flows of oil, not stocks, was required. Caltex continued:

> Robustness would be maximised by many alternative shipping routes from many sources. If international trade on fuel was disrupted by military action, having a strong domestic supply chain of this kind would be an important safeguard. We are fortunate that Australia has well-developed domestic supply chains and supporting emergency response plans. These supply chains work very well in normal commercial circumstances and can cope with a variety of disruptions such as refinery breakdowns, cyclones, product contamination and global incidents (such as Libyan supply disruption).[30]

4.19 However, NRMA argued that fuel security could be achieved if Australia controlled part of its supply from the source through to that of refining and processing, with some storage. Noting that Australia is at the end of long supply chains, Air Vice Marshal Blackburn (Retired) explained that:

> Fuel security is when you have a problem you have a percentage of your supply from the start to the end that you can control in Australia. That is security. Just one week extra or two weeks extra storage of your fuel means you are going to starve or your crops are going to fail two weeks later than was going to happen. That is what the whole argument misses. It is not storage; it is about end-to-end supply continuity.[31]

4.20 Furthermore, while much of the evidence to the committee focused on suggested vulnerabilities and risks in relation to Australia's supply chain from

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27 Mr Mark McKenzie, Australasian Convenience and Petroleum Marketers Association, *Committee Hansard*, 9 April 2015, p. 33.

28 Caltex, *Submission 26*, p. 4.

29 Caltex, *Submission 26*, p. 4.

30 Caltex, *Submission 26*, p. 5.

31 Air Vice Marshal Blackburn (Retired), National Roads and Motorists' Association, *Committee Hansard*, 2 February 2015, p. 71.

producer to port, ACAPMA made the point that there were also vulnerabilities in relation to Australia's internal fuel supply from port to pump.[32]

4.21 ACAPMA noted that there were eight importers and providers beyond the four major oil companies which import fuel into Australia. However, it suggested that the current ownership and access structures serve as a barrier to independent importers from importing fuel into Australia at reasonable cost. ACAPMA argued that this situation should change and that the market should be opened up as:

> The only opportunity to bring fuel into this country, unless you are servicing United, is to actually utilise the Holden dock here at Port Melbourne. But that dock is not sufficient to bring in large-scale vessels to be able to offload fuel. So, in that first instance, we have got a situation where we do not have a key piece of gateway infrastructure to be able to offload seaside and then put in a pipeline and put the storage in place.[33]

4.22 ACAPMA further suggested that there are various factors blocking investment in internal supply and storage. Mr Mark McKenzie, CEO of ACAPMA noted in this regard that the current infrastructure for receiving imported fuel supplies in Australia is limited, particularly in capital cities. He continued:

> Therefore someone looking to actually create an investment in storage not only has to invest in the storage but they have got to invest in the terminal receiving—that is, the seaside infrastructure designed to receive those volumes. As a result, there are very significant barriers at the moment to investment in that area. It becomes uneconomic for someone who is, effectively, concentrating in terminal facilities to then also start to look at developing port facilities.[34]

4.23 ACAPMA made the point that meeting IEA obligations would imply bringing about an increase in Australia's oil storage and terminal infrastructure. It noted, however, that any decision to expand existing fuel storage and terminal infrastructure should not be premised on extending national storage volumes to the point of IEA compliance but rather on opportunities to reduce current vulnerabilities in the internal supply chain.[35] In this regard, ACAPMA noted that:

> The absence of a comprehensive audit of the architecture and performance of Australia's internal fuel supply chain makes it difficult to draw definitive conclusions about the nature and extent of current vulnerabilities in the supply of transport fuel between Australia’s fuel storage terminals and the more than 6400 retail fuel outlets that operate in Australia.[36]

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32 Australasian Convenience and Petroleum Marketers Association, *Submission 37*, pp 1–2.

33 Mr Mark McKenzie, Australasian Convenience and Petroleum Marketers Association, *Committee Hansard*, 9 April 2015, p. 30.

34 Mr Mark McKenzie, Australasian Convenience and Petroleum Marketers Association, *Committee Hansard*, 9 April 2015, p. 29.

35 Australasian Convenience and Petroleum Marketers Association, *Submission 37*, pp 3–4.

36 Australasian Convenience and Petroleum Marketers Association, *Submission 37*, p. 4.

4.24 In calling for such an audit, ACAPMA argued that the exercise should consider the resilience of supply in the face of potential interruption by various events including the deferral of oil tanker delivery, grounding of road transport fleets, and repair of critical oil transmission and storage infrastructure.[37]

Australia's domestic refining capacity

4.25 The 2011 NESA acknowledged that increased competition from large-scale Asian refineries will continue to pose a risk of further rationalisation in the domestic refinery sector. However, it suggested that access to regional markets for refined products is expected to provide ample supply to meet any domestic refinery shortfall and concluded that:

> Therefore, over the long term, Australia is likely to have a greater reliance on imported oil and long global supply chains, a decrease in diversity of supply (due to the decline in domestic production of crude oil) and increased exposure to international factors such as geopolitical tensions and events, and the investment decisions of international and state-owned oil companies.[38]

4.26 This view was echoed in the 2012 Energy White Paper which stated that:

> Our lack of oil self-sufficiency and the prospect of further refinery rationalisation does not in itself compromise or reduce our energy security. Our liquid fuel security is expected to remain high because of our access to reliable, mature and highly diversified international liquid fuel supply chains.[39]

4.27 However, UQ argued that such statements appear not to consider the crucial role of resilient infrastructure. It further argued that to achieve sustainability and resilience of Australia's liquid fuel supplies required consideration and address of the supply risks across all parts of the supply chain from upstream production to shipping, refining, storage and distribution.[40]

4.28 In response, Caltex argued against market intervention to either subsidise or protect the manufacturing industry, including oil refining, on the grounds that local manufacturing was not necessary for supply security or reliability.[41] As an alternative, Caltex suggested that Australia should pursue competitive markets in Australia and overseas and promote a free trade agenda. While recognising that manufacturing is under pressure from global forces and the resultant transformation of the Australian market, Caltex argued that a better approach would be to ensure that the economic

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37 Australasian Convenience and Petroleum Marketers Association, *Submission 37*, p. 5.

38 Department of Resources, Energy and Tourism, *National Energy Security Assessment 2011*, p. 25.

39 Department of Resources and Energy, *Energy White Paper 2012*, p. 43.

40 University of Queensland, *Submission 12*, p. 5.

41 Caltex, *Submission 26*, p. 9.

settings for manufacturing were as favourable as possible, consistent with deregulated markets and free trade.[42]

4.29 Australia's declining domestic refining capability reflects the growth of large, more cost-efficient refineries in the Asia-Pacific region and the comparative disadvantages of Australian refineries including age, size, labour and construction costs.[43] Viva Energy Australia noted that prior to its closure in 2012, the Clyde Refinery, (which produced 70,000 barrels a day), was not able to compete with regional refineries which produce 1.2 million barrels a day.[44] According to Engineers Australia, the cost pressures on Australia's refineries are likely to continue as Asia expands its oil refining capacity and super refineries are developed in the Middle East. Engineers Australia concluded that:

> Without renewal, Australia's aging refineries cannot compete effectively against these newer, more technically advanced and large scale refineries. The ongoing decline in domestic refining capability will continue to increase Australia's reliance on imported refined products.[45]

4.30 Caltex noted that, based on its own analysis regarding the closure of its Kurnell refinery in late 2014, the factors which disadvantage Australian refineries include:

- small scale due to population and geographically dispersed markets;
- technology that is oriented towards the wrong fuel (petrol, rather than diesel);
- inability to use substantial amounts of lower cost, high sulfur crude oil;
- increased shipping costs associated with more distant crude oil supply;
- distance from markets, so exports are generally not competitive;
- high capital and operating costs; and
- a high Australian dollar in recent years.[46]

4.31 Mobil Oil Australia made the point that Australian refineries are also subject to generally higher (and growing) levels of environmental and OH&S regulation than competing refineries in the region. In some cases, such as that of Altona, local refineries may face additional pressures from continuing encroachment of residential and other higher value land use close to their site of operations.[47] Mobil Oil noted that, in light of the commercial challenges face by Australian refineries, policy settings must strike the right balance in addressing environmental and community needs without adding unnecessary costs, such as port fees and major input costs such as

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42 Caltex, *Submission 26*, p. 10.

43 Department of Industry, *Energy White Paper – Green Paper 2014*, p. 52.

44 Viva Energy Australia, *Submission 34*, p. 9.

45 Engineers Australia, *Submission 2*, p. 2.

46 Caltex, *Submission 26*, p. 11.

47 Mobil Oil Australia, *Submission 27*, p. 3.

utilities, which threaten the long term viability of the industry. To this end, it argued that governments should guard against the introduction of any regulatory requirement that imposes additional cost on local refineries which is not borne by international competitors.[48]

4.32 A 2011 study by ACIL Tasman on liquid fuel vulnerability acknowledged that the potential closure of refinery capacity in Australia 'reduces the diversity of supply options for the Australian market'.[49] Yet, the point was made by Viva Energy Australia that as Australian domestic crude production (including condensates) is clearly in decline (with only 14.9 per cent of the crude diet met by local Australian crude in 2012–13), and most local refineries are now reliant on a large percentage of imported crude oil, it is 'difficult to argue that local refineries reduce exposure to disruption to import supply chains'.[50]

4.33 The department informed the committee that there is no government policy directed at maintaining any onshore refining capacity for Australia's oil production. When asked whether a lack of an onshore refining capacity would leave the country at risk, the department's Mr Ryan informed the committee that:

> We assess the risk in terms of where we are going to get our supply of refined oil from and that is a mixture of imports and refining that we do locally. At this point in time, we have a mixture of both and we continue to do our assessments on that basis. We do not have a target for the minimum refining we might require in this country.[51]

4.34 The department further noted that refinery closures were a commercial decision for the determination of the owners/operators of refineries. It explained that the 2009 and 2011 NESA identified risks associated with Australia's declining refining capacity while a 2012 commissioned report which assessed those risks found that:

> Australia was well placed to maintain domestic energy security through access to the large Asian refining system with significant excess capacity and producing Australia specification fuels in the next decade. The current excess refinery capacity in the Asia Pacific is around 16-18%. Australia's current total refining capacity would represent around 1% of this surplus refinery capacity in the Asia Pacific.[52]

4.35 The 2014 Energy White Paper Issues Paper observed that, in light of the high proportion of imported crude used in domestic refineries, a policy which supports

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48 Mobil Oil Australia, *Submission 27*, p. 5.

49 ACIL Tasman, *Liquid fuels vulnerability assessment*, Department of Resources Energy and Tourism, October 2011, p. 120.

50 Viva Energy Australia, *Submission 34*, p. 11.

51 Mr John Ryan, Department of Industry and Science, *Committee Hansard*, 2 February 2015, p. 89.

52 Department of Industry and Science, Answer to question on notice at 2 February 2015 hearing (answer received 24 February 2015).

domestic refineries would likely only make a marginal impact on energy security, while adding substantial costs for the taxpayer and/or fuel consumer. It also noted the high costs involved in investing in strategic fuel reserve stocks to protect against the long run risk of a sudden severe disruption of global trade. It was suggested in the issues paper that such costs would need to be met by either increased fuel prices or the diversion of public funds.[53]

4.36 However, in direct contrast, a number of submitters raised serious concerns about Australia's declining refining capacity. NRMA noted that from 2003 to mid–2015, Australia would have lost 50 per cent of its refining capacity. It highlighted that there is no government policy to maintain any refining capacity in Australia, and yet, a total loss of Australia's refining capacity would imply 100 per cent import dependency and no ability to refine Australian-produced oil. Of the situation, NRMA expressed the view that:

> Some level of refining capacity will not only protect Australia from a total dependency of imported liquid fuels, but will be required as alternative fuels become economically viable. It will not be practical or feasible to encourage an alternative fuels industry if there is no refinery capacity in Australia.[54]

4.37 Similarly, NFF made the point that the supply chain is made more vulnerable to supply shortages where there are a limited number of domestic refineries and greater dependence on imported fuels. It noted that currently, one-third of Australia's point-in-time fuel supply is at sea. NFF suggested that any further increases in imports would create potential supply issues resulting from factors such as shipping delays, changing trade arrangements and geopolitical developments.[55]

4.38 Southern Oil Refining (SOR) argued that retaining some level of refining capacity would not only protect Australia from total dependence on imported liquid fuels but would inevitably be required as alternative fuels become more economically viable.[56] SOR cited a 2014 BREE report, Australian Energy Resource Assessment to make the point. According to BREE, second generation biofuels 'show promise for making a greater contribution to transport fuel supply', but this is dependent on sustainable production of biomass at a competitive cost.[57] SOR concluded that without government support to maintain and build this production capacity, Australia would not be able to achieve an economically viable industry sector to maximise alternatives in the total transport fuel mix.[58]

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53 Department of Industry, *Energy White Paper Issues Paper*, December 2013, p. 12.

54 National Roads and Motorists' Association, *Submission 18*, p. 10.

55 National Farmers' Federation, *Submission 9*, p. 2.

56 Southern Oil Refining, *Submission 28*, p. [3].

57 Bureau of Resources and Energy Economics, *Australian Energy Resource Assessment*, 2014, p. 328, http://www.industry.gov.au/industry/Office-of-the-Chief-Economist/Publications/Documents/GA21797.pdf (accessed 5 March 2015).

58 Southern Oil Refining, *Submission 28*, p. [3].

4.39 The Queensland Government expressed concern that both major oil refineries in Brisbane have indicated potential closure within the next two years as a consequence of perceived inefficient operations and financial loss. It explained the possible ramifications:

> Refinery closures in Queensland could result in additional fuel product being sourced from overseas refineries, with the largest being located at Singapore, in which case attempting to impose production and supply conditions onto overseas countries is likely to be problematic. For example, should the companies currently involved in oil refining in Queensland choose to close, then the possibility of compelling international companies to commit to mandatory stockholdings is difficult under international trade agreements (Australia has a Free Trade Agreement with Singapore).[59]

4.40 The Queensland Government argued that if no new refineries with increased capacities are established in Australia, the community, industry and essential services will be reliant upon either increased imports or reducing demand for petroleum-based transport fuels.[60]

4.41 The Australian Workers' Union (AWU) and Engineers Australia made the point that the closure of refineries not only negatively impacts fuel security in Australia but also jobs and specialist skills.[61] AWU noted in this regard that once the refining workforce has gone, like the plants themselves, it is unlikely that they will return without significant investment in recruitment and training.[62] Mr Neil Greet, Fellow of the Institution of Engineers, Engineers Australia, made the point that, if engineering skills, training and knowledge erode, it would not be possible to understand future challenges, and that Australia's security would consequently be degraded.[63] AWU argued that the total economic benefits associated with investment in the refining workforce should be considered when measuring the costs and benefits of any further loss of refining capacity in Australia.[64]

4.42 Other evidence highlighted the risks that emanate from a declining refining capacity. According to Engineers Australia, since 2002, the proportion of refined petroleum, oils and lubricants sourced from overseas has risen from 11 percent to 37 percent in 2012, and it is estimated that this will reach 43 percent in 2014 with the closure and conversion of the NSW refineries. It argued that these dynamics have increased Australia's vulnerability to the influences of the global market in terms of availability of refined products.[65] This concern was echoed in the evidence of other

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59 Queensland Government, *Submission 22*, p. 1.

60 Queensland Government, *Submission 22*, p. iv.

61 Australian Workers' Union, *Submission 20*, p. 6; Dr Brent Jackson, Engineers Australia, *Committee Hansard*, 2 February 2015, p. 2.

62 Australian Workers' Union, *Submission 20*, p. 6.

63 Mr Neil Greet, Engineers Australia, *Committee Hansard*, 2 February 2015, p. 2.

64 Australian Workers' Union, *Submission 20*, p. 6.

65 Engineers Australia, *Submission 2*, p. 3.

submitters. Australian Pipeline Group (APA Group) noted that Australia's limited domestic refining capacity for transport fuels and any disruption to the imported fuel supply chain could have significant implications for the Australian economy, potentially restricting the transport sector for extended periods.[66]

4.43 AWU argued that relying solely on the international market in the absence of a local refining capability in times of a national emergency was not an adequate response. It suggested that, given such circumstances, Australia must retain domestic refining capacity in order to fuel the local economy, sustain living standards and to provide scope to contribute to its own defence.[67]

4.44 While arguing that the closure of an additional one or more local refineries should not pose a threat to reliable domestic fuel supply in the longer term, Mobil Oil Australia recognised that 'some level of domestic refining capacity is highly desirable to provide additional flexibility to cope with the short term product supply interruptions or imbalances which can occur'.[68]

Stockpiling imported fuels

4.45 The Queensland Government made the point that increased stockpiling of imported fuels will create new challenges in relation to shelf life and changes in the risk and safety management profiles of such storage. Storing refined fuel has different technical safety requirements to crude oil which has a longer storage life and lower volatility. Furthermore, the Queensland Government put the view that, should mandatory stockpiling be introduced, refinery closures raised questions of ownership arrangements: should the two Queensland refineries close, the state would be dealing with mandatory stockpiling of refined fuel product rather than crude oil.[69] The Queensland Government continued:

> If refined fuel is stockpiled in the state, this can potentially provide a short-term buffer against any significant price increases. The import of refined product however, will not benefit from this effect and result in possibly more expensive prices for fuel products in the long term. However, more competition may be facilitated if multiple players enter the retail fuels and distribution market.[70]

4.46 As a first step, NRMA recommended that the Australian Government undertake a public analysis of the country's refining capacity with a view to determining the implications of ongoing closures, and the loss of local capacity, on both near-term and longer-term resilience and security.[71]

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66 APA Group, *Submission 10*, p. 2.

67 Australian Workers' Union, *Submission 20*, p. 8.

68 Mobil Oil Australia, *Submission 27*, p. 3.

69 Queensland Government, *Submission 22*, p. 1.

70 Queensland Government, *Submission 22*, p. 1.

71 National Roads and Motorists' Association, *Submission 18*, p. 15.

Shipping

4.47 The Maritime Union of Australia (MUA) suggested that the closure of Australian refineries affected NSW and the Australian Capital Territory (ACT) in particular given that since September 2014, they no longer have any operational refineries. As a consequence, ships are now critical to the fuel supply for transport, aviation, industry and mining in both jurisdictions. Fuel supply to these two locations is dependent upon tankers importing fuel to only three ports – Sydney, Port Botany and Newcastle.[72] MUA explained that as one fuel tanker carries the equivalent fuel of 1000 truck tankers, it was not possible to transport replacement supplies by road from refineries in Brisbane or Melbourne in the event of a disruption to these ports or ships.[73]

4.48 Furthermore, international petroleum imports, and an increasing amount of domestic shipping, are undertaken on international-flag and crewed tankers. From 2011–12 to 2013, there was a 47 per cent increase in domestic voyages by international-flag ships and a 67 per cent increase in the tonnage of refined petroleum carried by these ships.[74] According to MUA, in contrast to the record of Australian-crewed ships, international-flag tankers have been found to have hundreds of deficiencies that are so serious that they have been detained an average of 12 times per year by the Australian Maritime Safety Authority (AMSA).[75] In 2013, most of these ships were detained because of deficiencies in relation to International Safety Management compliance, fire safety, lifesaving appliances, pollution prevention, and emergency systems.[76] In contrast, according to MUA, the five (but soon to be three) Australian-crewed tankers were never detained in 36 years of service.[77]

4.49 MUA put the argument that greater use of international-flagged and crewed tankers over the Australian alternative would further weaken Australia's already fragile fuel security.[78] It suggested that Australian companies and the Australian Government would not have the capacity to take control of and re-direct these tankers in the event of a fuel emergency in Australia.[79] Dr Penny Howard, National Research Officer of MUA suggested that it was unclear what would happen if there was a disruption to the fuel supply and Australia was reliant upon international flagged ships that have 'no particular obligation to Australia' and which may have contracts with a

72 Maritime Union of Australia, *Submission 21*, p. 4.

73 Maritime Union of Australia, *Submission 21*, p. 4.

74 Maritime Union of Australia, *Submission 21*, p. 10.

75 Maritime Union of Australia, *Submission 21*, p. 7.

76 Maritime Union of Australia, *Submission 21*, p. 7.

77 Mr Ian Bray, Maritime Union of Australia, *Committee Hansard*, 2 February 2015, p. 38.

78 Maritime Union of Australia, *Submission 21*, p. 10.

79 Maritime Union of Australia, *Submission 21*, p. 16.

number of countries during the course of a year. Dr Howard noted that such a scenario had not been considered in the risk assessments conducted by the department.[80]

Emergency fuel distribution system

4.50 The *Liquid Fuel Emergency Act 1984* (LFE Act) provides the Australian Government with the authority to prepare for and manage a national liquid fuel emergency. Under the Act, the Minister for Industry can control the industry's stocks of crude oil and liquid fuels, Australia's refinery production and the distribution of fuel stocks in an emergency. Similarly, each state and territory has arrangements in place to deal with liquid fuel emergencies within their respective jurisdictions.[81]

4.51 AIP explained that there were comprehensive response strategies in place to address or replace any lost supply including:

- numerous 'in-refinery' technical options;
- utilising of alternative supply infrastructure and supply and distribution routes;
- sourcing supply from other Australian refineries and fuel wholesalers;
- sourcing supplies from international sources and the spot market;
- equitably allocating bulk fuel to consumers; and
- drawing down industry stockholdings.[82]

4.52 Notwithstanding this evidence, the AIP pointed out that many larger fuel users hold only limited stocks on the expectations that stocks will be held by fuel suppliers or that government will intervene to protect the interests of fuel users if supplies are limited.[83]

4.53 Emergency services are recognised as 'essential users' in the Act and *Liquid Fuel Emergency (Activities – Essential Users) Determination 2008* and have 'priority' access to fuel in the event of a national liquid fuel emergency. The Guide Note on Essential Users emphasises that 'governments all agree' that those users who 'contribute to the provision of goods and services which, if reduced in supply or availability, would be likely to seriously damage the health, safety or welfare of the community', should have priority access to fuel. Declared essential users include:

- Defence of Australia;
- Ambulance service;
- Corrective service;
- Fire or rescue service;

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80 Dr Penny Howard, Maritime Union of Australia, *Committee Hansard*, 2 February 2015, p. 43.

81 Engineers Australia, *Submission 2*, p. 3.

82 Australian Institute of Petroleum, *Submission 17*, p. 13.

83 Australian Institute of Petroleum, *Submission 17*, p. 13.

- Police service;
- Public transport service;
- State Emergency Service or an equivalent organisation;
- Taxi service.[84]

4.54 AIP noted that many business and industry fuel users incorrectly believe that they are 'essential users' for the purposes of the Act and will get preferential supplies during a supply emergency in the same way as police, ambulance and emergency services.[85]

4.55 At the core of considerations regarding fuel stocks was the role of fuel suppliers and the question of where the obligation to retain fuel stocks to deal with an emergency should lie. AIP members held the view that it was not the role of fuel suppliers to hold buffer stocks in the event of a disruption. AIP argued that:

> It is not the role for fuel suppliers to hold buffer stocks to guarantee the ongoing business operations of major fuel users and distributors during a major fuel supply disruption. Therefore, it is in the interests of all fuel users to understand their own fuel use and to consider how best to manage the potential impacts of reduced fuel supply.[86]

4.56 However, AIP noted that fuel supply patterns were consumer driven and that prior to harvest season, suppliers fill available storage facilities.[87]

4.57 Yet, AUSVEG made the point that while growers might be in a position to take some measures, it was not reasonable to expect them to put in place on their own measures sufficient to deal with a disruption.[88] It informed the committee that information derived from vegetable growers located around Australia of different farm sizes revealed that their fuel storage depended on the size of the farm – smaller growers had a few thousand litres of storage, with the larger growers having up to 33,000 litres.[89] Mr AJ White, Deputy CEO of AUSVEG made the point that, as many producers are now harvesting on a year-round basis, any such disruption in fuel supply would impact the entire agricultural sector.[90]

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84 Section 4(4), *Liquid Fuel Emergency (Activities – Essential Users) Determination 2008*; Department of Industry, Essential Users under the Liquid Fuel Emergency Act, http://www.industry.gov.au/Energy/EnergySecurity/Liquid-fuels-security/Liquid-Fuel-Emergency-Act/Pages/default.aspx (accessed 12 February 2015).

85 Australian Institute of Petroleum, *Submission 17*, p. 13.

86 Australian Institute of Petroleum, *Submission 17*, p. 14.

87 Mr Andew Warrell, Australian Institute of Petroleum, *Committee Hansard*, 2 February 2015, p.33.

88 Mr AJ White, AUSVEG, *Committee Hansard*, 2 February 2015, p. 15.

89 AUSVEG, Answer to question on notice taken at 2 February 2015 hearing, (received 13 February 2015).

90 Mr AJ White, AUSVEG, *Committee Hansard*, 2 February 2015, p. 15.

4.58 Another matter raised in relation to the issue of fuel security was whether there is an intersection between national security, energy and economic security. AIP argued that energy and economic security issues were distinct from national security issues. Therefore, national security issues are a matter for defence while energy security should be assessed through the energy white paper process.[91] However, NRMA challenged this approach by arguing that it was impossible to differentiate between national security, energy security and food security as they are all part of the country's base.[92] Air Vice Marshal Blackburn (Retired) noted in this regard that Defence was 'totally' dependent on industry and the civil supply base. He continued:

> If your civil supply base—food supply and everything else that happens—does not work then Defence cannot work either. So it is not a case of: if you had stocks the Defence then they could go off and operate; they cannot—they are totally dependent on the civil infrastructure. So you cannot actually separate energy security and defence security because they are actually married.[93]

Fuel security or insecurity?

4.59 In considering evidence regarding Australia's fuel stockholdings, the IEA stockholding requirement, Australia's liquid supply chain and domestic refining capacity, this chapter has revealed clear divisions in evidence on the question of whether Australia's current arrangements provide adequate fuel security.

4.60 Those who questioned the current arrangements and suggested that Australia should not be content to 'outsource our energy security to the market' made the following points: [94]

- Australia fails to meet its IEA stockholding obligations;[95]
- Australia holds no government controlled or mandated stocks in contrast to regional and global peers and has no control over any part of oil/fuel infrastructure;[96]
- despite an apparent dependence on oil, there are no current alternatives to substitute fossil liquid fuels used for transportation with other fuels;[97]

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91 Mr Andrew Warrell, Australian Institute of Petroleum, *Committee Hansard*, 2 February 2015, p.19.

92 Air Vice Marshal Blackburn (Retired), National Roads and Motorists' Association, *Committee Hansard*, 2 February 2015, p. 77.

93 Air Vice Marshal Blackburn (Retired), National Roads and Motorists' Association, *Committee Hansard*, 2 February 2015, p. 77.

94 Truck Industry Council, *Submission 23*, p. 6.

95 Truck Industry Council, *Submission 23*, p. 2.

96 Truck Industry Council, *Submission 23*, p. 2; National Roads and Motorists' Association, *Submission 18*, p. 8.

97 Engineers Australia, *Submission 2*, p. 1.

- Australia's almost 100 per cent reliance on imported liquid fuels leaves the country's industries, including that of transport, extremely vulnerable to supply disruption and exposes Australia's economy to continually rising and volatile world spot prices for oil;[98] and
- the rising costs of fuel coupled with growing dependence on other nations for fuel supply (which implies greater susceptibility to delays in deliveries from foreign shipping) raised questions regarding Australia's energy resilience.[99]

4.61 The argument was put to the committee that these factors made Australia particularly vulnerable in the event of an interruption to the import supply chain.[100] To this end, the point was made that Australia's Energy Green Paper acknowledged that the combined effect of declining domestic refining capacity and increased dependent on fuel imports, particularly for specific fuel types, could 'enhance concerns about the level of risk to Australia's national security'.[101] As NRMA stated in its submission:

> Australia is moving towards a situation where by 2030 we could have:
>
> - No refineries;
> - Less than 20 days of liquid fuel; and
> - 100% imported liquid fuel dependency.[102]

4.62 Submitters concerned about the fuel supply status quo made the point that stockholdings alone would not guarantee Australia's transport energy security while increased storage was only part of the solution. They contended that a different approach is required whereby supply and demand aspects of Australia's transport fuel supply as well as stockholdings are considered.

4.63 NRMA made the point that what was required is a secure, reliable and ongoing flow of fuel. To this end:

> Rather than focus on stockholdings as an isolated endpoint or a stand-alone 'solution', the Government needs a comprehensive and multi-faceted approach to energy security…Australia's reliance on imported oil and fuel has grown from 60% in 2000 to over 90% in 2014, with further declines in indigenous oil and fuel production capacity foreshadowed.[103]

4.64 To address fuel security concerns, like-minded submitters pointed to the need for government to take a multi-faceted approach to transport energy security as a mechanism to achieve adequate fuel security.[104]

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98 Biofuels Association of Australia, *Submission 32*, p. 2; National Roads and Motorists' Association, *Submission 18*, p. 7; Mobile LNG, *Submission 31*, p. 6.

99 Mobile LNG, *Submission 31*, p. 6.

100 National Roads and Motorists' Association, *Submission 18*, p. 7.

101 Department of Industry, *Energy White Paper – Green Paper*, 2014, p. 53.

102 National Roads and Motorists' Association, *Submission 18*, Attachment 2, p. 6.

103 National Roads and Motorists' Association, *Submission 18*, p. 8.

104 Truck Industry Council, *Submission 23*, p. 2.

4.65 In direct contrast, submitters who argued that Australia has adequate fuel security including the department and AIP, supported by various government commissioned reports and analysis, pointed to factors such as:

- the extensive supply network and shipping routes;
- the lack of severe disruption events to date;
- a need to tap further into regional markets rather than expensive domestic refineries;
- the cost implications of meeting IEA requirements which may have no bearing on fuel security per se; and
- the need to avoid the impost of additional costs on the industry and/or economy.[105]

4.66 At the heart of the debate regarding fuel security is that of the role of government and fuel security policy. The following chapter explores these questions.

105 Mr Andrew Warrell, Australian Institute of Petroleum, *Committee Hansard*, 9 April 2015, p. 19.