

Strategic Analysis Paper

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Strategic Risk and North West Australia's Critical Infrastructure

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Summary

The Pilbara region is considered 'the engine room of the Australian economy'.¹ This region produces approximately twenty percent of Australia's exports. According to Regional Development Australia, this is 'made possible by 0.2 percent of the national population'. Onshore and offshore resource projects, such as Gorgon, Wheatstone and Pluto, continue unabated. The North West Shelf continues to be of national significance to the Australian economy. Numerous mineral and energy projects operate across the Pilbara and exports reach global markets via the maritime gateways at Port Hedland, Dampier and Cape Lambert. Australia's minerals, energy and other commodities are shipped along Sea Lines of Communication (SLOC) across the Indian and Pacific Oceans, and through the Philippine and South China Seas.

By 2020, the Pilbara region will increasingly become a significantly valuable part of the nation's economy. With its offshore assets and SLOCs, it will also gain increasing strategic importance. Over the next decade, the Indian Ocean region's security environment will continue to evolve and require Australia to address a growing strategic risk to its onshore and offshore assets across regional areas, especially the Pilbara. Factors may challenge the current order, such as major powers jostling to maintain their need for energy security and to protect their supply lines. Australia's decision makers, therefore, need to consider increasingly a range of factors when considering the strategic defence and security requirements of the Pilbara region.

Analysis

The Pilbara region covers approximately 507,896 square kilometres (including offshore islands), which represents nearly twenty percent of Western Australia's landmass.² The region stretches geographically from the Indian Ocean in the west and eastward to the Northern Territory. The Pilbara's offshore region includes Barrow Island and numerous energy installations along the North West Shelf.

¹ Regional Development Australia, Preliminary Pilbara Regional Plan, August 2010, p. 30.

² Western Australian Department of Regional Development and Lands, 2010.

The population base of the region is 45,983, from a State total of 2.286 million.³ Most of the population lives in towns in the western third of this region. There are four local government authorities across this region: Town of Port Hedland, Shire of Roebourne, Shire of Ashburton and the Shire of East Pilbara. There are major towns along the coast, such as South Hedland and Karratha, as well as inland towns such as Newman, Paraburdoo and Tom Price. These five towns represent 70 percent of the Pilbara population. The remainder of the population live in Indigenous communities, smaller towns and in remote mining and pastoral locations.

The Pilbara is one of the most productive regions in Australia. In 2006-07, the Pilbara region accounted for \$26.4 billion of total output. The region also accounted for 61 percent of Western Australia's Gross Resource Production and 23 percent of Gross State Product.⁴ According to the Department of Foreign Affairs and Trade, in 2008 this represented almost 20 percent of Australia's total value of merchandise exports.

Some of Western Australia's largest minerals and energy projects, such as Gorgon, Wheatstone and Pluto, are located in the Pilbara region. (Appendix A)

In September 2010, the Western Australian Departments of State Development and Mines and Petroleum stated that 'more than \$150 billion worth of projects are either committed or under consideration for the State during the next few years'.

In Regional Development Australia's *Pilbara Regional Plan*, it notes that '\$90 billion of the State's record \$112 billion of under construction or committed projects are in the Pilbara'.⁵

The region's ports, such as Port Hedland, Dampier and Cape Lambert, are most likely to remain of significant economic and strategic importance in the long-term. Ongoing investment in infrastructure, such as ports and wharves by major resource companies, continues to increase the export capacity of the region.

At present, the Pilbara regional workforce is 26,389.⁶ One challenge facing the region is the ongoing need for skilled labour. According to the Chamber of Commerce and Industry (Western Australia), the state is going to have a shortfall of 210,000 workers by 2020. For the Pilbara in 2020, it is projected that there will be a labour shortfall of 10,000 workers. This situation poses a significant risk to the commercial viability of resource projects in the State, especially those in the Pilbara region.

The fly-in fly-out (FIFO) workforce component in the Pilbara is seen as a solution to skilled labour shortfalls, especially during the construction phase of a project. Critics of FIFO, however, claim that it does not encourage people to settle in regional towns, allowing economic advantages to be gained from a local and affluent workforce. An estimate by the Pilbara Industry Community Council (PICC) 'puts the regional employment growth rate at 28 percent between 2010 and 2015. And notwithstanding this growth in resident workforces, the PICC also estimates that FIFO

³ Australian Bureau of Statistics, 'Australian Demographic Figures', 3101.0, March Quarter 2010.

⁴ Shire of Roebourne, 2010.

⁵ Regional Development Australia, *Preliminary Pilbara Regional Plan*, August 2010, p. 5.

⁶ Western Australian Department of Training and Workforce Development, 2010, at: www.dtwd.wa.gov.au/dtwd/detcms/portal/

employment will increase by 83 percent over the same period, and by a further 23 percent to 2020'.⁷

Land use, rental accommodation and housing affordability and availability is one element being addressed to foster the creation of sustainable communities. The State Government's 'Pilbara Cities' plan is a key component to providing large-scale population bases in the region's northern centres of Karratha and Port Hedland. One element of the housing issue is that the development of larger and more a permanent population base will allow companies to employ more local skilled labour. According to the State Government's 'Karratha: City of the North' programme, the city seeks to grow from approximately 18,000 to a city in excess of 50,000 residents.

Water is another vital element to the sustainable growth of the region and its communities. The Western Australian State Government announced on the 25 October 2010 the construction of a sea-water desalination plant in the Pilbara that will provide an additional six billion litres of water from 2013 'to support residential and small commercial growth in Karratha, Dampier, Roebourne, Wickham and Port Samson'.⁸

Increased government funding invested in the region, such as that provided by the state government through its Royalties for Regions programme, or commercial undertakings and investment by mineral and energy companies such as BHP Billiton, Rio Tinto, Woodside, Chevron, highlight the value and potential of the Pilbara region. Whether onshore or offshore, stakeholders, both government and private, are demonstrating a willingness to invest in this strategically important part of regional Australia.

Defence's Role in Managing Strategic Risk and North West Australia

Geo-strategically, Australia currently enjoys the status of being of one of the world's most secure nations. The states in our regional neighbourhood do not pose a threat to Australia's sovereignty over the coming next decade.

The 2009 Defence White Paper, *Defending Australia in the Asia Pacific Century: Force 2030*, (referred hereafter as *Defence White Paper*), however, acknowledged that 'new security risks that might arise from the potential impact of climate change and resource security issues, involving future tensions over the supply of energy, food and water'.⁹

Considerable focus of the Defence White Paper and the strategic environment to 2030 is centred on the Asia-Pacific region. It is the Indian Ocean region, however, that is likely to gain increasing geo-political significance in the coming decade. Presently, the majority of the Australian Government's listed terrorist organisations, and current Australian Defence Force (ADF) operations, are located in the Indian Ocean region. Such an evolving security environment may, over the long-term, have an impact on the surrounding SLOCs and regions which face the Indian Ocean, such as the Pilbara.

⁷ Regional Development Australia, p. 6.

⁸ Western Australian State Government, 'New Drinking Water Sources Announced for East and West Pilbara', media statement, 25 October 2010.

⁹ Australian Government, Department of Defence, 2009, *Defending Australia in the Asia-Pacific Century: Force 2030*, Commonwealth of Australia: Canberra, p. 39.

Located on the shores of the North East quadrant of Indian Ocean region, and close to major SLOCs that carry commodities and energy to global markets, the Pilbara region by 2020 is likely to gain greater geopolitical and economic significance. Continued mineral and energy projects, both onshore and offshore, already demonstrate the region's ongoing and long-term economic value, both to the state and the nation.

The *Defence White Paper* is clear that the "primary obligation" of the ADF is to 'deter and defeat attacks on Australia'.¹⁰ Accordingly, the "brief" of the ADF and its primary role will remain the protection of Australia's territory, citizens and sovereign interests from threats and armed aggression. Fundamental to this position, therefore, 'How to balance competing national priorities is central to the Government's decision about the future defence needs of the nation?' and is in the words of the *Defence White Paper*, 'how much strategic risk Australia is prepared to bear, and hence, how much military power we should seek to develop'.

The Australian Government is aware of the vast array of challenges it may face in the long-term, and needs to develop a host of contingencies and provide platforms that will best address strategic risk.

This broad "standing order" includes the protection of Australia's energy supply and trade routes, domestic energy and mineral sources, both onshore and offshore. A host of critical infrastructure located across North West Australia, especially in the Pilbara region, and increasingly the Kimberley region, is set to only increase in number and value.

The vital economic assets and critical infrastructure across the North West Shelf are increasingly a case for greater focus on defence and security of the Pilbara region over the long-term and its broader strategic maritime environment.

The ADF presence in the North West Australia in 2010 includes the Army's Pilbara Regiment, an Army Reserve unit headquartered in Karratha, Western Australia. The Pilbara Regiment also has squadrons located at Port Hedland and Exmouth. This unit is responsible for an area that covers Shark Bay in the south to Broome in the Kimberley region.

In addition, the Kimberley Squadron of the North West Mobile Force (NORFORCE) is the western most surveillance unit that is 'responsible for land and water operations throughout the Kimberley, its coastal fringes and offshore islands'. Further north, the Kimberley Squadron Headquarters is located in Broome and has depots in Kununurra and Derby. The Army's Force Command states that these units have 'Intelligence Surveillance, Target Acquisition and Reconnaissance (ISTAR) capability throughout the Kimberley region'. Army also has a training centre at Yampi, near Derby.

There are two Royal Australian Air Force (RAAF) "bare bases" in Western Australia, both outside the Pilbara region. One is situated at RAAF Base Learmonth on the North West Cape, though when activated, is close enough to conduct operations over the North West Shelf. The second regional bare base is at RAAF Base Curtin, near Derby.

¹⁰ *Ibid*, p. 58.

Domestic ports, such as Dampier, can be accessed by the Royal Australian Navy for refuelling. Port Hedland, however, is unlikely to be on the plans as a future naval facility. This is due not only to current fiscal restraints but increased commercial activity that continues to take place at the port.

Critical Infrastructure Protection

Australia's National Terrorism Public Alert System currently remains at "Medium". North West Australia's onshore and offshore critical infrastructure could, over time, become over time a target of choice by non-state actors, such as terrorist organisations, or even single issue, lone extremists.

Australia remains a net energy exporter, principally of coal, liquefied natural gas, and uranium, but faces the challenge of securing external sources of energy for domestic consumption needs and their supply lines as well as the protection of critical infrastructure.

The relationship energy security has with defence and economic policy results in a number of considerations for policymakers, especially when dealing with Australian and Western Australian energy infrastructure. The Australian Government may in time need to consider a greater role for Defence in regards to critical infrastructure protection across regional Australia, especially the Pilbara region, and more broadly, North West Australia. A case in point is the increasing economic importance of the Pilbara's North West Shelf.

The Australian Government defines critical infrastructure as 'those physical facilities, supply chains, information technologies and communication networks which, if destroyed, degraded or rendered unavailable for an extended period, would adversely impact on the social or economic well-being of the nation or affect Australia's ability to ensure national security'.¹¹

Approximately 90 percent of Australia's critical infrastructure is privately owned or operated on a commercial basis. Through the Australian Government's National Strategy for Critical Infrastructure Protection, however, the commercial sector and its private operators are involved in a variety of forums, along with State and Territory Governments, to manage threats, including terrorism, against the nation's critical infrastructure.¹²

There is a broad, yet coordinated, approach to national security and critical infrastructure protection. This includes a variety of strategies that involve the National Counter-Terrorism Committee and the National Intelligence Coordination Committee, and plans such as the National Guidelines for the Protection of Critical Infrastructure. The Australian Government's 2010 Counter-Terrorism White Paper *Securing Australia: Protecting our Community* seeks to address the key objective of 'taking all necessary and practical action to protect Australia and Australians from terrorism at home and abroad'.

¹¹ Department of the Attorney General, 'Critical Infrastructure Protection', Commonwealth of Australia: Canberra, December 19, 2008.

¹² Trusted Information Sharing Network for Critical Infrastructure Protection, October 2008, 'Critical Infrastructure Protection Modelling and Analysis Program', Fact Sheet, Commonwealth of Australia: Canberra, p. 1. *Security initiatives which address Australia's critical infrastructure protection, especially in the area of energy, include the Energy Infrastructure Assurance Advisory Group, and the application of the Critical Infrastructure Protection Modelling and Analysis Program (CIPMA). The CIPMA is a partnership between government and business decision makers, giving them access to the Trusted Information Sharing Network for Critical Infrastructure Protection is an "all hazards" programme that informs critical infrastructure protection. Managed by the Department of the Attorney General, CIPMA allows owners and operators of critical infrastructure to 'prepare, prevent, respond to or recover from an adverse event'.*

In regards to the location of current and proposed energy infrastructure projects, defence considerations need to be taken into account, thereby reducing any mismatch between defence posture and strategy. This situation can occur because State and Territory Governments have primary responsibility for the management of critical infrastructure that falls within their jurisdiction. This means that State and Territory Governments ‘have primary responsibility for the prevention of and response to potential terrorist incidents involving critical infrastructure.’¹³

The Australian Government, however, does continue to improve both its capacity and capabilities to minimise the threat from terrorism. Counter-terrorism capabilities continue to be strengthened through better linkages between the Australian Government and the States and Territories, improvements in maritime security measures, increased intelligence gathering capabilities, and a host of border protection activities.

Potential Non-State Threats

A publication by the Australian Strategic Policy Institute, *Our Western Front: Australia and the Indian Ocean*, describes the range of threats and risks that present in the Indian Ocean region as ‘extensive and varied’. Authors Sam Bateman and Anthony Bergman list traditional maritime security concerns as ‘risks of interstate or intrastate conflict; threats to good order at sea, such as maritime terrorism, piracy, people smuggling and illegal fishing’ affecting the Indian Ocean region to also have a range of non-traditional security concerns. They include, but are not limited to, ‘climate change, transnational crime, marine natural hazards and energy, food, environmental and human security’.

Regional and remote critical infrastructure, such as the Pilbara’s mineral and energy projects, are an integral part of Australia’s economic earning capacity, much of which is exported along SLOCs to the global marketplace.

Crippling or damaging the economic earning capacity and investment confidence of a nation such as Australia is a key focus of the activities of terrorist organisations. Any potential attack on a mineral or energy project, onshore or offshore, or its associated critical infrastructure is likely to feature as a potential future target for a transnational terrorist organisation, or even a domestic terror cell. Economic assets with an iconic status and rich in symbolism, such as a Liquefied Natural Gas (LNG) tanker or a North West Shelf offshore installation, mean that they could be “in the frame” as any successful attack would achieve the dual aims of denting Australia’s economy and ensuring maximum media coverage for such actions.

Energy is treated by some terrorist groups as a legitimate target in order to increase oil prices, raise production and security costs at these installations, and generally destabilise Western economies.¹⁴ Some terrorist organisations have a doctrine which includes the selection of energy targets as a highly valued goal within their pursuit of damaging and destabilising economic hubs.

¹³ Trusted Information Sharing Network for Critical Infrastructure Protection, July 2008, ‘Fact Sheet: Critical infrastructure protection: whose responsibility is it?’, Factsheet, Commonwealth of Australia: Canberra, p. 2.

¹⁴ Rudner, M., 2008, ‘Protecting Critical Energy Infrastructure through Intelligence’, *International Journal of Intelligence and Counter-Intelligence*, Vol. 21, No. 4, p. 640. The purpose of the destruction of critical infrastructure, especially of critical infrastructure energy projects, is to achieve a stated goal of *al-Qaida*, affiliates, and *jihadi* terror groups: to attack facilities that can cause the greatest economic damage. A 2004 *al-Qaida* manifesto, *The [Islamic] Laws of Targeting Petroleum-Related Interests and a Review of the Laws Pertaining to the Economic Jihad*, states: ‘The targeting of oil facilities is a legitimate means of economic *jihad*’.

Terrorist organisations do focus on strategically high-value and iconic targets. They can include centres which extract, produce, process or distribute energy. Therefore, energy centres remain at risk from select groups and individuals seeking to damage and maximise their impact on a state's economic capacity. Deterring and protecting potential "target acquisitions" must remain at the forefront of Australia's defence and security plans.

Broader Considerations

The threat posed to Australia's critical infrastructure, mineral and energy projects are not, however, limited to terrorist organisations. The ever-changing global security dynamics indicate that major power conflict remains a possibility. The 2009 *Defence White Paper* states that 'the ADF would have to comprehend the remote but plausible potential of confrontation with a major power adversary'.

The Australian Government seeks to have an ADF with a force which has the attributes and capability advantage out to 2030 in order to prevent, or prevail in, a conflict.

The Australian Government's measured analysis is that major powers may be operating in our strategic approaches 'in the most drastic circumstance, as a consequence of a wider conflict in the Asia-Pacific region'.¹⁵ There has been a subtle yet strategic shift in focus from the Pacific Ocean to the Indian Ocean region. This trend is likely to occur over the long-term.

As the demand for energy from China and India increases, these states will seek to secure their supplies. Increased naval capabilities, construction of ports, and the conduct of surveillance will be done to maintain the passage of energy and trade through strategic chokepoints, from their sources to their domestic markets. Such activity could lead to heightened regional major power rivalry. This scenario would produce numerous challenges for the Australia's defence and security planners.

Energy sources, however, are not just domestically produced but are also internationally sourced for an Australian market. Energy follows a long path on its way to market. From offshore oil and gas platforms, energy is transported through pipelines, processed, stored, loaded and distributed for consumption around the world.

The stages of the production and distribution cycle of energy via critical infrastructure do have a vulnerability to various types of risk, whether it is a non-state actor such as a terrorist organisation or single issue lone extremists, or the risk posed by major power rivalry.

Australia's energy projects and energy supply lines remain especially vulnerable due to their on-going "target-rich" potential from such threats. It is recognised that personnel on critical infrastructure, such as offshore platforms, can be vulnerable to attack or even hostage-taking.

The strategic vulnerability of the energy production zone in North-Western Australia, especially the North West Shelf, was highlighted by the Karratha gas supply disruption in January 2008, and followed soon after in June 2008 with the Varanus Island industrial accident, where a pipeline explosion affected the flow of gas to Perth and the South West region of Western Australia. A dedicated attack, on such a site by a terrorist organisation or single issue lone extremist could

¹⁵ Defence White Paper, 2009, p. 65.

prove catastrophic in disabling urban centres far from the scene of the event. An incident in one region can have a direct impact far from the critical infrastructure target. An attack could also be conducted remotely, through the use of cyber warfare techniques.

In regard to Australia's energy security over the long-term, it is linked to timely investments that ensure the supply of energy is in line with economic developments, including critical infrastructure projects. In the short-term, however, energy security is tied to the ability of states to ensure the energy system is responsive to sudden changes in supply and demand.¹⁶ The International Energy Agency defines this state as 'the broader need of ensuring energy security is progressively taking a more comprehensive approach to the security of supplies, including for example, natural gas supplies and power generation.'¹⁷ Energy security over both the short- and long-term requires interface with investment, development and protection of critical infrastructure energy projects, as well as the ability to maintain strategic fuel reserves.

The global security situation and the demand for energy over the next 20 years are likely to become more competitive as states seek to secure the source and supply of energy. For many states, energy is becoming increasingly sourced from non-domestic locations. Threats to the security of supply of energy and goods across SLOCs will continue to come in a variety of forms, especially from non-state actors, such as that from modern-day piracy.

Piracy activity off the Somali coast in the Gulf of Aden, and across the north-west quadrant of the Indian Ocean region has been able to disrupt the free passage of vessels transiting this important shipping zone.

The risk posed to sovereign interest, therefore, is not just to assets located within territorial waters, but also along SLOCs upon which shipping transports voluminous amounts of trade and energy. The strategic importance of protecting SLOCs remains a central tenet of national maritime doctrine. There is a need for the Australian Government to give consideration to the expansion of a strategic fuel reserve capability, a stand-alone source that is separate from the domestic supply chain. Consideration should also be given to exploring the production of synthetic fuels that are compatible for use by the ADF in its various maritime, land and aerial platforms.

Conclusion

The Indian Ocean region's constantly changing and evolving strategic environment means that Australia will continue to face a range of challenges which have a relationship to protecting and defending its national interests, such as its mineral and energy projects, critical infrastructure, energy supplies and SLOCs. Also, a variety of future threats, such as a pandemic or increased non-state armed activity, may present themselves without sufficient strategic warning.

The growth of China and India, and their shared strategic ambitions of protecting their supply lines, may, in time, become a cause of inter-state friction and heightened naval activity in the Indian Ocean region. Regional conflict between states is a possibility.

¹⁶ International Energy Agency, 'Energy Security', 2009. The energy system can be defined as the different energy sources (coal, oil and gas), intermediate means (refineries and electricity), and transportation modes (pipelines, shipping, ports and power grids).

¹⁷ *Ibid.*

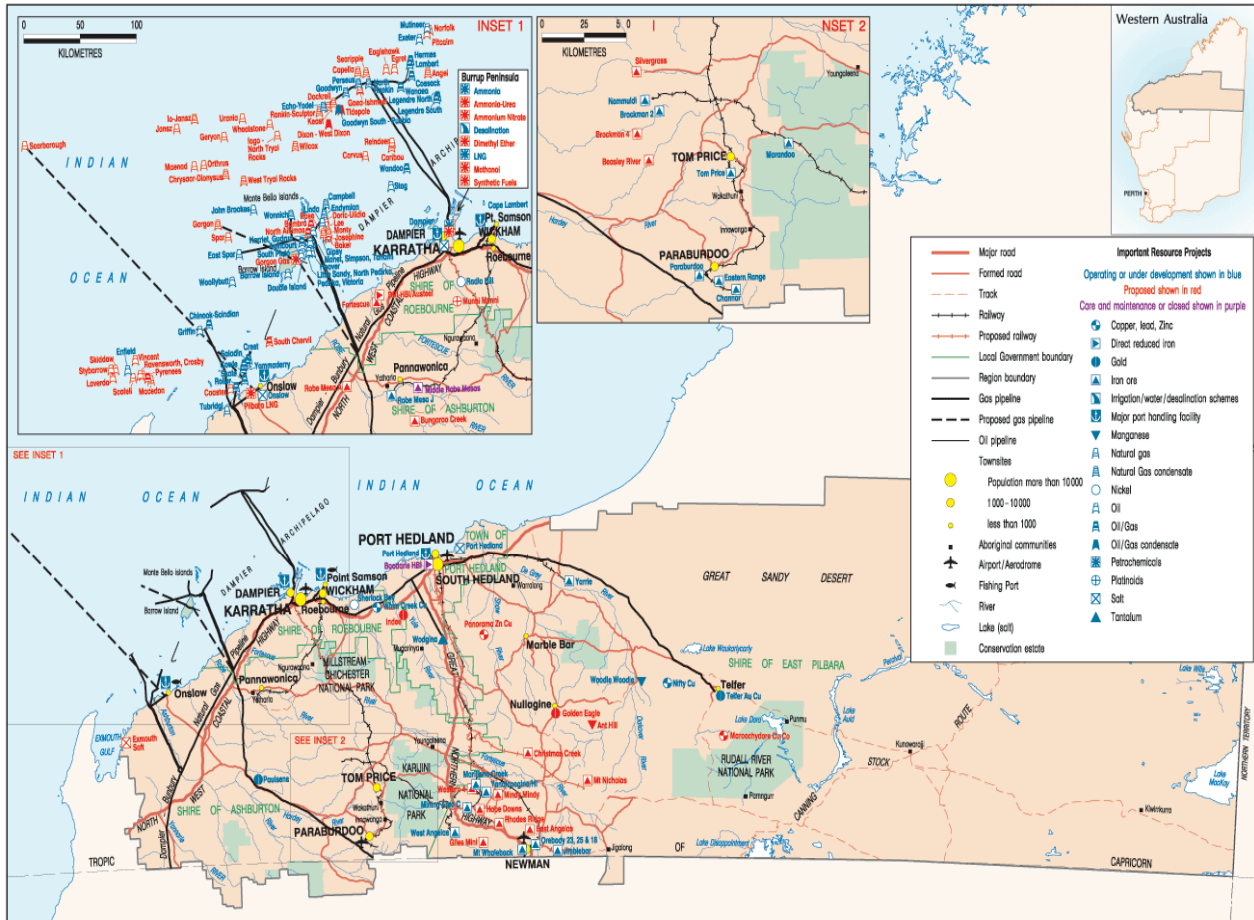
The threat by states against Australia remains remote to non-existent in the medium to long-term. Australia must, however, recognise the growing strategic importance of the Indian Ocean region as it will have an influence on those parts of regional Australia which face this dynamic maritime environment. As the Indian Ocean region increases in its strategic importance, so does North West Australia and regions such as the Pilbara. Australia's decision makers therefore will need to pay more attention to a host of factors when considering the strategic defence and security requirements of the Pilbara region.

Any opinions or views expressed in this paper are those of the individual author, unless stated to be those of Future Directions International.

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APPENDIX A

Pilbara Region – Key Features



PILBARA REGION KEY FEATURES



Produced by the Geological Survey of Western Australia
Map product is to be used for broad based planning only.
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DATA DIRECTORY		
THEME	SOURCE	DATE
Cultural	DLI/DoR	1998
Transport	DLI	1998
Hydrography	DLI	1998
Taxure	CALM	Mar 2005
LGA Boundaries	DLI	2004
Aboriginal Communities	Department of Indigenous Affairs	2004
Important Resource Projects	DoR – modified from MINEDEX and WAPIMS databases	Nov 2004

Source: Western Australian Department of Regional Development and Lands, 2010.