



ANALYSIS

# Defence challenges 2035: Securing Australia's lifelines

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## EXECUTIVE SUMMARY

As the Australian government prepares a new white paper to guide the country's defence planning to 2035, the burden of strategic risk on Australia's national interests is increasing. Those interests are extensive and face a widening range of risks, from coercion or conflict in Asia to resurgent terrorism and aggression in other parts of the globe. Australia's region is becoming more central to global power balances and strategic tensions. Power balances are changing with China's rise, and this will encourage risk-taking. Conflict between states is more about constant competition and coercion than the prospect of all-out war. The probability of war in Asia is small but real, and greater than a few years ago. Disruptive technologies are altering calculations of military advantage. Deep dependence on energy, information, trade and human links with the outside world makes Australia vulnerable. This means that challenges to global order are risks to Australian interests as well. But no country can pay equal heed to them all, or meet them alone.

Together, these factors mean that the number and kind of security contingencies that could affect Australia will grow. Australia's defence will involve meaningful contributions to securing its lifelines to the wider world. Thus Australia will need to protect its sovereignty, provide security in a troubled immediate neighbourhood, and contribute to the security of the broader Indo-Pacific region and beyond. In the next 20 years, there are many plausible situations in which Australian governments might want military options, including regional crisis interventions, contributions to US-led coalitions, and missions to safeguard maritime interests.

Deciding which national interests are worth defending is ultimately about political choices. As the Australian Government prepares its next defence white paper — a document meant to guide military spending and priorities out to 2035 — it will need to choose between diverse, complex, sometimes contradictory pressures. An essential starting point for informed decision-making is an assessment of Australia's strategic environment: the identification of geopolitical factors, including trends and possible discontinuities that put our interests at risk.

For a nation of only 23 million people, **Australia's interests** are extensive, including the scale of its territory and maritime jurisdiction. Australia benefits from exceptional interconnectedness with the world, through flows of trade, finance, information and people. This brings with it a reliance on rules, order, and secure access to the global commons. Australia's interests go beyond the obvious priorities of protecting the physical security of its citizens, its sovereign territory, and its resources. They also include maintaining national freedom, including independence of action, social cohesion, and a democratic political system, as well as secure access to energy supplies and international markets. Australia cannot achieve these goals without international partnerships — the most important of which by far remains the alliance with the United States. These partnerships in turn are reasons for Australia to uphold its reputation as a secure, capable, reliable, and active participant in the international system.

Last year, a Lowy Institute report outlined what an effective Australian defence policy might require, highlighting an emerging gap between national interests and military capabilities.<sup>1</sup> This Analysis poses three questions. What is Australia's strategic environment likely to look like in the decades ahead? What are the risks to security that Australia may face out to the 2030s? What are the circumstances under which future Australian governments may want military options?

In addressing these questions, this report considers the changing strategic order in Australia's Indo-Pacific region and globally. It considers drivers of rivalry among states, emerging trends in military technology, and the changing character of conflict. It surveys a range of transnational risks, including terrorism, and considers the extent to which military forces can address them. It identifies imaginable discontinuities or 'strategic shocks'. It concludes with a set of plausible scenarios in which a future Australian government may want the option of deploying force.

*What are the circumstances under which future Australian governments may want military options?*

*Australia's best defence involves securing its lifelines to the wider world.*

Debates on Australia's defence policy have long oscillated between two schools: one focused on the physical defence of Australia's territory and its immediate maritime approaches, the other on maintaining the capability to send out expeditionary forces able to meet threats early or contribute to alliances. Both have characterised Australia's relative isolation mainly as an asset. But now, as a country more dependent than ever on global flows of trade, energy, information, people, and money, Australia's best defence involves securing its lifelines to the wider world.

## AUSTRALIA'S CHANGING STRATEGIC ENVIRONMENT

We live in a world of increasing uncertainty and a growing awareness of danger. From Ukraine to Iraq, Syria to the South and East China Seas, the threat or use of force makes daily headlines. Observers speak of a "new world disorder"; others ask "is the world falling apart?"<sup>2</sup> Such conclusions may seem extreme given that the world has become more interconnected and in some ways more peaceful over the past few decades. Yet the international system is in flux. The world is changing across such crucial areas as economics, demographics, military spending, technology, resource and environmental stresses, and the behaviour of powerful states, as outlined in comprehensive future-scanning surveys by Western intelligence and defence agencies.<sup>3</sup> These changes are rapid, simultaneous, and intersecting, and therefore unusually complex and hard to predict.

Does all this amount to deterioration in Australia's strategic environment — a net increase in strategic risk to national interests? Recent public statements on Australian defence and security, including the 2013 defence white paper and national security strategy, have not offered a direct judgement on this score.<sup>4</sup> The good news is that on no single issue has Australia's strategic environment reached a point of looming catastrophe. It would be alarmist to draw parallels with the world wars and superpower confrontations of the 20th century. The bad news is that multiple kinds of negative change are occurring, without a clear end in sight. Consequently, the **accumulation of risk** to Australia's interests is greater than at any time since the end of the Cold War.

Even the most learned studies of defence planning recognise that the future is inherently unknowable.<sup>5</sup> Yet preserving a country's security against not only present but also future risk is a prime responsibility of national government, and modern military capabilities take decades to develop and will be in use for decades more. So estimating future security risks is an unavoidable task. There are multiple ways for defence planners to assess or try to measure potential security risks, and all need to be considered. These include trends in economics, military power, technology, and demographics as well as plausible shocks or discontinuities, made clearer through plotting out scenarios of future crises. Additionally the interplay of the probability and impact of particular risks should be considered, alongside the question of the

number and variety of threats a country may have to face at once. Another important point is the question of timing: some risks may be worse sooner, others later. Taken together, if these factors are applied to Australia's interests and changing strategic environment, they suggest that the overall burden of risk is increasing.

The world is in a phase of complex uncertainty, meaning there are many trends and possible strategic shocks that may intersect in unpredictable and dangerous ways. Risk is proliferating, from conflict to coercion, from terrorism to chaos within fragile states. It is tempting to conclude, therefore, that there is too much uncertainty for meaningful defence planning. However, for a country like Australia, dependent on the functioning and predictability of a globalised world and the rules-based management of differences, there is a thread running through the multiplicity of security challenges: **the need for order**. From Ukraine to Iraq to East Asian waters and vulnerable South Pacific states, the common strategic risk can be characterised as disorder. A guiding principle for Australian defence policy will thus be how to most effectively protect and advance a rules-based order with limited national resources.

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## RISKS BETWEEN STATES

For the foreseeable future it is highly unlikely that Australian territory will face a direct large-scale military threat from another state. Australia is not currently engaged in the type of regional conflict that might prompt a state to invade or strike at Australian territory. Moreover, few countries anywhere have the capabilities, let alone the intent, to undertake such actions, particularly countries in Australia's immediate neighbourhood, including Indonesia.

Yet none of this makes Australia's defence planning any easier. The very low probability of a direct military threat against Australian territory must be offset against the unacceptably high impact on Australian interests were it ever to occur. Australia has long premised its defence planning on the assumption that it would have sufficient warning of potential threats to allow for the mobilisation of manpower and machines to counter them.<sup>6</sup> Under this logic, a core force could be kept small and expanded if major conflict loomed. But assumptions about strategic warning time are becoming less relevant. In a world in flux, **threats can arise suddenly** to regional and global order. Furthermore Australia's deep and deepening dependence on energy, information, trade, and human links with the outside world has the potential to turn prosperity and geography from advantage into security vulnerability: Australia's interests could be put at risk without its territory being threatened.

Australia's interests are at growing risk because its region is becoming more central to the global power balance, and more contested. Indo-Pacific Asia is becoming **the global centre of gravity**, economically, demographically, and strategically.<sup>7</sup> By the 2040s, the economies of

East and South Asia are projected to make the largest contribution to world GDP of any region, and this super-region — centred on China and India — will contain more than half of the world's population.<sup>8</sup> The Indian Ocean is already supplanting the Atlantic to become the world's busiest shipping highway. By 2030, assuming growth trajectories of major Asian economies continue, the volume of world trade looks set to be dominated by maritime routes through the Indian Ocean and the Western Pacific — including the disputed waters of the South and East China seas.<sup>9</sup>

The growing wealth of key countries in Asia is in turn translating into greater military power and, potentially, a greater willingness to use that power. Within the Indo-Pacific region, **strategic competition** among powerful states is likely to continue and could well intensify. Total Chinese defence spending is likely to approach and perhaps even rival that of the United States; almost certainly, the two will be in a league of military spending and technology innovation beyond any other military powers.<sup>10</sup> Deepening strategic competition can be expected between China and the United States — not only in maritime East Asia where China's territorial disputes with US allies are concentrated, but also across the wider Indo-Pacific where China's interests and vulnerabilities will expand. This competition will be reflected in further efforts at military modernisation, a more distributed deployment of forces, and efforts to influence third countries.

The range and number of strategic risks in Indo-Pacific Asia are also set to increase as the region's **geopolitics become more multipolar** and as China's interests and capabilities extend further from its shores. The likely trend lines here are: India to continue its economic and military rise; Japan to respond to Chinese power with its own kind of assertiveness in the face of relative decline; and a range of medium and smaller powers in Southeast Asia, such as Vietnam and Indonesia, to develop armed capabilities and seek new ways to hedge against Chinese power and regional instability. Russia could become more active in Asian security dynamics, partly as a way of asserting its great-power status and complicating US strategic calculations. New security partnerships may form — such as India and Japan or China and Russia — but these are unlikely to become firm alliances. New contests will develop too. The US-China relationship will not be the only strategic competition of concern to Australia. By the 2030s, unless the relationship between Beijing and New Delhi is exceptionally well managed, China-India tensions may be a potential source of confrontation and conflict, almost as worrisome as the risks between China and Japan or China and the United States.

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Tensions in East Asian waters are likely to worsen in the years ahead, as deep historical animosities, nationalism, resource pressures, and mutual perceptions of insecurity intersect in hazardous ways. Indeed, the chance of a near-war **maritime security crisis** in the disputed waters of

the East China Sea or the South China Sea may be more likely in the next few years than in subsequent years, because it is difficult to see how the 'new normal' of regular maritime confrontation can continue indefinitely without a lethal incident and possible escalation. In the near term, a security crisis in the South China Sea — where many countries are involved in contending claims — seems more likely than the East China Sea, where China-Japan relations show signs of mutual, if brittle, deterrence. Meanwhile, a crisis on the Korean Peninsula remains a real prospect, more likely to play out as regime collapse and international intervention — with potential for US-China confrontation — than a replay of the 1950-53 Korean War. Even Taiwan may at some stage become a flashpoint again. Taiwanese public sentiment towards China may be influenced by concerns about the limits to democracy in Hong Kong. A return of pro-independence forces to power in Taipei might prompt China to again consider military options for reunification.

Although the probability of war in Asia is small, it is real, and certainly more so than a few years ago. Power balances in Asia are changing with the continued rise and assertiveness of China and this may encourage strategic risk-taking. According to opinion polls, most Asians (outside China) think that war with a rising China is a likely prospect in their lifetimes.<sup>11</sup> The risk of all-out war involving China should not be overstated. There is only a low probability that any particular crisis would lead to fighting or escalation. Economic vulnerability due to interdependence and fears of uncontrolled escalation, including to the nuclear level, would weigh heavily on the minds of leaders. But the speed and complexity of changing military technology, and the speed and reach of new media as tools of propaganda, will make crises increasingly difficult to manage, and add to the risks of hasty judgement and miscalculation.

Any potential Australian involvement in a conflict with China would most likely come about through a request from the United States. It is difficult to imagine that the Australia-US alliance would avoid fundamental damage were Australia to refuse to support America in a military conflict or confrontation with China. At the same time, Australian interests would be grievously affected by US-China or Japan-China conflict even if Australia endeavoured to stay out; the regional and global economic and rules-based order would be shaken even if hostilities were quickly brought under control. All of this makes a **major war in Asia** one of the relatively low-probability but very high-impact risks that Australia cannot afford to ignore.

More probable than war, however, is the possibility of growing mistrust and rivalry between China and one or more other countries, including the United States, incorporating some elements of a new Cold War. With the growth of China's global interests and military reach, including into the Indian Ocean, the number of potential friction points will increase, along with opportunities for cooperation. On the other hand, if China's growth

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story were to slow greatly, this could prove just as risky for regional stability: internal unrest might then increase, heightening the temptation for leaders to distract public opinion with nationalism and external tensions.

In strategic tensions with China short of war, the **balance of credibility** will become as important as the balance of hard power. A critical question will be the impact of increasingly powerful Chinese military 'anti-access' capabilities, like anti-ship ballistic missiles, or the willingness of America or other countries to risk their forces in possible confrontations with China.<sup>12</sup> A situation in which confrontation did not lead to conflict, but in which coercion was successfully brought to bear by China against a smaller nation, would be a dangerous precedent for a country such as Australia that relies on a rules-based order. Likewise, a successful act of coercion in which the United States did not support one of its allies could raise doubts about the credibility of other US alliances. Although unlikely, a greatly reduced US focus on Asia — through new isolationism — would be very harmful for Australia's ability to protect its interests.

*...Australia must think about how to keep itself connected to global flows.*

Continued economic growth in Asia will bring an increased and acute **dependence on sea-borne energy supplies**, including for Australia. Changes in energy linkages within the Indo-Pacific region and Australia's own energy security highlight how the baseline of Australian defence planning is shifting. Instead of thinking about insulating itself from the menaces of the world, Australia must think about how to keep itself connected to global flows. Sea lanes, communications links, and intricate multinational distribution and manufacturing chains are critical elements of the Australian economy, which can be disrupted — accidentally or deliberately. Meanwhile, multiple powers, notably China, are improving their long-range military capabilities, including submarines, missiles, cyber, and anti-satellite weapons. Isolation is becoming as much a liability as an asset.

Two trends in Australia's strategic energy situation highlight its vulnerability. Australia is expected to soon become the largest global exporter of liquefied natural gas (LNG) at a time when the major powers of Asia are intensifying competition for energy resources critical to sustaining their growth. Overall energy demand in Asia is expected to double by 2030,<sup>13</sup> and some scholars conclude that this "energy risk pivot" to Asia will introduce new strategic tensions as countries such as China, South Korea, Japan, India, and Singapore jostle to ensure continuity of supply.<sup>14</sup> Australia will be a critical regional exporter: it is anticipated that by 2018, Australian gas exports will provide more than half of Asia's LNG needs.<sup>15</sup>

Australia's economy, however, remains critically dependent on oil, domestic demand for which is due to nearly double between now and 2035.<sup>16</sup> Australia remains particularly dependent on importing refined oil. Automotive gasoline, for example, is sourced entirely from Singapore (52

per cent), Taiwan (27 per cent) and Korea (21 per cent) while 67 per cent of Australia's petroleum imports must transit through the waters of the Indonesian archipelago.<sup>17</sup> The precise figures shift year to year but the deep dependence on Southeast Asian sea-lanes remains the same. Australia has no strategic oil reserve or 'national champion' oil company, is currently the only International Energy Association member state failing to meet minimum net oil holdings standards, and could sustain less than six weeks usage of oil in the event of a supply disruption.<sup>18</sup> A Defence Force Posture Review in 2012 concluded that guaranteeing fuel supply for the Australian military "under the stress of major operations" is uncertain.<sup>19</sup>

The fragility of Australia's own domestic energy supply chain heightens its interest in a secure global order, magnifies its national vulnerability to conflict in the region, and increases the importance of protecting both maritime trade linkages and relationships with those Southeast Asian countries from and through which refined fuels are imported. Maintaining Australia's enhanced economic leverage in Asia through its status as a major LNG exporter will further deepen its interests in freedom of navigation through Indo-Pacific waters, including the Indonesian archipelago.

There is a high likelihood that **Indonesia** will remain a security partner for Australia, rather than posing a major threat. There is only a low probability that Indonesia will divert radically from democratisation or from a path of placing a premium on stable relations with its neighbours. Even then, Indonesian military capabilities would have to be transformed — and not just grow in budgetary terms — to become a profound threat to Australian interests. Any military tensions with Indonesia would probably occur only through the prolonged mutual mismanagement of some unlikely scenarios. What is more likely is the prospect of cooperation with an increasingly capable Indonesian military in relation to other challenges.

## RISKS ACROSS AND WITHIN STATES

Australia in the years and decades ahead will also face a wide range of transnational and sub-state security risks. In the **near neighbourhood** of East Timor, Papua New Guinea and the South Pacific, it remains likely that Australia will again be pressed to **take the lead in humanitarian or even armed stabilisation operations** as a result of continuing political instability and governance problems, rising and unmet societal expectations, resource pressures, population growth, the proliferation of lethal weapons, worsening public health challenges, the increased intensity of natural disasters, and the consequences of climate change. Political transition points such as forthcoming independence referendums in Bougainville and New Caledonia will produce particular periods of uncertainty.

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In theory, of course, an Australian government could choose not to intervene in its near region, but this would have a range of negative consequences. For example, extreme disorder in PNG could have direct implications for border security given how close this neighbour is to Australian territory. A failure to deliver security in the neighbourhood would harm Australia's reputation as a security partner. This would make it more imaginable that another power, such as China, might eventually become the preferred security provider in countries traditionally within Australia's zone of interest and influence, notably the South Pacific, Papua New Guinea and East Timor — with long-term implications for Australia's security interests.

Australia will also be expected to contribute to stabilisation or disaster relief **operations beyond the immediate neighbourhood**. The increasing urbanisation of Indo-Pacific Asia, and the fact that most of the emerging megacities are coastal, may increase governance challenges and unregulated population movements in the wider region. It will also leave more of the region vulnerable to environmental shocks such as natural disasters and the effects of climate change. The security needs of Australian expatriates and businesses will be another driver of a possible Australian security role in the broader neighbourhood and beyond. Australia's recent acquisition of highly visible capabilities, such as two large amphibious ships, will add to expectations of Canberra as a regional security provider in a crisis.

Pressure will remain on Australia to make significant contributions to stabilisation operations led by other powers, notably the United States, in countries further afield, including in the Middle East and Africa. The geographic reach of humanitarian, disaster relief, search and rescue, evacuation and other non-warlike operations involving Australian forces is likely to keep expanding across the Indo-Pacific and even beyond, assuming that Australia remains dependent on a globalised world order and that Australians continue to live, travel, and work overseas in increasing numbers.

As their regional and global interests continue to expand, emerging powers, especially China and India, are likely to become more active and capable security players in dealing with transnational challenges and threats to the global commons, such as piracy and natural disasters. Japan is also showing signs of becoming a more capable and confident military partner in the wider region. The key questions here are how much reliance can be placed on the **Asian giants as security partners** — both for Australia and for one another — and whether such partnerships can help to reduce mistrust over strategic differences.

Expeditionary activity to deal with transnational challenges such as piracy will provide a reason for emerging powers to extend their security footprint into unfamiliar regions, thus exacerbating suspicions among other countries: China's increased presence in the Indian Ocean, which

has deepened Indian mistrust, is a prime example. Either way, given the limits on American and other Western capabilities and willingness to project force, Australia will need to be flexible in working with **new and unfamiliar coalitions**, such as its collaboration with China and other Asian powers in the search for the missing Malaysian Airlines Flight MH370. China is becoming more confident and capable in projecting security capabilities far afield, including the use of aircraft, submarines, and ships able to embark troops. As its global interests continue to expand, China will come under increasing pressure to reinterpret its principle of non-interference — for instance if Chinese nationals or economic interests are threatened amid instability in distant lands.<sup>20</sup>

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Thirteen years after the terrorist attacks of 9/11 and eleven years since the US-led invasion of Iraq, **jihadi terrorism** and other forms of religiously-inspired violence remain security threats for many nations.

Terrorism does not threaten Australian sovereignty in the same way that might major conflict or coercion involving powerful states. Nevertheless, there is a very high probability that terrorism will pose persistent risks to the safety of Australian nationals and the wider national interest in an interconnected world. It would be dangerously complacent to assume that the suppression of jihadi **terrorism in Southeast Asia** is a permanent condition, particularly as new signs emerge of links between extremists in Southeast Asia and the Middle East.<sup>21</sup> Australians will face the terrorist threat both when they travel in the region and beyond, but also at home. The chances of a terrorist attack in Australia having a high impact — inflicting serious casualties or causing major damage to Australian societal cohesion — will depend considerably on the quality of domestic counter-terrorism capabilities, international cooperation and the resilience of Australian society.

Although domestic terrorism may not principally be a matter for the Australian Defence Force, it is likely to register highly in the threat perceptions held by the public. Moreover, there are likely to be continued expectations for Australian military involvement in counter-terrorism activities internationally, although military solutions alone will not be sufficient, and Australian forces will only have a chance of influencing global outcomes as part of robust coalitions including local partners.

In considering worst-case security scenarios worldwide, risks related to **weapons of mass destruction** — chemical, biological, but especially nuclear — cannot be ruled out. The proliferation of such weapons is not likely to be rapid: counter-proliferation measures and the prevention of nuclear materials from falling into terrorists' hands is one area where international cooperation has continued to strengthen.<sup>22</sup> The probability of a successful terrorist attack anywhere using a nuclear weapon will remain very low. One conceivable way such a weapon could be obtained would be through some kind of major disruption or security breakdown in Pakistan, but the day-to-day security of Pakistan's nuclear

weapons is greater than popularly imagined. An act of nuclear terrorism anywhere would have massive global consequences, provoking highly disruptive change and potentially major war: one of the ultimate in very low-probability but very high-impact security risks.

## TRENDS IN MILITARY RESPONSES TO RISK

Australia is not alone in facing the challenge of protecting its expanded, and increasingly enmeshed national interests. Several trends are apparent in the way countries around the world are thinking about the use of military force.

The need to use military force as an instrument of policy has not gone away. **War is far from obsolete**, even if it is far removed from the day-to-day experience of most people. Some scholars point to an historic decline in the incidence or lethality of wars,<sup>23</sup> while economists laud the peace-enhancing qualities of trade and investment interdependence. Nuclear weapons have reduced the likelihood of war between major powers. But fresh doubts are emerging about the supposed obsolescence of warfare.<sup>24</sup> War may no longer often be driven by economic calculations or competition for territory or resources but the age-old calculations of fear, deterrence, credibility, and domestic politics persist.

For Western countries war has largely become remote, expeditionary, and apparently discretionary. No longer do nations oscillate between peace and formal declarations of war. Instead, we are entering an era of constant and hybrid competition, in which gradations of force, occur continually across a broad variety of domains — not just military but at the intersection of military affairs, commerce, technology and information warfare, and throughout the global commons. In a finely calibrated global economy, it is easier to threaten disruption rather than destruction. As a result conflict can flare with little warning and coercive effects may be achieved rapidly. The cadence of conflict is accelerating, assisted by the volatility of public opinion enabled as never before by new communications technologies.

As the horizon of security risks becomes more crowded, the capacity to address these risks is not keeping pace. Advanced militaries are prioritising intelligence/surveillance capabilities and military 'jointness', integrated command and control systems, and smaller yet higher readiness forces. These militaries are more expensive and increasingly unable to prepare for all eventualities. Hence the importance of strategic decisions on defence procurement has increased.

The cost of defence is rising, as **military technology** becomes more sophisticated by the year. The most advanced military technology is becoming so expensive and sophisticated that it is difficult to imagine other powers keeping pace with the capabilities and innovation afforded

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by the United States (and its close allies) or increasingly by China. At the same time, a wide range of lethal capabilities are becoming increasingly available to smaller countries and non-state actors, and the rapid commercialisation of new technologies could give them options to inflict serious harm on a stronger, more risk-averse opponent. Both of these divergent trends mean that, for a country like Australia, with diverse and extensive interests yet limited defence capabilities of its own, there is an inescapable premium on partnerships and, in particular, the US alliance. The materially and politically confronting alternative would be to radically reorient national priorities towards military ends.

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The sheer proliferation of new technology, and the speed with which it is being adapted for military purposes, compounds the complexity of strategic decision-making. Precision strike weapons, remotely piloted (or potentially autonomous) weapons platforms, offensive cyber, and other new disruptive technologies are **increasing the pace of conflict**, including the speed at which it can begin and end. In the cyber domain, changes and attacks happen in milliseconds, therefore defence systems need to be either automated, or autonomous: able to respond instinctively to threats. The Defence Science and Technology Organisation is already working on transitioning Australia's cyber defences to rely more on autonomous systems.<sup>25</sup> Command decisions will need to be locked in prior to any conflict erupting, consequences analysed ahead of crisis, and reduced political flexibility during a conflict anticipated.

Over the next 20 years, major advances can be expected in powerful technologies with potentially **game-changing military applications**. These include unmanned and autonomous systems, directed energy weapons, hypersonic missiles able to penetrate missile defences, additive manufacturing (such as 3D printing), cyber capabilities, nanotechnology, viruses engineered to target specific ethnicities or individuals, and human performance modification.<sup>26</sup> Innovation is coming from the general commercial sector and universities as well as from dedicated military research efforts.<sup>27</sup> Already, for instance, universities are exploring the application of quantum technology for defence and intelligence uses. Such technology, which focuses on the use of subatomic particles, could make future sensors in a submarine, for example, up to eight times more powerful than sonar and much less detectable.<sup>28</sup> At the same time, the range of countries selling defence technology can be expected to grow, with Asian powers including Japan, China, South Korea and India becoming more frequent suppliers of conventional defence platforms and weapons systems, alongside established suppliers such as the United States, Europe, Russia, and Israel.

The main consequence for Australia of all of this new technology is that it could make future battlefields wider, attacks (such as cyber campaigns) harder to detect, and conflict faster and more difficult to manage.

## WAR IN SPACE?

All of these factors — constant competition, the lingering possibility of war, complex systems, vulnerability, new technology, and new players — interact in an increasingly critical domain for defence planners: **space**. Planning for the possibility of space-based conflict, and the need to build resilience to guard against the loss of space-based capabilities, are new features of the strategic environment that Australia faces.<sup>29</sup> US satellites and ground-based space infrastructure confer an asymmetric advantage in intelligence, surveillance, and reconnaissance on the US military and its allies. These space assets are also essential to the day-to-day functioning of interconnected economies such as Australia's where, for instance, atomic clocks on US Air Force GPS satellites provide timestamps essential to facilitate credit card transactions.

*Space is becoming an area of intensified strategic competition...*

Space is becoming an area of intensified strategic competition, one characterised by mistrust between the major powers. US planners assume China would seek to blind the US military in the event of conflict by disrupting or destroying space-based systems — and Chinese planners probably assume the same. China completed an unannounced anti-satellite missile test in 2007 (creating significant debris still in orbit) and is believed to be developing new means for destroying US satellites. Malicious non-state actors could also interfere with space assets by dazzling imagery satellites with lasers, for example, or jamming communications downlinks. There is significant crossover between the space and cyber domains; actions in one will have consequences in the other. A potential adversary would likely target both. This increases the possibility that malicious individuals or sub-state or state-sponsored groups could disproportionately damage countries by targeting space assets through the cyber domain.

## SCENARIOS FOR THE FUTURE AUSTRALIAN DEFENCE FORCE

In the next 20 years there will likely be numerous situations in which Australian governments require military options. Here we introduce five hypothetical examples of the many scenarios that are possible and plausible. They illustrate the range and complexity of potential future risks, and call attention to the scope of capabilities the Australian Defence Force might need if it is to provide flexible options for government.

Whilst some of these scenarios may seem fanciful, they are no more so than actual events that strategists failed to foretell over the last 20 years in East Timor, Afghanistan, the Solomon Islands, Iraq, Ukraine, and the global war on terror inspired by the 9/11 attacks. Whilst it is impossible to measure the probability of any of these particular future situations, it is very likely Australian governments will be confronted with **security**

**contingencies of similar complexity and novelty** in the years ahead, and quite possibly more than one at the same time.

*Show of force — South China Sea, 2017:* Increasing Chinese maritime assertiveness in the South China Sea since 2010 has worried neighbouring countries with competing territorial claims. At the beginning of 2017, Chinese state-owned oil companies deploy oil rigs to contested waters, this time with no stated intention to leave. Flotillas of Chinese navy and civilian vessels have swarmed to ward off approaches by foreign coast guard and naval forces, while Chinese military aircraft have undertaken increasingly risky manoeuvres. This has led to a series of worsening incidents at sea, including collisions, exchanges of warning shots, and disruptions to civilian shipping. Responding to requests from Vietnam and the Philippines, and with the stated aim of 'monitoring', a new and determined US Administration decides to send a task force from the 7<sup>th</sup> Fleet to the South China Sea and calls on several allies and partners, including Australia, to provide a naval and air contribution. Risks of confrontation, miscalculation, and combat must be taken into account. The Australian Government considers a range of options including the despatch of maritime surveillance patrol aircraft, through to the deployment of naval surface forces (either independently or embedded with the US Navy), and submarines.

*Volatile neighbour — Papua New Guinea, 2020:* Papua New Guinea's population in 2020 has reached 8.5 million<sup>30</sup> and LNG royalty streams of over US\$3 billion annually are flooding a polity already plagued by corruption. Construction of new LNG facilities has stalled due to worsening security in remote areas. Promised royalty-funded infrastructure developments have failed to materialise and urban poor unemployment rates are at a record high.<sup>31</sup> Civil-society figures working to expose government corruption call a national strike to protest against what they are calling "PNG's lost decade"; the security response gets out of control, and poorly disciplined security forces kill protesters. The trouble cannot be contained locally: digital communications and social media now connect many parts of the country to the capital and its political tensions.<sup>32</sup> Increasing violence in multiple centres overwhelms the capacity of the PNG security forces. Rioting destroys government buildings, LNG infrastructure is sabotaged, and expatriates begin evacuating. The PNG Government requests Australian support to restore order. Several countries (including the United States) request Australian protection for their citizens located in PNG, and that Australia lead evacuation operations. China offers to contribute military forces to a stabilisation effort, while maintaining the option of a unilateral intervention to protect its nationals and investments.

*The PNG Government requests Australian support to restore order.*

The Australian Government's options range from a limited deployable joint task force headquarters for command and control purposes with niche specialist force elements, through to a brigade-sized joint task force operating primarily from amphibious ships utilising large numbers



*In 2025, Australia is in a number of disputes with increasingly powerful Asian countries...*

of helicopters for mobility within PNG. Additional intelligence, surveillance, and reconnaissance capabilities as well as extensive logistics assets are also required. The deployment of Australian civilian agencies and Australian Federal Police is also considered.

*Digital Highway Patrol — Northern Australian waters, 2025:* Australia's increasingly digitised, service-based economy is reliant on connections to the rest of the world. More than 95 per cent of Australia's digital traffic travels through 19 undersea telecommunications cables, with a small amount of residual capacity managed through networks of Australian and internationally owned satellites in geosynchronous orbit.<sup>33</sup> In 2025, Australia is in a number of disputes with increasingly powerful Asian countries, including over negotiations for long-term Australian LNG contracts. Amidst this, outages suddenly begin affecting the 25 per cent of cables that connect to Australia's west coast. Australian intelligence officials suspect this might be part of a broad campaign of coercion by a foreign state. Commercial cable operators suspect that, in addition to cyber interference with Australian telecommunications systems, direct physical interference with undersea cables may be taking place — potentially in the Sunda Strait through which most of the western cables run.<sup>34</sup> The Australian Government requires the ADF to investigate these disturbances, identify and counter any threats, and provide security for any necessary commercial repair efforts. The Australian Defence Force assets potentially involved in the response include the Australian Signals Directorate (ASD), naval surface and submarine force elements, maritime surveillance and patrol assets, combat strike aircraft, and Special Forces. The response also requires extensive utilisation of commercial assets, US capabilities including satellites, and possibly defence space infrastructure yet to be acquired by the Australian Defence Organisation.

*Evacuation operations — Burma 2030<sup>35</sup>:* In 2030, Burma is home to 72 million people and has benefited from two decades of improved economic growth since military rulers allowed partial democratisation, a liberalised economy, and foreign direct investment.<sup>36</sup> China, India, Japan, the United States, Australia, and Singapore all have extensive investments in the country's competitive manufacturing and resources industries.<sup>37</sup> Foreign investment also underpins the transport and telecommunications infrastructure that has made Burma a hub between Southeast and South Asia.<sup>38</sup> Development along the Andaman Sea coast has also led to a tourism boom. Thousands of Australians now live and work in Yangon, with thousands more visiting as tourists at any given time.

Yet Burma's political stability remains brittle. Worsening power plays involve the military leadership, civil-society organisations frustrated by the stalled transition to full democracy, ethnic communities protecting their interests, and political movements backed by external powers.<sup>39</sup> This political fragility is exposed when a category five tropical cyclone

makes landfall in the country, killing thousands and extensively damaging key infrastructure. The Burmese authorities respond inadequately to the growing crisis and, in regions where the cyclone destruction has been greatest, rioting erupts as the Burmese Government fails to deliver medical services and food and water supplies dwindle. Long-running civil conflict continues in some areas even as relief efforts are made.

The international community is unable to reach rapid agreement on how to intervene, and factions within the Burmese Government disagree on whether foreign governments should be allowed into Burma to render assistance. Public pressure mounts on the Australian Government to evacuate injured Australian citizens before they die from lack of medical aid, clean water, and food supplies. Several other countries, including the United States, India, and China also contemplate military operations to evacuate large numbers of their nationals, despite the risk that this may be perceived by local forces as aggression. The Australian Government's options range from a tailored contribution of Defence assets to an international coalition force, through to a large Australian amphibious task force with embarked troops and aviation assets, supported by naval forces and intelligence assets.

*Deterrence — Cocos Islands 2035:* Indian Ocean shipping, particularly of energy supplies, continues to be critical to the economies of Asia as well as Australia's economy. Despite increased utilisation of nuclear power, trans-Asian oil and gas pipeline development, and increased domestic energy efficiency, China remains reliant on Indian Ocean shipping for more than 70 per cent of its oil needs.<sup>40</sup> Australia too is reliant on the movement of liquid fuels from the Persian Gulf to Singapore to sustain its own domestic energy requirements. The United States has become less dependent on energy from the Gulf region due to development of unconventional oil and gas resources and increased energy efficiency.<sup>41</sup> As a result, and amid long-term defence austerity measures, the US Navy has reduced its presence in the Indian Ocean. This includes a significant drawdown at the Diego Garcia naval base, which the United States and United Kingdom are now under intense political pressure to depart. The newly dominant powers in the Indian Ocean are the Indian and Chinese navies, whose tense relationship often leads to incidents at sea. Both the Indian and Chinese navies have carrier task forces and submarines regularly operating in the Indian Ocean.

India establishes a major new naval base in the Nicobar Islands, near the Malacca Straits. Feeling threatened by this, and by a semi-permanent Indian naval presence in Vietnam, China considers how to strengthen its presence in the Indian Ocean. Australian intelligence agencies assess that the Chinese Navy is seriously considering the value of the Cocos Islands as a lily pad from which to protect its shipping and disrupt Indian and Japanese shipping. An increased presence of

*...amid long-term defence austerity measures, the US Navy has reduced its presence in the Indian Ocean.*

Chinese naval and fishing vessels is apparent in waters near Cocos and Christmas islands, as are intensified Chinese surveillance and reconnaissance efforts in the area. In Singapore, a seemingly local group begins campaigning for Singaporean sovereignty over Cocos Islands and Christmas Island, echoing arguments made by some prominent Singaporeans in the 1960s and 1970s. Amid deterioration in China-India relations, Australia begins to consider how it might deter any external interference in its Indian Ocean territories, which have become vital bases for its own maritime surveillance.

The Australian Government considers how best to deploy forces to put weight and resolve behind a diplomatic effort to deter potential crisis. This could require many of the air and naval force elements in the Australian Defence Force, plus amphibious army units and some capabilities that the current Defence Force lacks such as integrated air defence, coastal anti-ship missiles, and long-range strike.

## CONCLUSION

Each of these five scenarios goes some way to illustrating two facets of the strategic environment ahead. Firstly, security challenges will likely possess a complexity borne from a multipolar regional environment, an array of possible threat domains, a profusion of sub-state, non-state, and commercial actors, as well as the intricacies of evolving military coalitions. Secondly, in each, Australian national interests are diffused well beyond the Australian homeland and their protection dependent on 'unsovereign' systems, both in capabilities and political partnerships. The prospect of direct force against Australian territory, though, is only a facet of the least likely scenario we have sketched, some 20 years hence. The preponderance of scenarios in which an Australian government might choose to use military force involve preserving Australia's connections to the wider world, and maintaining the ability of our citizens to live, work, and travel freely and securely within it. That requires a contribution to a rules-based regional and global order, as well as influencing the way it adjusts to changes in the balance of power.

As the strategic contours of Indo-Pacific Asia shift, and thinking on Australia's place in this region changes, trade-offs between Australia's limited defence capabilities will become more apparent. If conflict ensues it will unfold in a manner unfamiliar to most Australians and involve new domains and technologies, which will place additional strains on military commanders and political decision-makers. In aggregate, Australia's strategic risk burden is increasing. Facing particular vulnerability are Australia's lifelines to the world and its reliance on regional and global order. The challenge for the national defence establishment will be to provide options to government to manage this new horizon of risk.

*In aggregate, Australia's strategic risk burden is increasing.*

## NOTES

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<sup>5</sup> Colin S. Gray, *Strategy and Defence Planning: Meeting the Challenge of Uncertainty* (Oxford: Oxford University Press, 2014).

<sup>6</sup> Richard Brabin-Smith, "Force Expansion and Warning Time," *Security Challenges* 8, no. 2 (2012): 33.

<sup>7</sup> This paper adopts an Indo-Pacific definition of Australia's region. See for example Rory Medcalf, "In Defence of the Indo-Pacific: Australia's New Strategic Map," *Australian Journal of International Affairs* 68, no. 4 (2014), 470-483.

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<sup>9</sup> Lloyd's Register, QinetiQ & the University of Strathclyde, *Global Marine Trends 2030* (Glasgow: University of Strathclyde, 2013), 77.

<sup>10</sup> Ministry of Defence, *Global Strategic Trends - Out to 2045* (London: UK Government, 2014), 93-96. *The Economist* predicts Chinese defence spending will outstrip US defence spending by 2025, see *The Economist*, "The Dating Game", *The Economist Online*, 27 December 2011.

<sup>11</sup> Pew Research Center, *Global Opposition to U.S. Surveillance and Drones, but Limited Harm to America's Image*, (Washington DC, 2014), <http://www.pewglobal.org/2014/07/14/chapter-4-how-asians-view-each-other/>; and media coverage in Andrew Browne, "Asian Nations' Fears of War Elevated as China Flexes Muscle, Study Finds," *Wall Street Journal Asia*, <http://online.wsj.com/articles/asian-nations-fears-of-war-elevated-as-china-flexes-muscle-study-finds-1405361047>.

<sup>12</sup> *Military and Security Developments Involving the People's Republic of China 2014: Annual Report to Congress* (Washington: Department of Defense, 2014), 7.

<sup>13</sup> The World Bank, *Winds of Change: East Asia's Sustainable Energy Future* (Washington DC: The World Bank, 2010), 48.

<sup>14</sup> Bruce Jones, David Steven and Emily O'Brien, *Fueling a New Order: The New Geopolitical and Security Consequences of Energy* (Washington DC: The Brookings Institution, 2014).

<sup>15</sup> The IGU 2014 LNG report anticipated that total LNG demand in the Asia-Pacific market will equal 165 MTPA with Australian export capacity at approximately 85 MTPA. International Gas Union, *World LNG Report - 2014 Edition* (Oslo: International Gas Union, 2014), 18-19.

<sup>16</sup> International Energy Agency, *Energy Policies of IEA Countries: Australia - 2012 Review* (Paris: International Atomic Energy Agency, 2012), 138.

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<sup>18</sup> John Blackburn AO, *Australia's Liquid Fuel Security: A Report for NRMA Motoring and Services*, (Sydney: NRMA Motoring and Services, 2013), 9.

<sup>19</sup> Department of Defence, *Australian Defence Force Posture Review* (Canberra: Commonwealth of Australia, 2012), 49.

<sup>20</sup> Mathieu Duchatel, Oliver Brauner and Zhou Hang, "Protecting Chinese Interests Overseas: The Slow Shift Away from Non-Interference," *SIPRI Policy Paper 41*, June 2014.

<sup>21</sup> "Indonesia Probes Islamic State Ties in Terror Arrest," *Wall Street Journal*, 14 September 2014, <http://online.wsj.com/articles/indonesia-probes-islamic-state-ties-in-terror-arrests-1410705066>.

<sup>22</sup> Graham Allison, "The Easiest Way We Could Stop the Prospect of Nuclear Terrorism," *Defense One*, 24 March 2014, <http://www.defenseone.com/threats/2014/03/easiest-way-we-could-stop-prospect-nuclear-terrorism/81157/>.

<sup>23</sup> Steven Pinker, *The Better Angels of our Nature: Why Violence has Declined*, (New York: Penguin, 2012).

<sup>24</sup> Robert J. Samuelson, "Global Prosperity is No Panacea: The Post-Euphoric World," *Washington Post*, 17 August 2014, [http://www.washingtonpost.com/opinions/robert-j-samuelson-global-prosperity-is-no-panacea/2014/08/17/388b1eb8-24d3-11e4-8593-da634b334390\\_story.html](http://www.washingtonpost.com/opinions/robert-j-samuelson-global-prosperity-is-no-panacea/2014/08/17/388b1eb8-24d3-11e4-8593-da634b334390_story.html).

<sup>25</sup> Department of Defence, *Cyber 2020 Vision* (Canberra: Commonwealth of Australia, 2014), 28.

<sup>26</sup> Shawn Brimley, Ben Fitzgerald and Kelly Saylor, *Game Changers: Disruptive Technology and U.S. Defense Strategy* (Washington DC: Center for a New American Security, 2013). Ministry of Defence, *Global Strategic Trends - Out to 2045* (London: UK Government, 2014), 89, 94-95. In some technology areas, such as hypersonics, unmanned systems and nano-scale mechanics, China already has a publicly-documented focus on scientific innovation with military purposes. *Military and Security Developments Involving the People's Republic of China 2014: Annual Report to Congress* (Washington: Department of Defense, 2014), 45.

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William Lynn, "Creative Disruption: Strategy, Technology and the Future Defense Industry," (panel, 8th Annual Center for a New American Security National Security Conference, Washington DC, 11 June 2014).

<sup>28</sup> Keye Martin, 2013, "One + One is not Two" in *Innovation Magazine*, US Department of Defense, Office of Naval Research, 10, Spring 2013

<sup>29</sup> Department of Defence, "Minister for Defence - Space Agreement a Milestone in International Cooperation," media release, 21 May 2014,

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<sup>30</sup> Department of Foreign Affairs and Trade, *Demographic and Development Statistics for PNG*, (Canberra: Commonwealth of Australia, 2013), <http://aid.dfat.gov.au/countries/pacific/png/Pages/statistics-png.aspx>.

<sup>31</sup> Asian Development Bank, *Papua New Guinea: Critical Development Constraints*, (Mandaluyong City: Asian Development Bank, 2012), 24-26.

<sup>32</sup> Danielle Cave, *Digital Islands: How the Pacific's ICT Revolution is Transforming the Region*, Lowy Institute Analysis (Sydney: Lowy Institute for International Policy, 2012), <http://www.lowyinstitute.org/publications/digital-islands-how-pacifics-ict-revolution-transforming-region>

<sup>33</sup> TeleGeography, *Submarine Cable Map*, (Washington DC/San Diego/Exeter/Singapore: TeleGeography, 2014), <http://www.submarinecablemap.com/> and Kathryn Young, "The Economic Importance of Submarine Cables," *Semaphore*, no. 2 (2012) <https://www.navy.gov.au/media-room/publications/semaphore-june-2012-1>.

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<sup>35</sup> Though Yangon is one hypothetical location for a scenario requiring a large-scale Non-combatant Evacuation Operation (NEO) of Australians, there are others that could well present some similar circumstances, or already do. For instance Dubai, Bangkok or even Hong Kong have substantial resident or visiting Australian populations, and could experience political crises with risk of security tensions.

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<sup>38</sup> Nicholas Farrelly, "Location, Location, Location," *Inside Story*, 3 July 2014, <http://inside.org.au/location-location-location/>.

<sup>39</sup> *Ibid.*

<sup>40</sup> John Lee, "China's Geostrategic Search for Oil," *The Washington Quarterly* 35, no. 3 (2012): 75-92.

<sup>41</sup> Robert D. Blackwill and Meghan L. O'Sullivan, "America's Energy Edge," *Foreign Affairs* 93, no.2 (2014): 102-114.

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