



Australian Government

# COEXISTENCE IN THE WOOMERA PROHIBITED AREA

## 2018 REVIEW





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Cover photos: A windmill on the land (Credit: Leadinglights, iStock by Getty Images), an F-35A Lightning II Joint Strike Fighter aircraft (Credit: Department of Defence), underground at Prominent Hill mine (Credit: Oz Minerals), and local community members with Air Force personnel standing in front of a KA350 King Air in Coober Pedy (Credit: Department of Defence).

**IMAGE WARNING** Aboriginal and Torres Strait Islander people are advised that this document may contain images or content referring to deceased persons. It may also contain words or descriptions that are culturally sensitive. The term Indigenous is occasionally used throughout this document to refer to Aboriginal and/or Torres Strait Islander people.

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ISBN 978-1-925890-04-4



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The report should be attributed as the *Coexistence in the Woomera Prohibited Area 2018 Review*.



## Australian Government

The Hon Christopher Pyne MP  
Minister for Defence  
Parliament House  
Canberra ACT 2600

Senator the Hon Matthew Canavan  
Minister for Resources and Northern Australia  
Parliament House  
Canberra ACT 2600

Senator the Hon David Fawcett  
Assistant Minister for Defence  
Parliament House  
Canberra ACT 2600

Dear Ministers

In May this year I was appointed to review the coexistence framework that governs the Woomera Prohibited Area (WPA). I am pleased to provide you my report, which makes recommendations for a contemporary coexistence regime that continues to balance Defence's needs from the area, with the requirements of others – particularly Aboriginal groups, the resources industry, pastoralists and the South Australian Government.

The report sets out conclusions and recommendations drawn from extensive consultation with the diverse range of people and groups that have an interest in the WPA.

These consultations examined how the current framework is working, where it might be improved, and the way the stakeholder environment within the WPA has changed since 2014 when the current coexistence framework was established.

It has been a privilege to hear the views of all who have an interest in the WPA. I would like to thank those who have invested their time in sharing their opinions, either through submission to the Review or during engagement activities.

I would also like to acknowledge the work of the Review team from the Department of Defence and the Department of Industry, Innovation and Science and all who supported their efforts across government, both State and Commonwealth.

Yours sincerely,

A handwritten signature in black ink that reads 'Gordon de Brouwer'.

**Dr Gordon de Brouwer PSM**

11 December 2018



*A Heron Remotely Piloted Aircraft on the taxi way during training activities in Woomera South Australia. Credit: Department of Defence.*



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# Executive Summary

## Executive summary

In May 2018, the Minister for Defence and the Minister for Resources and Northern Australia appointed Dr Gordon de Brouwer PSM to lead a review of coexistence arrangements in the Woomera Prohibited Area (WPA). Coexistence recognises that while Defence requirements for the testing and evaluation of military systems – particularly those operated by the Royal Australian Air Force (RAAF) – are given precedence within the WPA, the area is also important for pastoral activity, resources exploration and mining, Aboriginal native title and cultural heritage, and other activities such as tourism and scientific research.

The current coexistence arrangements in the WPA were put in place following an earlier major review of the area in 2010-11. It saw the area arranged into three Defence use zones – green, amber and red – along with a time-share arrangement and access permit system. Under the time-share system, Defence has continuous use of the red zone, and a capped number of days that it can exclusively use the amber and green zones. Under the access permit system, the Minister for Defence may issue a permit to an individual or body corporate to access the green and amber zones of the WPA for purposes including resource exploration and production, tourism, environmental and other purposes. These arrangements are given legislative effect in the *Woomera Prohibited Area Rule 2014*.

The WPA today encompasses an area of 122,000 square kilometres – roughly the size of England. It is the largest land-based test range in the Western world. The WPA includes the traditional lands of six Aboriginal groups. Their history and deep ties to the land date back over thousands of years. Today they access the WPA for traditional ceremonies, hunting, heritage site protection, and cultural activities – as well as being involved in commercial activity in and around the area.

The word ‘Woomera’ refers to a spear-throwing device that extends the distance a spear can be thrown. The Woomera Range Complex’s motto ‘sharpen the spear’ is a reference to this unique Aboriginal invention.

The WPA contains economic deposits of copper, gold, iron, uranium, silver, titanium, and zirconium – as well as other minerals. Key deposits in the WPA include the Prominent Hill copper, gold and silver deposit which also contains uranium resources, the Challenger gold and silver deposit, the Cairn Hill iron deposit, the Giffen Well and other magnetite iron deposits, the Peculiar Knob mixed hematite and magnetite iron deposit, and the Lake Phillipson and Penrhyn coal deposits. The Barton West heavy mineral sands deposit contains the bulk of the titanium and zirconium resources in the WPA.

The WPA today encompasses 26 pastoral stations covering 39 leases, most of which are operated as commercial enterprises for cattle and sheep grazing.

Key civilian infrastructure traversing the area includes the Stuart Highway and the Tarcoola to Darwin rail line which connect northern and southern Australia.



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Established in 1947, the Woomera Village is today part of RAAF Base Woomera but is also accessible to the public. Its population peaked in the mid-1960s at around 7,000 people, but has declined to less than 200 today.

According to Geoscience Australia and the Department of Industry, Innovation and Science, the undiscovered mineral resources in the WPA could allow for five new additional mines, while an optimistic scenario could see 13 new mines. The scenarios consider what is possible from a geological perspective in the longer term. That potential notwithstanding, many Review interlocutors pointed to the challenge of operating in a remote environment with minimal infrastructure, the significant depth of mineral deposits, challenges in penetrating some types of mineral cover, and scarcity of water in some areas. They all saw further potential in developing mines in the WPA, but did not envisage many new or expanded operations in the near-term. The area also has potential – as yet unquantified – for oil and gas.

The 2018 WPA Review's Terms of Reference call for a contemporary coexistence framework that accounts for changes since the coexistence arrangements were first developed in 2010-11 as well as the evolving future requirements of those who access the WPA, particularly Defence.

To that end, the Review consulted extensively, including public consultations, 14 written submissions to the Review and many face-to-face meetings.

Since the 2010-11 Review mineral prices have undergone a significant fall, but there are some cases – such as copper – where demand is on the rise again. Pastoralists in the WPA have continued to toil in demanding conditions, but are currently enjoying strong prices for wool. Of particular significance, there has been an increased recognition in recent years of Australia's Aboriginal and Torres Strait Islander history and culture. That national focus has been reflected on-the-ground in the WPA, with strong and productive relationships between the Department of Defence and local Aboriginal groups.

There have also been significant geopolitical developments since 2010 which have made Australia's strategic environment more complex. The 2017 Foreign Policy White Paper points to a world that is more interconnected and interdependent than at any other time, with Australia facing a more dynamic, contested and competitive regional environment in which powerful drivers of change are converging. The Australian Security Intelligence Organisation has noted that Australia's position as a major commodity supplier, scientific and technological innovator, and potential joint venture partner makes it a target of foreign states seeking to gain an advantage. It also says that Australia's military modernisation program, including niche research and development capabilities, is of interest to a wide range of foreign intelligence services seeking to obtain or compromise sensitive technologies.

Recognising that Australia will continue to face greater security uncertainty and complexity, the 2016 Defence White Paper and its accompanying Integrated Investment Program sets out a comprehensive program to enhance Australia's defence capability, deepen international security partnerships and collaborate with defence industry and science and technology research partners in support of Australia's security. For the RAAF, new advanced platforms have been introduced in recent years, including the Joint Strike Fighter, Wedgetail, Growler, P-8 Poseidon and Triton airborne platforms – along with strengthened intelligence, surveillance and reconnaissance, space, electronic warfare and cyber security capabilities.

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The introduction of such systems will drive increasingly complex testing, training and evaluation programs. As a result, Defence is increasing its investment in the WPA, which will see approximately \$300 million being invested from 2018 through to 2021 to deliver instrumentation system and facilities upgrades. Scoping works are underway for a further \$500 million of investment in redeveloping the Woomera Village and airfield precinct between 2022 and 2025. Other smaller projects over the last five years will bring new investment in the WPA in the decade 2015-2025 to approximately \$900 million.

Defence anticipates that its operations within the WPA will increase steadily and substantially from 2019. Over the next decade, the area will become critical for the development, testing and evaluation of new Defence capabilities, particularly high-speed, long-range and non-kinetic weapons, which require increasingly large and secure test facilities. The WPA offers an environment unique in the Western world, with its key assets being its large geographic size, low population density, electromagnetic quietness and secure environment.

The greatest growth area will be the testing of non-kinetic systems that do not rely on explosive force or chemical reaction, and instead use the electromagnetic spectrum to, for example, damage or degrade systems reliant on wireless or radio frequency networks. Because these systems are invisible, deliver an effect over a wide area and cannot always be easily contained, testing must be done in an area like the WPA where there is reduced risk of conflicting with civilian infrastructure or communications systems – or of civilian systems interfering with Defence equipment.

The WPA is anticipated to become more valuable as an area for international engagement and cooperation, particularly with the United States and United Kingdom. Both see significant value in the unique conditions offered by the area, including its secure and safe environment.

Feedback to the Review is that the coexistence framework and the WPA Rule are, overall, working effectively. A recurring theme during consultations was that strong, productive and open relationships are critical to coexistence. Key individuals, particularly within the Department of Defence, were highlighted as making exceptionally strong contributions to the relationships underpinning coexistence in the WPA. They were noted as always looking to minimise tensions inherent in the WPA arrangements, and maximise the collective value of the area for its multiple purposes. The Woomera Prohibited Area Coordination Office in the Department of Defence was seen as providing valuable, professional and generally timely assistance on WPA processes and procedures.

Almost all Aboriginal groups emphasised that the improved relationship was the result of enhanced people-to-people links between Defence and Aboriginal groups, particularly efforts made by the WPA Range. The RAAF Regional Compliance Officer program was highlighted as a particular success. Introduced in 2016, it has seen representatives from Aboriginal groups in the WPA become valued members of the WPA Compliance Monitoring Team, which ensures the safety and security of Defence activity in the WPA.

Strong on-the-ground cooperation in the WPA reflects the fact that Defence personnel in the area are an important part of the remote but closely connected community in the WPA region.

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The Review found that the existing coexistence arrangements and the WPA Rule are fundamentally sound. Overwhelmingly, the arrangements put in place following the 2010-11 Review have provided the guidance and certainty sought by non-Defence users, particularly the resources sector.

There is, however, scope to make some valuable improvements to the arrangements, including to help manage emerging pressures.

Recognising that the success of current arrangements reflects the dedication, pragmatism and good judgement of those involved in implementing the current coexistence framework – as well as the innovative policy and legal foundations set by the 2010-11 WPA Review – the 2018 Review recommends that contemporary coexistence give as much emphasis to strong and productive relationships, as to sound legal and policy frameworks.

The Review makes 12 recommendations which respond to issues raised with the Review team, as well as the Review's own observations and judgements. The recommendations reflect the enduring critical importance of the area to national security – and that Defence use should continue to be given precedence – while also recognising the considerable value the area holds for Aboriginal cultural heritage, mineral resources, pastoral operations, environmental research and other scientific activity.

The recommendations provide the potential to introduce greater flexibility into WPA zoning arrangements, while also ensuring the value of the area for Defence testing – particularly its security and electromagnetic quietness – is preserved. There is important guidance for those wishing to access the WPA for commercial purposes, particularly mining, on the factors they should consider and incorporate into their business models if they wish to establish a business in the WPA. Much of that guidance is also applicable to existing commercial operations in the area.

A strengthened role for the WPA Advisory Board is recommended, including a strategic forward work program that more closely connects the Advisory Board to WPA stakeholders, and assists the Commonwealth and South Australian Government to acquit their responsibilities as joint custodians of the WPA coexistence arrangements. Further geological and economic analysis of the mineral resources potential of the Gawler Craton area, including the red zone within the WPA, is proposed.

The report includes proposals and ideas to build on the already strong relationship between Defence and Aboriginal groups in the WPA, assist pastoralists to manage some of the impacts that Defence testing can have on the land that they lease from the South Australian Government, and to update the day-to-day administration of the WPA arrangements.

Recognising the complexity of the WPA environment and the rapid pace of contemporary change, a further complete review of WPA arrangements is recommended by 2025.

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## Consolidated recommendations

To ensure coexistence endures in the Woomera Prohibited Area and remains contemporary, the 2018 WPA Review recommends that:

- 1. Building on the success of current arrangements, contemporary coexistence in the WPA should focus as much on strong and productive relationships as on sound legal and policy frameworks.** Defence national security requirements within the WPA should continue to take precedence. As well as being critical to Defence testing and evaluation, the WPA should continue to be managed as a place of national significance for Aboriginal cultural heritage, mineral resources, pastoral operations, environmental research and other scientific activity. The Commonwealth and the South Australian Governments should continue to approach their custodianship of the area as a shared responsibility, with the goal of maximising the value of the area for state and national benefit.
- 2. Defence and the South Australian Government should employ a collaborative co-design process to determine the feasibility of a more flexible grid-based arrangement for the WPA green zone,** in close cooperation with the resources industry and other WPA stakeholders. If required, the Government should amend relevant legislation to give effect to a new model. Even with a more flexible green zone arrangement, companies operating in the WPA must continue to incorporate shut-downs in their business models. Tourists and others relying on roads and rail in the WPA must remain alert to closures.
- 3. All users of the WPA should give greater emphasis to managing the introduction and use of technology in the area** – particularly Defence, mineral resources companies and pastoralists. The *Woomera Prohibited Area Rule 2014* should be amended to introduce a mechanism for the Minister for Defence to determine by legislative instrument what constitutes ‘notifiable equipment’ that must be approved by Defence before being brought into the WPA. In consultation with the WPA Advisory Board, Defence should annually re-examine and, if necessary, update the notifiable equipment list to ensure that it remains contemporary and practical for the WPA. WPA users proposing to introduce new technology or equipment into the area should consider engaging third-party technical advisers with the appropriate expertise and security arrangements to assist them develop proposals that account for the unique requirements of operating in the WPA. Anybody who lawfully accesses the WPA should ensure they are aware of obligations to seek approval from Defence before using notifiable equipment or technology within the area, and should consult with Defence if they are uncertain.
- 4. To manage the risks to national security associated with investment in the WPA, a key consideration for Defence when it assesses WPA access applications should be whether companies have substantive Australian ownership, control and influence.** Defence should require businesses wishing to operate in the WPA to demonstrate strong transparency, independence in decision making, and institutional resistance to exploitation by any foreign government for intelligence gathering or foreign interference, or malicious personal action. Defence should implement a policy of arm’s-length foreign investment in the WPA for operations where foreign influence or related factors are a concern, under an arrangement where the investor has limited or no physical access to the area, uses only

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approved contracted services for any on-the-ground work or plant and equipment, and is subject to strong compliance.

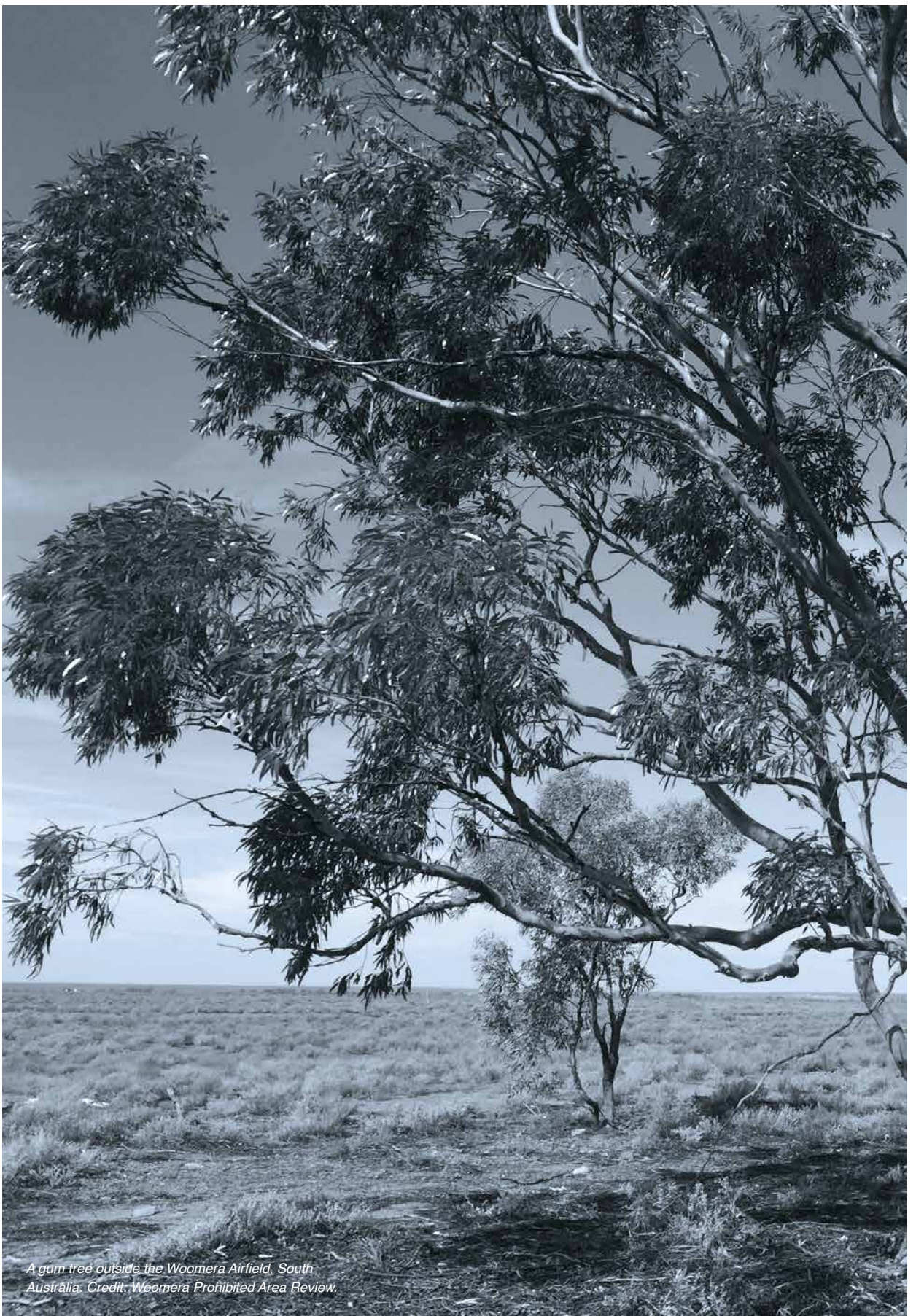
5. **Geological and economic analysis of the mineral, energy and groundwater resources potential of the Gawler Craton area, including the red zone within the WPA, should continue**, led by the South Australian Government in consultation with the Department of Industry, Innovation and Science. Decisions by Government about coexistence in the WPA should be fully informed about both Defence technology and economic prospects. A first phase should draw on new data that will become available from the South Australian Government's aerial geophysical surveys of the Gawler Craton, and should not involve any on-the-ground work in the red zone. A second or later phase should incorporate an evaluation and cost benefit analysis – with input from the WPA Advisory Board – of the findings from phase one, for decision by the Minister for Defence. The evaluation should determine what, if any, on-the-ground data acquisition activity in the red zone would be required to further understand its mineral prospectivity, the likely costs and benefits, and whether government conducted geoscience survey activity could be accommodated without jeopardising Defence activity.
6. **To address concerns about the feasibility of developing new mines in the WPA, Defence should reaffirm publicly its commitment to coexistence in the WPA**, including case-by-case consideration of new mining ventures that meet safety and security requirements. In proposing new mining operations, proponents should consider employing the services of a third-party technical adviser (see recommendation three) and work closely with Defence and the South Australian Government to develop proposals that take into account the unique requirements of the WPA and have the least impact on Defence activities. As part of the WPA Advisory Board's forward work program (see recommendation seven), the South Australian Government should lead an outreach effort with industry to examine what forward planning would assist in facilitating potential new mines in the WPA and minimising their impact on Defence testing, such as shared infrastructure or nominated infrastructure zones.
7. **To strengthen the role of the WPA Advisory Board**, it should refresh its terms of reference and develop a strategic forward work program that more closely connects the Advisory Board to WPA stakeholders, and assists the Commonwealth and South Australian Government to acquit their responsibilities as joint custodians of the WPA coexistence arrangements. A Memorandum of Understanding between the Commonwealth and the South Australian Government should be finalised as a matter of priority. Defence should introduce a policy mechanism for the Advisory Board Chair (or Deputy Chair) to provide a non-binding recommendation in the event the Minister for Defence is asked to review a decision taken under the *Woomera Prohibited Area Rule 2014*. It should ensure the Advisory Board is informed ahead of major closures in the WPA.
8. **There should be a greater collective emphasis on the security of companies operating in the WPA**. Defence should work with WPA businesses on a framework to encourage Defence Industry Security Program (DISP) membership. Regardless of DISP membership, WPA companies should ensure they have policies and practices in place to account for

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the sensitivities of operating within the WPA, including limiting access of personnel and equipment to only those essential for operations. Defence should grant WPA access authorisations with conditions tailored for specific circumstances. Security should be a priority for anybody entering the WPA, and particularly for companies operating there. Security is fundamental to the WPA and goes to the heart of coexistence. Over recent years, security threats to the area have intensified in line with a general increase in the level of espionage and foreign interference directed at Australia and its allies.

9. **Defence and Aboriginal groups in the WPA should continue to build on their already strong relationships.** Priority should be given to finalising Working Level Agreements and the WPA Heritage Management Plan. A program of structured dialogue between Defence, the South Australian Government and Aboriginal groups in the WPA should investigate options for further mutually beneficial economic and cultural cooperation, including those suggested in this report.
10. **Consideration should be given to new ways of managing small parcels of land no longer suitable for pastoral activity, and greater guidance provided to pastoralists for claiming compensation for losses due to Defence testing.** Defence, the South Australian Government and pastoralists should consider whether Defence may lease small portions of pastoral land which are currently unsuitable for pastoral activity due to Defence testing activities, and provide advice to the Government before the end of 2019.
11. **Administration of the WPA coexistence arrangements should be modernised.** Defence should review feedback on suggestions for administrative enhancements provided to the 2018 WPA Review, with a view to immediately implementing those that can be done quickly and later development of a modern digital platform and accompanying smartphone/tablet interface. Defence and the South Australian Government should examine arrangements for opal miners to determine if any efficiencies can be made without undermining WPA security. Defence should determine the feasibility of quicker processes for revoking exclusions from the range when testing does not proceed as planned. Additional resources should be dedicated to administering the WPA framework, particularly in the WPA Coordination Office.
12. **A further complete review of WPA arrangements by 2025** should re-examine coexistence and the need for any changes in response to local, national and international developments.





*A gum tree outside the Woomera Airfield, South  
Australia. Credit: Woomera Prohibited Area Review.*

# Introduction

## 2018 WPA Review and Terms of Reference

On 11 May 2018, the Minister for Defence and the Minister for Resources and Northern Australia jointly announced a Review of the Woomera Prohibited Area (WPA). The Review was a recommendation of an earlier examination of arrangements in the WPA in 2010-11 which led to the establishment of the coexistence framework and the access regime that operates in the WPA today.

The Ministers appointed Dr Gordon de Brouwer PSM to lead the Review, with the support of a small secretariat hosted in the Department of Defence.

The Review's Terms of Reference (Annex A) required it to deliver a contemporary coexistence framework for the management of the WPA that:

- a. acknowledges that the WPA is a significant national security asset and that its use by Defence and Australia's partners will continue to evolve;
- b. balances and responds to evolving Defence and non-Defence use including the economic interests within the WPA;
- c. maintains the primacy of Defence use governed by national security and Defence's capability needs while committing to continued coexistence with other stakeholders to maximise the economic value of their activities: the resources sector, pastoral operations, Aboriginal communities, and other current and emerging interests;
- d. provides for investment access by non-Defence users within a framework that offers current and prospective investors clarity on strategic and national security considerations in granting access; and
- e. provides for public and private consultations to inform stakeholders and their submissions that will contribute to the review.

## Consultation and engagement activity

The Review consulted extensively with a range of stakeholders seeking views on how well, or otherwise, the current coexistence framework arrangements are working to meet challenges arising from competing land use, access arrangements and changes in how the WPA will be used in the future.

To publicise the Review and call for public submissions:

- notices were placed in national and regional newspapers;
- a web page was established on the Department of Industry, Innovation and Science Consultation Hub informing stakeholders on how to make a submission to the Review;
- information on the Review was published on the Defence WPA Coordination

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Office website;

- a free-call number was established for stakeholders to contact the Review team;
- all known WPA stakeholders were advised by email of the Review's commencement, with directions to the Consultation Hub for further information; and
- tailored emails invited stakeholders to participate in open information sessions.

Meetings were hosted in Adelaide, Woomera, Roxby Downs, Port Augusta, Coober Pedy, Brisbane and Canberra. Discussions included all Aboriginal groups with an interest in the WPA, the resources sector, pastoralists, railway operators, opal miners and extractive mineral lease holders, tourism representatives, local councils, South Australian Government representatives and Commonwealth Government agencies. The Review also undertook a focussed program of engagement with international counterparts in the United States and United Kingdom.

Fourteen written submissions were received from a cross-section of resources, pastoral, research/academic and space industry organisations (Annex B). The South Australian Government lodged a submission to the Review, highlighting the significance of the WPA for generating economic opportunities, and as a national security asset. The Review worked particularly closely with the South Australian Government to understand its priorities and views on coexistence.

The Review met with Commonwealth and State Government Ministers, including the South Australian Minister for Energy and Mining, the Hon Dan van Holst Pellekaan.

To ensure consistent engagement with stakeholders across various Commonwealth Government agencies, the 2018 WPA Review Commonwealth Interdepartmental Steering Group was established. The steering group met on five occasions throughout 2018, with the Departments of Defence; Industry, Innovation and Science; the Treasury; Home Affairs; Prime Minister and Cabinet; Foreign Affairs and Trade; and the Australian Security Intelligence Organisation (ASIO) all represented at the meetings. The Review spoke with a broad range of Commonwealth Government officials outside of the steering group.

The Review engaged the WPA Advisory Board early in the review process including through teleconferences and face-to-face meetings with the Chair, the Hon Amanda Vanstone, Deputy Chair, the Hon Paul Holloway, and the full Board at its July 2018 meeting.



# Background on the WPA and Coexistence

## The Woomera Prohibited Area

### *WPA over the years*

The Woomera Prohibited Area was established in the tumultuous years following the Second World War, when it was recognised that, although allied forces were ultimately victorious, Germany's advances in rocketry were well ahead of Britain's. German breakthroughs could have swayed the outcome of the war. The creation of atomic weapons was also recognised as a paradigm shift, with an inevitable link to long-range delivery systems.

In 1946, Australia consequently joined in partnership with the British Government to form the Anglo-Australia Joint Project, a centrepiece of which was the establishment of a long-range weapons testing facility and village in Woomera. The area was declared a Prohibited Area in 1947 and the first military trial took place in December 1947. At one point, the area then known as the Anglo-Australian Long Range Weapons Establishment encompassed an area of 270,000 square kilometers – more than twice the size of the current WPA – including a satellite range in north-west Western Australia known as the Talgarno Prohibited Area.

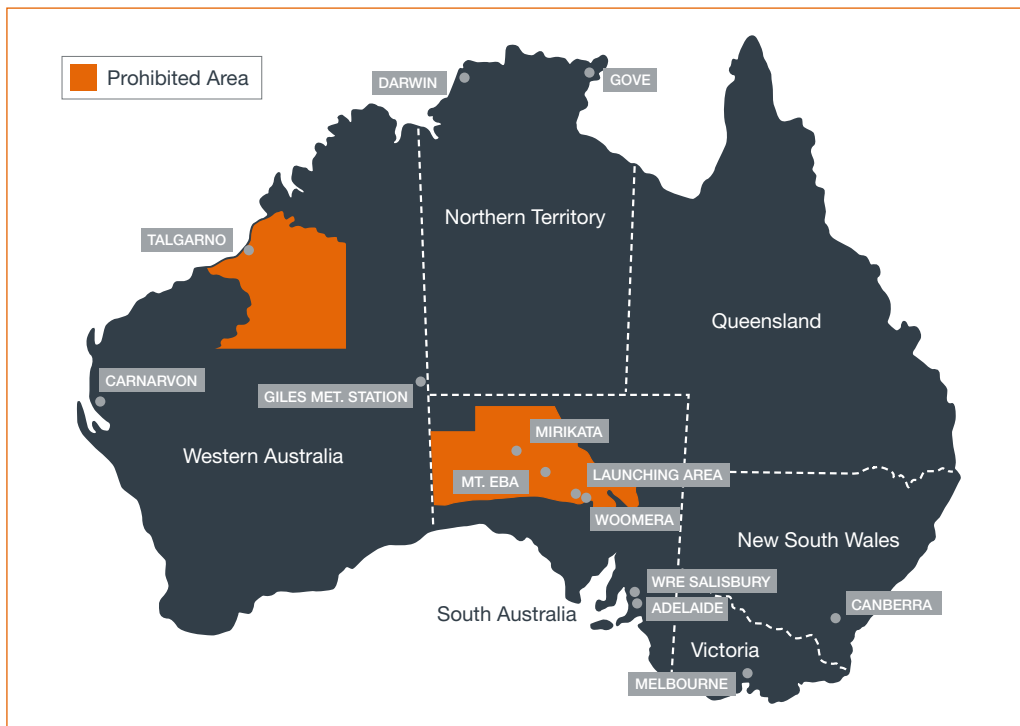


Figure 1: Historical map of the Woomera Prohibited Area in the 1960s. Credit: Department of Defence.

From 1957, Woomera became a global focal point for space activity, including being chosen as the launch point for the European Launcher Development Organisation (ELDO). Two launch sites were constructed at Lake Hart along with facilities to build and maintain space-related equipment, and monitor tests. At the height of its space activity, Woomera had the second highest number of rocket launches in the world after NASA's facilities at Cape Canaveral in Florida.

While the end of the Cold War marked a dip in Defence use of the WPA, its importance for test and evaluation has steadily increased since the late 1990s. It is now, in parts, in near constant use by Defence.

The WPA today encompasses an area of 122,000 square kilometres in South Australia, about 450 kilometres north-west of Adelaide. At approximately the size of England, it remains the largest land-based test range in the Western world.

In January 2015, a Chief of Air Force directive established Royal Australian Air Force (RAAF) Base Woomera. It and the RAAF Woomera Test Range together comprise the Woomera Range Complex (WRC). The southern area of the RAAF base, which encompasses the Woomera Village, is accessible to the public. While the village is often referred to as a remote town, it is in fact part of a military base that the public may access. It is situated on Commonwealth land within the WPA and is maintained by Defence.

The WRC includes the Nurrungar Test Area, a smaller specialised testing area just outside the WPA. This area hosted the Australia-US Joint Defence Facility Nurrungar from 1969 until it was closed in 1999.

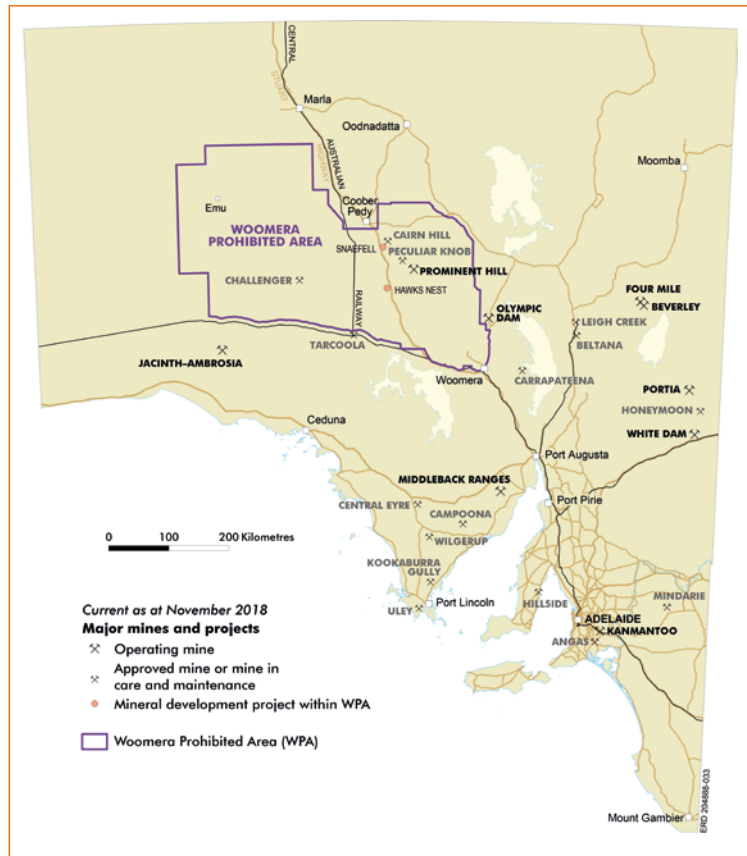


Figure 2: Current boundary of the Woomera Prohibited Area.  
 Credit: Department for Energy and Mining, Government of South Australia.

## The traditional custodians of the land

The WPA encompasses the traditional lands of six Aboriginal groups. Maralinga Tjarutja (MT) and Anangu Pitjantjatjara Yankuntjatjara (APY) hold almost 30 per cent of the land in the west of the WPA as freehold title granted under South Australian legislation. Four other groups – Antakirinja Matu-Yankuntjatjara (AMY), Kokatha, Arabana and Gawler Ranges – hold native title over areas in the WPA.

The history of these groups and their deep ties to the land in the WPA dates back over thousands of years. The WPA still contains sites and artefacts of enduring significance to Aboriginal peoples, including stone arrangements associated with traditional ceremony and ritual, rock art sites including paintings and engravings, and ceremonial sites.

Aboriginal groups access the WPA for traditional ceremonies, hunting, heritage site protection, and cultural activities. A number of Aboriginal groups have been actively involved in commercial activity in and around the WPA, including in the resources and tourism sectors. For example, AMY Environmental Services Pty Ltd (AMYES) provides integrated waste management services at Prominent Hill mine. Kokatha Aboriginal Corporation (KAC) is engaged on infrastructure projects on Kokatha lands and at surrounding mine sites in the WPA. Maralinga Tjarutja has established a successful and growing tourism operation at the former Maralinga Atomic Test Sites.

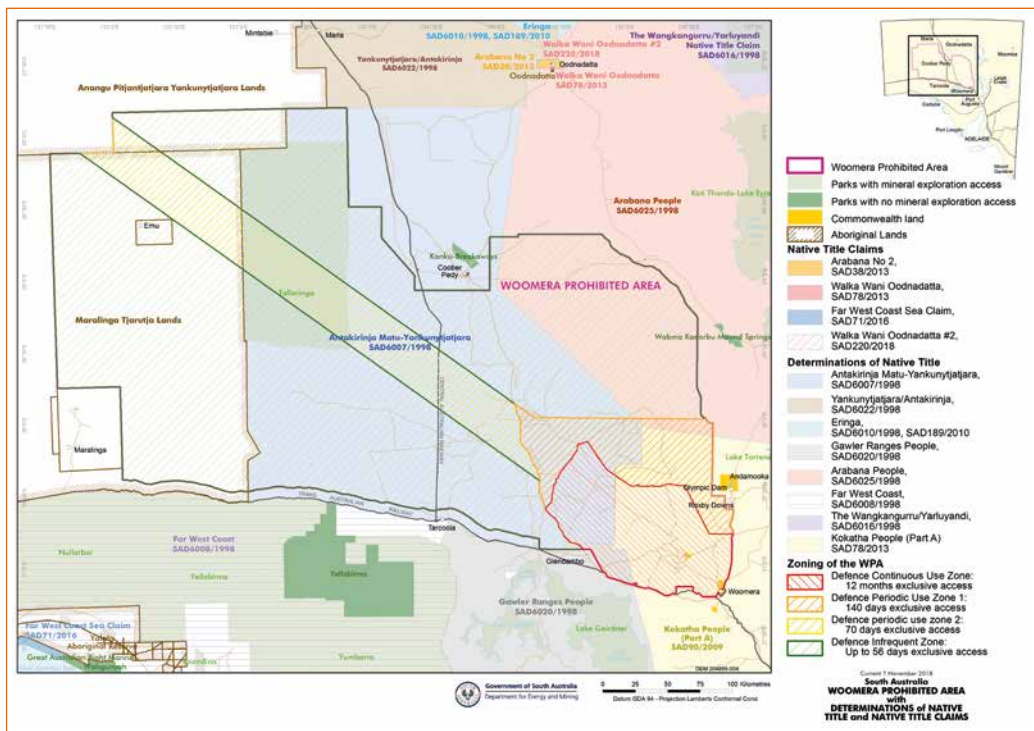


Figure 3: Woomera Prohibited Area with determinations of Native Title and Native Title claims.  
Credit: Department for Energy and Mining, Government of South Australia.



Today, the traditional custodians of the WPA live in cities, small towns and settlements around South Australia. They continue to have strong links to the land, an interest in preserving their history and culture in Woomera, and growing an economic and employment base for their communities.

The word ‘Woomera’ comes from the Eora people of Sydney. It refers to a spear-throwing device that extends the distance a spear can be thrown. The Woomera Range Complex motto ‘sharpen the spear’ is a reference to this unique Aboriginal invention and acknowledges the significance of the WPA in supporting development of ADF capabilities.

### Mineral and petroleum resources

Mineral and petroleum exploration in the WPA and its surrounds has a long history. In 1901, mineral exploration commenced at Lake Phillipson in the centre of the WPA and, in 1905, petroleum exploration was undertaken in the same area.

The WPA contains economic deposits of copper, gold, iron, uranium, silver, titanium, and zirconium. Other resources which are known or expected to occur include nickel, zinc, lead, coal, petroleum and critical minerals – platinum group elements, rare earth elements, potash and chromium – but the size and economics have yet to be demonstrated.

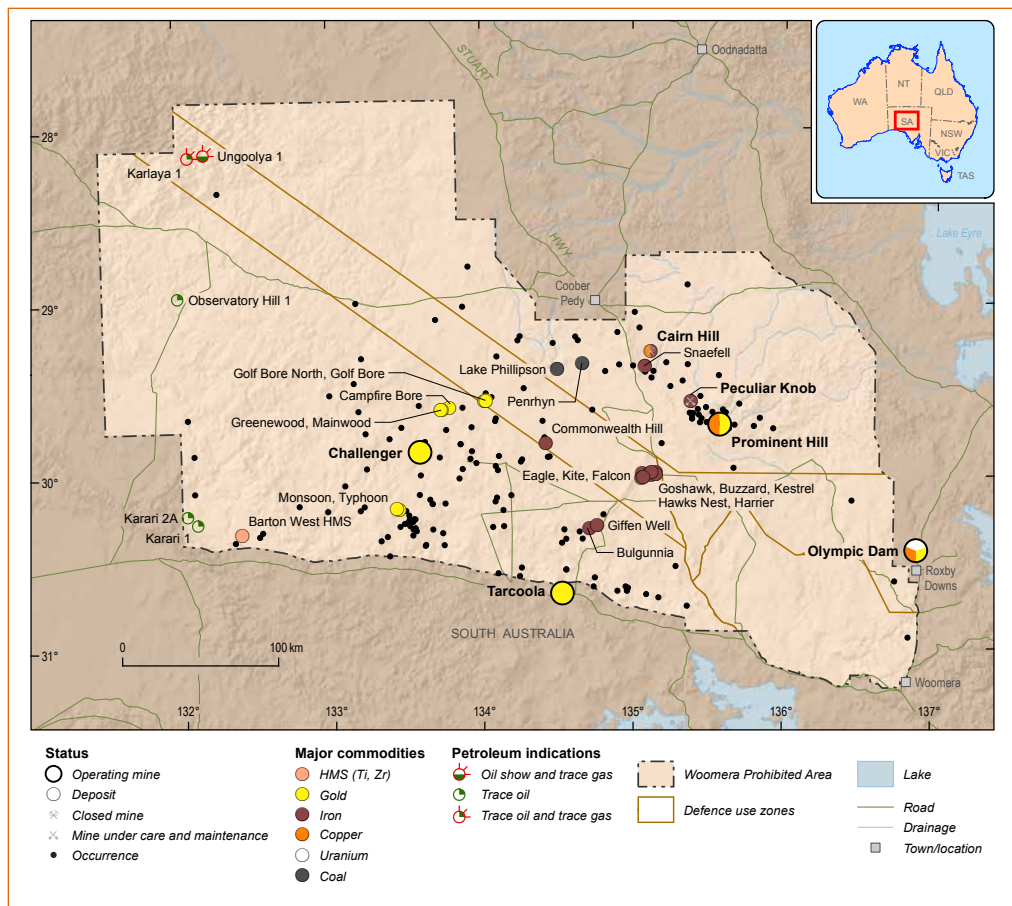


Figure 4: Deposits in the Woomera Prohibited Area. Credit: Geoscience Australia.

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Key deposits in the WPA include the Prominent Hill copper, gold and silver deposit which also contains uranium resources, the Challenger gold and silver deposit, the Cairn Hill iron deposit, the Giffen Well and other magnetite iron deposits, the Peculiar Knob mixed hematite and magnetite iron deposit, and the Lake Phillipson and Penrhyn coal deposits. The Barton West heavy mineral sands deposit contains the bulk of the titanium and zirconium resources in the WPA.

### *Pastoral activity*

Pastoralism was underway in the central north of South Australia by the turn of the 20<sup>th</sup> century, and sheep and beef cattle enterprises were well established within what is now the WPA prior to the outbreak of the Second World War. Pastoralism did not, however, extend to the far western areas of the WPA, where access to near-surface water was difficult. The WPA was a challenging environment for early leaseholders, with its remoteness, lack of infrastructure and added difficulties of rabbit plagues, dingoes and drought.

While the development of new farming technology helped improve operations, the fortunes of pastoralists remains largely tied to the seasons, and stock and wool prices. Pastoralists consulted during the Review recalled how the crash of the wool floor price in 1987 resulted in structural change within the industry and hardship for many.

The WPA now encompasses 26 pastoral stations covering 39 leases, most of which are operated as commercial enterprises for cattle and sheep grazing.

### *Key infrastructure in the WPA*

The Stuart Highway and the Tarcoola to Darwin rail line are the key civilian infrastructure assets within the WPA. They connect northern and southern Australia.

Starting as a navigable route along the Australian Overland Telegraph Line, the current Stuart Highway was sealed in 1982 thereby realising the potential of the road as a vital logistics and transport corridor. The William Creek Road is another key unsealed route in the north of the WPA green zone which offers east-west access to Coober Pedy. The Olympic Dam Highway linking Roxby Downs to Woomera and Pimba skirts outside the WPA to the east.

The 1,350 km long Anne Beadell Highway traverses the northwest of the WPA between Coober Pedy and Laverton, Western Australia. The highway is a remote route popular with 4WD tourists, particularly in the cooler months. The highway traverses key locations including the Tallaringa Conservation Reserve and the former atomic test site at Emu.

The Tarcoola to Darwin single rail line commenced operation in 1980. Sidings have been constructed at Wirrida and Rankin Dam to receive ore via haul roads from Prominent Hill, Peculiar Knob and Cairn Hill mines.

The only sealed airstrips in the WPA capable of taking commercial-sized aircraft are located at Woomera and the Prominent Hill and Challenger mines. There are numerous dirt strips scattered throughout the WPA located on pastoral leases and used by light planes and the Royal Flying Doctor Service aircraft.

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The Woomera Village is the only population centre in the WPA besides the Prominent Hill mine, which has an on-site camp of approximately 400 people. The Challenger mine and Peculiar Knob mines previously had large on-site camps, but these are no longer in use. The pastoralist homesteads and outstations are the only other permanently inhabited areas within the WPA.

The Port Augusta to Woomera pipeline provides water for the Woomera township and is the only water pipeline in the vicinity. It is currently maintained by Defence but is ageing and may need to be replaced. A number of pastoral stations obtain water from the pipeline. The WPA mines have developed bore fields to supply water for their operations.

The only high voltage transmission lines within the WPA are the 132 kV ElectraNet line which supplies Woomera, and a second private 132 kV line which supplies Prominent Hill mine from Olympic Dam.

The Dog Fence – which at 5,600 km is one of the longest structures in the world – runs from Queensland through to the Great Australian Bight and traverses the WPA. It is designed to keep dingoes out of the south-eastern part of the country and protect sheep flocks.

The Tallaringa Conservation Reserve in the WPA covers an area of almost 2,700 square kilometres. The park was established in December 1991 to protect and conserve wildlife and the natural features of the land. Resource exploration and mining are permitted subject to relevant approvals. The park is managed by the South Australian Government in partnership with the Antakirinja Matu Yankunytjatjara (AMY), the traditional owners.

*Processed iron ore from Peculiar Knob winds its way towards Port Augusta en route to its destination at Whyalla, 2013. Credit: BeyondImages.*



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## *The Woomera Village*

Since its establishment in 1947, the Woomera Village has developed and evolved in response to Defence needs. Its population peaked in the mid-1960s at around 7,000 people, but has steadily declined since then to less than 200 permanent residents today. During Defence testing, numbers accommodated in the village surge to about 600.

Located on Commonwealth land at the far south-eastern corner of the WPA, the village has been open to visitors since 1982. It is today part of RAAF Base Woomera. The passing of the WPA Rule in 2014 created a standing permission for people to enter the village, which can be suspended by Defence by way of legislative instrument when required for the security of Defence activities or for the safety of persons in the WPA.

While the primary purpose of the Woomera Village is to support Defence, it has come to play an important role in supporting others in the remote region. It currently has a school, supermarket, medical centre, police and fire services, as well a number of tourist attractions including the heritage missile park, two museums and the tourist information centre. Resources companies and other businesses in the Woomera area have used it as an accommodation site for employees. It offers a break and resupply point for around 65,000 tourists each year.

The village and its infrastructure are modest by city standards, ageing and costly to maintain. Defence is preparing an Estate Base Plan for the redevelopment of the village which will include consultation with the South Australian Government and other stakeholders. While redevelopment is some way off, the plan provides an important opportunity for Commonwealth and State Government collaboration to sustain a village that does not only support Defence, but continues to contribute to socio-economic activity in the surrounding area.

An accessible Woomera Village has helped facilitate strong and productive relationships between Defence and the wider Woomera community. Defence's continuing participation in community events and activities in the region has built support for its ongoing presence in the WPA and an understanding of the importance of the test and evaluation that it does in the area.

## **2010-11 WPA Review and WPA Rule 2014**

### *The 2010-11 WPA Review*

In 2010, the then Minister for Defence, Senator the Hon John Faulkner, commissioned a major review into how the WPA should be best used in Australia's national interest. It was led by the former Secretary of the Department of Defence, Dr Allan Hawke AC, and came in response to growing interest in the area from both Defence and the resources sector.

The 2010-11 WPA Review released an interim report in November 2010. In February 2011 it delivered its final report which included a series of recommendations to better balance national security and economic interests in the WPA.

A core judgement of the 2010-11 Review was that although Defence's authority to control access to the WPA makes it the principal user, it was not the sole stakeholder. Because the majority of the WPA was South Australian Crown land and held significant economic potential for the State through resources development, the 2010-11 Review said the South Australian Government is a key stakeholder along with the Commonwealth. It recommended that management of the WPA in the national interest should be within a construct of two stakeholders, one primary user.



Noting the significant mineral resources prospectivity of the WPA and its potential economic benefit to South Australia and the nation more broadly, the 2010-11 Review recommended the area be open to resources exploration to the maximum extent possible. It proposed a coexistence model to not only balance national security and economic interests in the WPA, but to also acknowledge the rights of other users such as Aboriginal groups and pastoral operations. The centrepiece of the coexistence model was a recommendation to divide the area into three Defence use zones (green, amber and red), overlay it with a time-share arrangement, and introduce a permit system to manage non-Defence access.

The issuing of a permit is not automatic and is subject to Defence’s governing risk assessment – being to uphold the safety of users within the WPA and the security of defence activities. Each permit contains a series of conditions applying to all permits, and may include additional conditions specific to a particular approval for access.

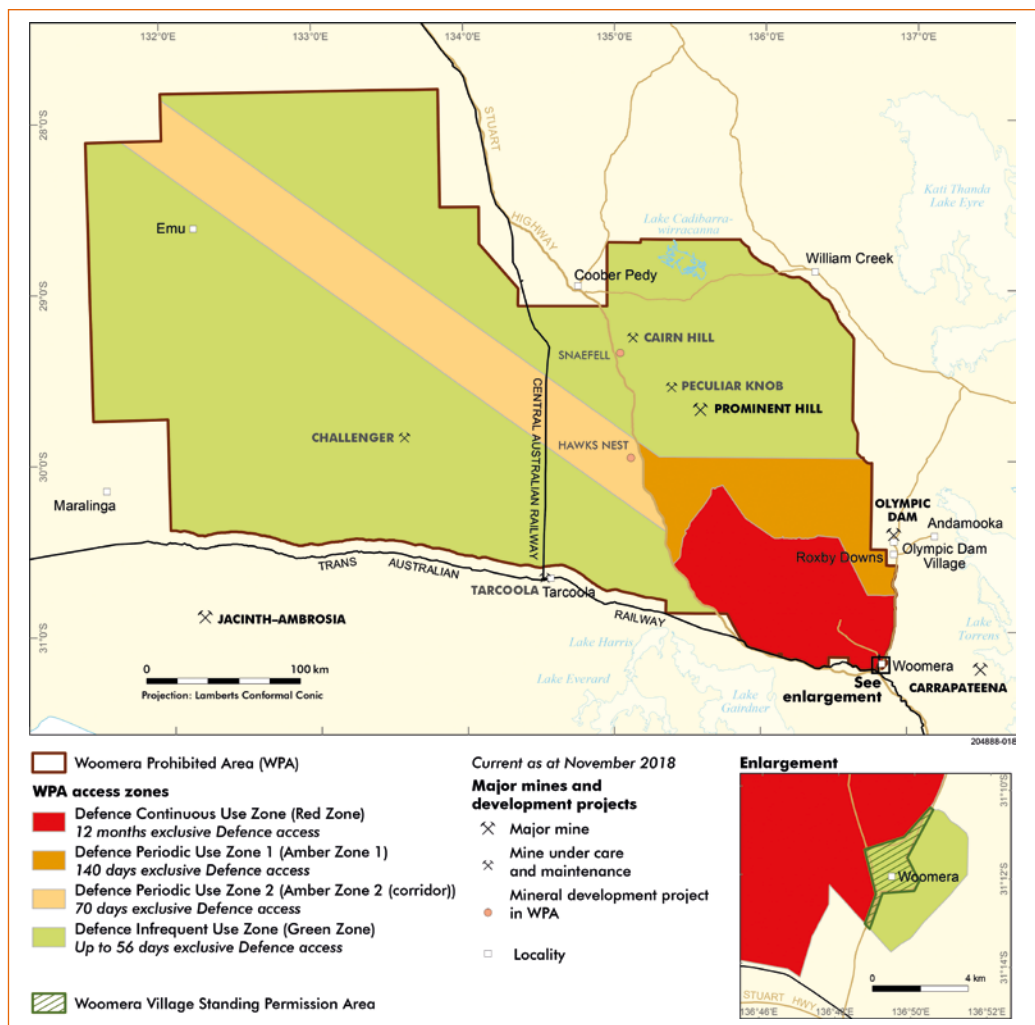


Figure 5: Access zones in the Woomera Prohibited Area. Credit: Department for Energy and Mining, Government of South Australia.

The WPA Rule compliance regime allows an authorised officer to issue an infringement notice where they have reasonable grounds to believe that a person has failed to comply with a condition of their permit. Demerit points may also be incurred if the permit holder is given an infringement notice or is convicted of an offence.

### *The WPA Rule 2014*

The Government agreed the majority of the 2010-11 Review's recommendations. In 2011, the Woomera Prohibited Area Coordination Office (WPACO) was established in the Department of Defence to administer the new system, and the WPA Advisory Board was established in 2012 to provide strategic guidance on coexistence arrangements. The *Defence Legislation Amendment (Woomera Prohibited Area) Act* was passed in 2014 and gave legislative effect to the recommendations. The Act authorised the Minister for Defence to make, by legislative instrument and with the agreement of the Industry Minister, the *Woomera Prohibited Area Rule 2014* (the WPA Rule). The WPA Rule, made under subsection 72TP(1) of the *Defence Act 1903*, was registered on the Federal Register of Legislation and came into effect on 27 August 2014.

The WPA Rule now covers all access to the WPA, with the exception of those people mentioned in the *Defence Act* who have authority to access the WPA pursuant to regulation 35 of the *Defence Force Regulations 1952*. These users remain subject to conditions under the Defence Force Regulations, and not those of the WPA Rule. These existing users include Aboriginal people with interests in the WPA, pastoralists, mines that are subject to deeds of access, the owner or operators of the Tarcoola to Darwin railway line and South Australian Government employees or its agents.

While remaining subject to the provisions of the *Defence Force Regulations 1952*, existing users may have their permission to access the WPA suspended under the Regulations and be excluded from the WPA for safety or security coincident with those exclusion periods that are determined under the WPA Rule.

## THE WOOMERA PROHIBITED AREA COEXISTENCE FRAMEWORK

### Defence Act 1903

<i>Defence Force Regulations 1952</i> (Access permission)	<i>Woomera Prohibited Area Rule 2014</i> (Access permit)
Traditional owners	Resource Production
Pastoral operators	Resource Exploration
Rail owner and operator	Opal mining and Precious stone prospecting
Mines with deeds of access	Research
South Australian Government employees and agents	Tourism
	Environmental
	Other Purposes

Figure 6: The Woomera Prohibited Area coexistence framework. Credit: Department of Defence.



## Coexistence and the WPA Rule 2014 in operation

### *Access applications*

Under the WPA Rule, the Minister for Defence may issue a permit to an individual or body corporate to access the green and amber zones of the WPA. In practice, this power is delegated to officers within the Department of Defence and administered by WPACO. Access permits may be issued for:

- resource exploration;
- resource production;
- opal mining and precious stone prospecting;
- research purposes;
- tourism;
- environmental purposes; and
- other purposes.

WPACO has authorised 38 resource exploration permits since the WPA Rule came into effect. These allow assessment activities, such as surveys and exploratory drilling, to identify deposits and improve knowledge of the natural resources potential in the WPA. They are valid for seven years. There was an anticipated peak of applications when the new arrangements were introduced in 2014 to account for exploration permits replacing former deeds of access, followed by a drop-off in later years.

There are over 50 mineral and petroleum exploration companies holding 143 mineral exploration and 54 petroleum or sequestration exploration licenses over the WPA, which are issued by the South Australian Government. The interest in mineral and petroleum tenements



*Opal Valley in Coober Pedy.  
Credit: Department for Energy and Mining,  
Government of South Australia.*



*Woomera Heritage and Visitor Centre.  
Credit: Department of Defence.*

within the WPA does not, however, necessarily equate to applications to Defence for access permits or on-ground access. Companies may hold tenements and undertake further analysis of tenement data before determining whether to progress to exploration and apply for an access permit.

Defence has issued one resource production (mining) permit since 2014, following the purchase of the Cairn Hill mine.

The Coober Pedy Precious Stones Field covers about 5,000 square kilometres and overlaps the northern part of the WPA. Opal miners must apply for a Precious Stones Prospecting Permit from the South Australian Government which allows them to peg a claim. Before entering the WPA, they must have an Opal Mining and Precious Stones Prospecting Access Permit issued by Defence. From the introduction of the WPA Rule until the end of the 2017-2018 financial year, 155 permits have been issued. The lower number of permits in 2016-17 and 2017-18 reflects the reduced level of opal mining activity in the region more broadly.

Two permits for research purposes were issued in financial year 2015-16 and one in 2016-17. These were for the purpose of seismic monitoring and geophysical surveys.

Tourist permits allow members of the public to access the WPA by roads in the area not covered by a standing permission, such as the Anne Beadell Highway, or the Tallaringa Conservation Park which is west of Coober Pedy. In the 2014-15 to 2017-18 period 1,957 tourist permits were issued.

Seven 'other purpose' access permits have been issued since 2014 for a variety of purposes, including for mineral and extractive mineral leases (quarries) and for communication towers. There have been no environmental purpose permits issued since the introduction of the WPA Rule.

No permits have been cancelled by Defence under the WPA Rule. Of the 38 exploration permits granted since the introduction of the WPA Rule, 14 have been surrendered upon relinquishment by tenement holders of their mineral tenements to the South Australian Government. Three applications for resource exploration have been refused on the grounds that issuing the permit would prejudice the security of Defence activities.

Permit or access granted	FY 2014–2015 <sup>1</sup>	FY 2015–2016	FY 2016–2017	FY 2017–2018
<b>Permits</b>				
Resource Exploration	35	1	2	0
Resource Production	0	1	0	0
Opal Mining	69	51	20	15
Research	0	2	1	0
Environmental	0	0	0	0
Tourist <sup>2</sup>	488	558	426	485
Other Purpose	5	1	0	1

Figure 7: Access for non-Defence users

### Approved and Escorted Persons

Companies with permits under the WPA Rule – such as mines or mineral explorers – are able to apply for access to the WPA for their employees or associates either as Approved Persons or Escorted Persons.

- Approved Persons can hold an approval for a two-year period if Defence is satisfied that the access by the person would not prejudice the security of defence activities and that they are likely to comply with the conditions of the permit and any conditions of the approval. Since the introduction of the WPA Rule in 2014, Defence has issued 3,787 approved person authorisations. The fluctuations from year to year reflect changes in mining and exploration activity, evolving business models and the expiration and re-processing of Approved Persons.
- Escorted Persons status provides temporary entry for a period of not more than five days, unless the person has applied for Approved Persons status and is waiting for an outcome from Defence. There have been 319 Escorted Person notifications since 2014. The change in Escorted Person access figures over time reflects changes in the number of permit holder-sponsored short-term visitors to the WPA.

No Approved or Escorted Person applications have been cancelled or refused under the WPA Rule.

Access notification is a condition applying to all permits. It requires that a notice of at least 10 business days is given to the Woomera Test Range before a person enters the WPA under a permit. The *Access Permission sought* figure on the following page refers to the instances of proposed permit holder access to the WPA. The *Personnel access processed* figure refers to the total number of personnel who have entered the WPA under the permit arrangements.

1 As the WPA Rule was introduced in August 2014, the 2014 – 2015 financial year is shortened.

2 Prior to the introduction of the WPA Rule permits were issued to individuals accessing the WPA, instead of per vehicle, as introduced by the WPA Rule.

Permit or access	FY 2014–2015 <sup>3</sup>	FY 2015–2016	FY 2016–2017	FY 2017–2018
<b>Approved and Escorted Persons</b>				
Approved Person applications <sup>4</sup>	1,133	579	1,134	941
Escorted Person applications	145	28	84	62
<b>Access Notification</b>				
Access Permission sought	10	62	100	63
Personnel access processed <sup>5</sup>	804	738	506	192

Figure 8: Access permission

Those users of the WPA whose permissions are granted under the *Defence Force Regulations 1952* – pastoralists, Aboriginal groups, the operating mines subject to deeds of access with the Commonwealth, the owner or operators of the Tarcoola to Darwin railway line and South Australian Government employees or its agents – do not need to apply for an access permit under the WPA Rule but must comply with exclusion periods and the conditions of their permission.

It is estimated that there are around 65,000 visitors to the Woomera Village each year. They do not require a permit because the village is covered by a standing permission under the WPA Rule. Many are tourists and retirees travelling in recreational vehicles or with caravans. Any tourist wanting access to roads within the WPA not covered by a standing permission must apply to Defence for a tourist permit at least 10 days before entering.

Since 2014, there have been no infringements issued or prosecutions under the WPA Rule, but formal warnings have been issued for minor permit breaches and persons unlawfully accessing the WPA. One person was prosecuted for being in the WPA without permission under the *Defence Act 1903*.

### *Defence use of the WPA under the WPA Rule*

Under the WPA Rule, Defence has continuous use of the red zone. The Defence Minister is unable to approve any access permits for that area.

The majority of Defence testing activity takes place in the red zone. That area is in near constant use.

Defence is able to apply exclusion zones to the amber and green zones for a set number of days each year, as follows:

- amber zone 1 – up to 20 periods of up to 7 days each;
- amber zone 2 – up to 10 periods of up to 7 days each; and
- green zone – up to 8 periods of 7 days each.

An exclusion period may immediately follow the end of a previous period. For example, Defence exercised an exclusion period in amber zone 1 between 29 October 2017 and

3 As the WPA Rule was introduced in August 2014, the 2014 – 2015 financial year is shortened.

4 One mine subject to a deed voluntarily adopted the Approved and Escorted Person process as set out in the WPA Rule but access is otherwise granted under the Defence Force Regulations and the conditions of the company's deed of access.

5 Multiple people can apply for access using the same access form.

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4 November 2017, followed immediately by another exclusion period in the same zone from 5 November 2017 to 11 November 2017. This enables longer or more complex tests. If the exclusion does not immediately follow the end of the previous one, there must be a break of at least six weeks in amber zones 1 and 2, and three months in the green zone.

The need for Defence to access the different zones varies and is based on the nature of testing and required safety parameters. Where possible, Defence will only exclude part of a zone to minimise the impact on other users.

The exclusion periods for amber zones 1 and 2 are forecast up to 15 months in advance to meet the notification requirements of the WPA Rule. Permit holders within the green zone who hold a resource production permit require at least six months' notice ahead of exclusion and at least 21 days for a permit holder other than resource production. The exclusion periods are determined by legislative instrument and registered on the Federal Register of Legislation.

Military testing is by its nature complex and subject to change. Weather, logistics, technology and a range of other factors can all effect scheduled testing. Consequently, Defence sometimes has to cancel or amend the area to which an exclusion period applies. If a test finishes ahead of schedule, Defence ordinarily revokes the exclusion period to allow access to the area.

The instrument determining an exclusion period will be formally revoked or amended and changes to exclusion periods communicated to permit holders and stakeholders as soon as possible. Exclusion periods are formally revoked by legislative instrument. Exclusion periods revoked or amended count toward the cap on Defence usage.

Between June 2012 and June 2018 Defence conducted over 400 tests within the WPA. Testing activity included, among other things, Joint Air-Surface Standoff Missiles, remotely piloted aircraft,

*HIFIRE Hypersonic test, June 2017.  
Credit: Department of Defence.*





electronic warfare self-protection systems, parachute delivery, explosive ordnance disposal, long-range air launched weapons and rockets.

Testing in 2016-17 included the successful launch of the Hypersonic International Flight Research Experimentation (HIFIRE 4) program rocket. Given its complexity and the number of international and Australian interests engaged, the test was considered an overwhelming success for the program and the Defence systems supporting it.

The pattern of Defence's use of the green and amber zones has varied since the zoning arrangements were introduced. Defence's testing program is influenced by a range of factors including the tempo of operational deployments and activity, the phasing of capability acquisitions and platform life-cycles.

Upgrading of the instrumentation at the Woomera Test Range, and the wider redevelopment project underway, has temporarily slowed some test activity, but will see an upswing once completed.

**Activation of exclusion zones within the WPA**

	Exclusion zone	Exclusion periods promulgated	Exclusion periods used	Exclusion periods revoked
FY 2012 - 2013	Amber 1	20	15	5
	Amber 2	14	3	11
	Green	2	2	0
	<b>TOTAL</b>	<b>36</b>	<b>20</b>	<b>16</b>
FY 2013 - 2014	Amber 1	35	15	19
	Amber 2	17	8	10
	Green	0	0	0
	<b>TOTAL</b>	<b>52</b>	<b>23</b>	<b>29</b>
FY 2014 - 2015	Amber 1	20	12	8
	Amber 2	10	2	8
	Green	2	2	0
	<b>TOTAL</b>	<b>32</b>	<b>16</b>	<b>16</b>
FY 2015 - 2016	Amber 1	20	12	8
	Amber 2	11	2	9
	Green	4	2	2
	<b>TOTAL</b>	<b>35</b>	<b>16</b>	<b>19</b>
FY 2016 - 2017	Amber 1	20	7	13
	Amber 2	10	3	7
	Green	8	3	5
	<b>TOTAL</b>	<b>38</b>	<b>13</b>	<b>25</b>
FY 2017 - 2018	Amber 1	19	14	5
	Amber 2	10	2	8
	Green	1	1	0
	<b>TOTAL</b>	<b>30</b>	<b>17</b>	<b>13</b>

Figure 9: Activation of exclusion zones within the Woomera Prohibited Area.

**Note:** The figures against each exclusion period in each zone represent a block of 7 days, e.g. 19 (x 7 days).

*A rocket launch to test hypersonic speed at more than five times the speed of sound, Woomera South Australia, May 2016. Credit: Department of Defence.*



# Strategic Context to the 2018 Review

## The contemporary WPA environment

### Changes since 2010-11

Much has changed in the WPA environment since the 2010-11 Review.

For those in the mineral resources sector, many commodity prices across Australia have not in recent years delivered the high returns in mineral and resources exploration and production that they did in the early part of the decade. Total expenditure on mineral exploration throughout Australia was \$2,178.2 million in 2017, compared with \$4,678.9 million in 2012. This reduction in expenditure was similarly felt in the WPA when in 2017 \$5.3 million was spent on mineral and petroleum exploration, down from a peak expenditure in 2012 of more than \$90 million.

Of the four mines operating within the WPA around the time of the 2010-11 Review, only the Prominent Hill mine (copper, gold) has operated continuously until today. Operations were suspended at Peculiar Knob (iron ore), Cairn Hill (iron ore, copper and gold), and Challenger (gold) primarily due to the decline in commodity prices and company administration arrangements. Since those suspensions, the Cairn Hill and Challenger mines recommenced operations in mid-2016 following acquisition by new owners. Challenger entered voluntary administration in mid-2018 and again ceased operations in late 2018.

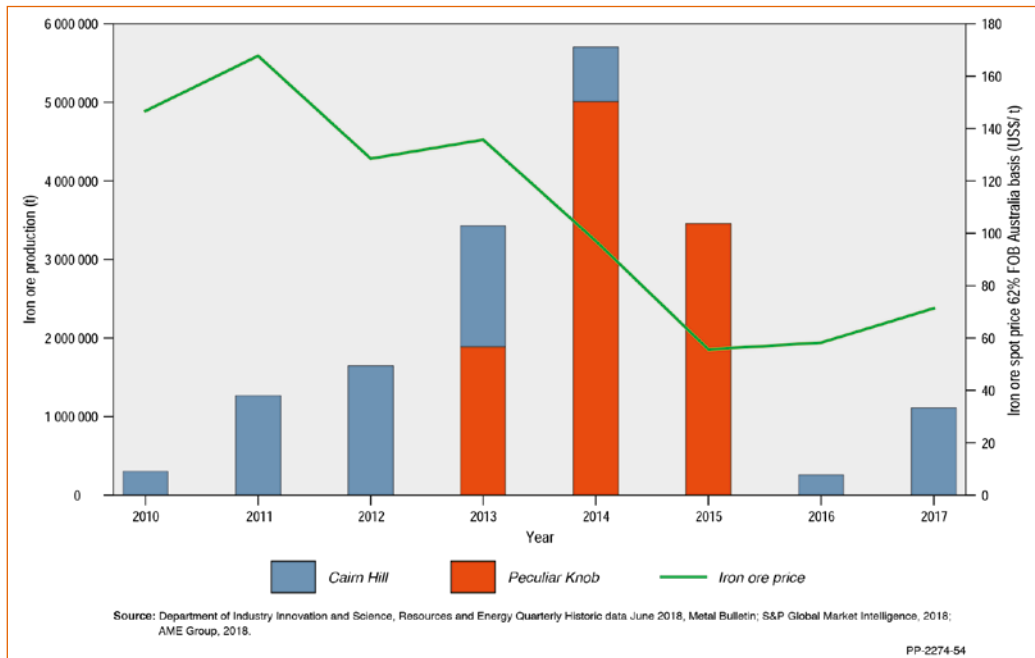


Figure 10: Iron ore production in the Woomera Prohibited Area and iron ore prices 2010-2017. Credit: Geoscience Australia.

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Global demand for copper – which is abundant in the WPA – is on an upswing. While the price per tonne has fluctuated since 2010, a price resurgence in 2017 reflects the broad range of applications for which the base metal can be used and increasing demand in these sectors. Technological advancements, including those driven by environmental concerns such as battery technology and electric vehicles, rely heavily on copper with electric vehicles said to use more than two to three times the copper used in conventional vehicles. The anti-microbial properties of copper are seeing an increase in its use for protecting against bacteria in hospitals and other public spaces. Copper is impermeable, durable and recyclable and is considered relatively sustainable when compared to other resources. For all these reasons global demand for copper is growing and this demand currently outweighs supply suggesting strong prices will continue.

Conditions for pastoralists since the 2010-11 Review have continued to be demanding. Periods of prolonged drought and increasing lease costs have been among these challenges, but increasing efficiency from use of technology to support station operations and strong wool prices are good news for the sector.

Eight pastoral leases within the WPA have changed hands since the 2010-11 Review, which is consistent with long-term trends.

In November 2015, the Government announced conditions on the sale of S. Kidman and Co. Limited – one of Australia's largest and long-standing private land owners – having decided that the acquisition by foreign investors would be contrary to the national interest given the size and significance of the total portfolio of Kidman properties, along with the national security issues around access to the WPA. This decision saw the removal of Anna Creek, the largest single property holding in Australia and partially within the WPA, from the proposed sale. The property was purchased in a separate transaction in 2016.

One of the most significant changes in the period since the previous WPA Review is increased national recognition of Australia's Aboriginal and Torres Strait Islander history and culture. At the Commonwealth Government level initiatives such as the Indigenous Advancement Strategy, Indigenous Ranger Projects and the Indigenous Procurement Policy were introduced to support improved economic and social prospects and opportunities for Aboriginal communities across Australia.

In the WPA, Native Title determinations were made for the Antakirinja Matu-Yankunytjatjara and Gawler Ranges communities in 2011, Arabana in 2012 and the Kokatha Uwankara people in 2014. Native title recognises that Aboriginal and Torres Strait Islander people have rights and interests to land and waters according to their traditional law and customs as set out in Australian Law.

The Anangu Pitjantjatjara Yankunytjatjara and Maralinga Tjarutja communities both have long-held Freehold Title over their respective lands towards Western Australia. In 2014, an area of the Maralinga Tjarutja lands was excised from the WPA. Known as Section 400, the area was the site of atomic testing and associated trials in the 1950s and 1960s. It holds particular and unique significance for the Maralinga Tjarutja community. Acting in response to its request – and recognising that unrestricted access to the land is important for the community and its



*The principal of Anangu School (right) and her students show the Director of Aboriginal and Torres Strait Islander Affairs (left) a map of the local area during the Section 400 Excision event, held at Maralinga Airfield in South Australia, 2014. Credit: Department of Defence.*

future generations – Defence and the South Australian Government worked together through the WPA Advisory Board to excise a total of 1,782 square kilometres from the WPA.

There have also been significant geopolitical developments since 2010 which have made Australia's strategic environment more complex, and increased the threat to Australia and its allies from espionage and foreign interference.

The 2017 Foreign Policy White Paper points to a world that is more interconnected and interdependent than at any other time. Australia faces a more dynamic, contested and competitive regional environment in which powerful drivers of change are converging. International rules designed to help maintain peace and minimise the use of coercion are being challenged.

In the Indo-Pacific, the economic growth that has come with globalisation is also changing power balances. The shift of economic and strategic weight to the Indo-Pacific is likely to continue. While the United States remains the most powerful country, its long dominance of the international order is being challenged by other powers. Competition over power and the principles on which regional order is based is intensifying.

The Foreign Policy White Paper highlights that Australia will need to be competitive and agile to take advantage of the opportunities that will come from dynamic Asian economies and technological and scientific advances. Australia has a vital interest in the ongoing strength



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of the Indo-Pacific economy. In parallel, Australia is likely to face greater uncertainty in the strategic environment.

Since the Defence White Paper of 2016 and the Foreign Policy White Paper of 2017, there has been further militarisation in the Indo-Pacific region.

ASIO has noted that Australia's position as a major commodity supplier, scientific and technological innovator, and potential joint venture partner makes it a target of foreign states seeking to gain an advantage. It also says that Australia's military modernisation program, including niche research and development capabilities, is of interest to a wide range of foreign intelligence services seeking to obtain or compromise sensitive technologies.

ASIO regularly observes cyber espionage activity targeting Australia, with foreign state-sponsored adversaries targeting the networks of the Australian Government, industry and individuals to gain access to information and progress intelligence objectives. It expects the number of countries pursuing cyber-espionage programs to increase, as such programs can offer significant intelligence returns with relatively low cost and plausible deniability.

As well as greater public focus on intelligence collection and foreign interference issues, new legislation to address foreign interference was introduced in 2018, the *National Security Legislation Amendment (Espionage and Foreign Interference) Act 2018* and the *Foreign Influence Transparency Scheme Act 2018*.

Recognising that Australia will continue to face greater security uncertainty and complexity, the 2016 Defence White Paper and its accompanying Integrated Investment Program sets out a comprehensive program to enhance Australia's defence capability, deepen international security partnerships and collaborate with defence industry and science and technology research partners in support of Australia's security. The new program builds on other major Defence acquisitions underway or recently delivered.

For the RAAF, investments in Defence capability have seen upgrades to the majority of its platforms in pursuit of a 5th Generation Air Force – an Air Force that supports and delivers stealth, high manoeuvrability, advanced avionics, networked data fusion through sensors and avionics, and multirole capabilities across its fleet. New advanced platforms have been introduced in recent years, including the Joint Strike Fighter, Wedgetail, Growler, P-8 Poseidon and Triton airborne platforms – along with strengthened intelligence, surveillance and reconnaissance, space, electronic warfare and cyber security capabilities.

The introduction of such systems will drive increasingly complex testing, training and evaluation programs. As a result, Defence is increasing its investment in the WPA itself. Woomera Range Upgrade projects AIR3024 and J0069 will see approximately \$300 million being invested from 2018 through to 2021 to deliver instrumentation system and facilities upgrades. Defence's Estate and Infrastructure Group is scoping works for a further \$500 million of investment in redeveloping the Woomera Village and Airfield precinct between 2022 and 2025. Other smaller projects have also taken place over the last five years which will bring new investment in the WPA in the decade 2015-2025 to approximately \$900 million.

The backdrop of change in the WPA since the 2010-11 Review is dynamic, rapid and constant technological development. That has had, and will continue to have, profound impact globally,



both positive and negative. For the WPA, technology has helped to better manage the challenges of operating in a remote environment and it has assisted businesses – including mines, mineral explorers and pastoralists – achieve efficiencies and cost savings. For Defence, it has opened up new frontiers of military activity, but it has also introduced additional complexity and vulnerability.

To address the risks outlined in this section, the Review makes recommendations to strengthen the protection of testing defence technology within the WPA.

### ***Assessment of mineral and petroleum resources potential in the WPA***

To assist the Review in its consideration of WPA arrangements, Geoscience Australia provided an updated assessment of its 2010 examination of the mineral and petroleum resources potential of the WPA (Annex C). Building on that work, the Office of the Chief Economist in the Department of Industry Innovation and Science (DIIS) provided an economic assessment of mineral resources in the area (Annex D).

While the reports provide a sufficient basis for the Review to form its judgements, neither report fully takes into account new data that is becoming available about the WPA, including from a major program of aerial geophysical surveys being conducted by the South Australian Government in partnership with Geoscience Australia. The Review makes recommendations that would leverage the value of this new data (see also section five and recommendation five).

Geoscience Australia's 2018 assessment of the potential for undiscovered resources in the WPA confirms the results of the 2010 assessment and shows that many parts of the WPA have moderate to high potential for the discovery of new mineral and petroleum resources (Figure 11).

There is high potential for the discovery of new deposits – similar to those already known – including copper, gold, silver, iron, titanium and zirconium and uranium. Some of these undiscovered deposits may also contain economic rare earth elements and other critical minerals. Analysis of new data in 2018 also identified additional areas with potential for groundwater resources in the WPA.

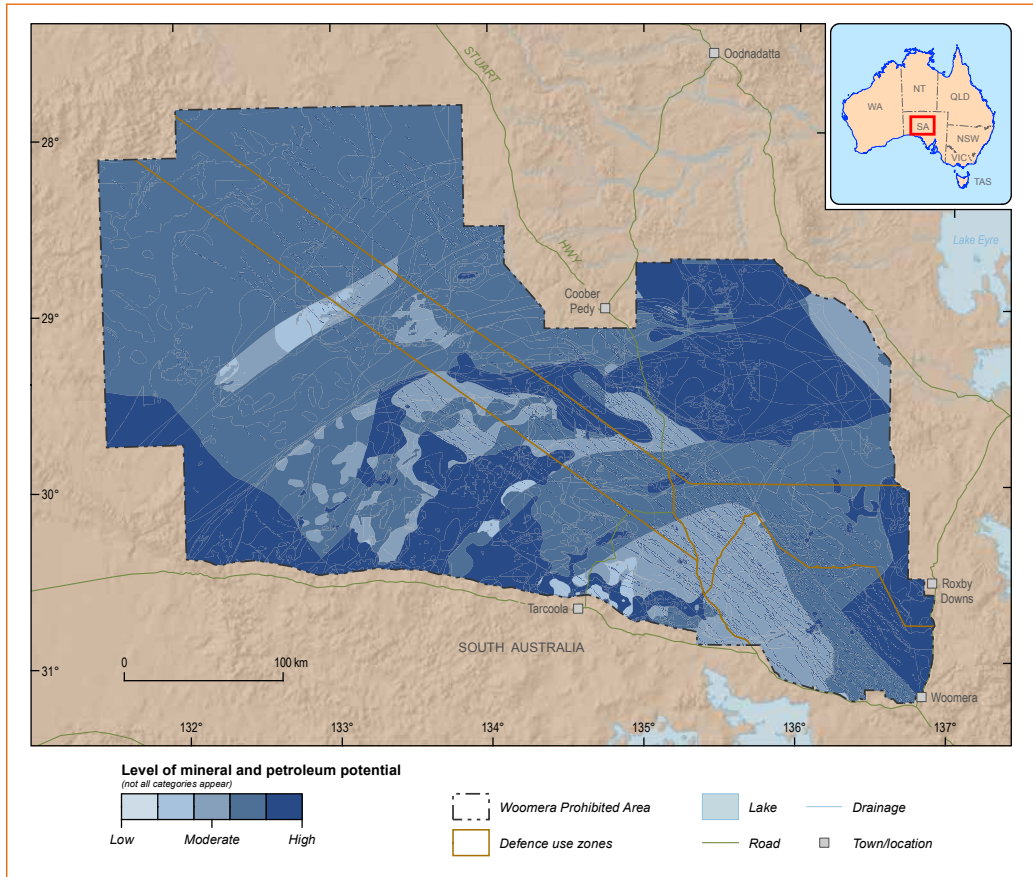


Figure 11: Combined resource potential in the Woomera Prohibited Area (including mineral, coal and petroleum resources). Credit: Geoscience Australia.

Based on the Geoscience Australia report, an economic assessment by the DIIS modelled ‘conservative’ and ‘optimistic’ scenarios. For the conservative scenario, it estimated that the undiscovered mineral resources in the WPA could allow for five new additional mines. Optimistically, it is estimated that 13 new mines could operate in the area.

The scenarios consider what is possible from a geological perspective in the longer-term. From an economic perspective, mining investments typically require large upfront capital costs, and there are long lead times for development and construction before revenue is generated. Committing to exploration activities and eventual project funding in the WPA can depend on factors such as the regulatory environment, tax and royalty arrangements, community acceptance, technical risks and access to infrastructure. The prices of commodities being

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mined are also a key consideration when assessing whether a project is viewed as viable or risky. In the WPA, the effect of declining iron ore prices from 2013 resulted in the Peculiar Knob mine being placed in care and maintenance and the Giffen Well project being halted.

The value of mineral resources can be considered in two ways. The first is the potential profit generated over time from mining and selling the resource. This was evaluated in the economic assessment for both the known resource and possible future mines using a Net Present Value approach (for more detailed methodology see page 11 of the Economic Assessment of Mineral Resources within the Woomera Prohibited Area, link provided in Annex D). For known resources in the WPA, the Net Present Value is estimated to be \$5.9 billion. The future potential mines in the WPA are estimated to have a Net Present Value between \$6.4 billion and \$19 billion using the conservative and optimistic scenarios. Adding the Net Present Value of mineral resources assumes that there is enough capital and labour for multiple additional mining projects to occur in the WPA. As such, it is important to interpret the estimated value of the mineral resources with this consideration in mind.

A second measure of the value of the mineral resources is through the flow-on impacts of mining operations. Mining operations generate economic value through employment (during construction of the mine and general operations), royalties and value-add to the economy. These impacts were measured using Input-Output analysis (for more details on the methodology, see page 15 of the Economic Assessment of Mineral Resources within the Woomera Prohibited Area, link provided in Annex D). The analysis estimated the impacts of the future possible mines in the WPA individually. Considering the impacts of all the mines operating concurrently in the WPA would require more complex analysis. The largest future possible mine in the WPA was estimated to generate 1,380 jobs each year through direct employment and 1,250 jobs through secondary employment. The same mine could also be expected to add \$920 million each year to Gross State Product and \$53 million in royalties. The economic impacts of the other future potential mines would be expected to have relatively smaller effects, but would still have the potential to materially increase employment and economic activity.

The above mentioned reports provide information on what might be expected to be present in the ground in the WPA, with no timeline or forecast on discovery.

The Review's consultations with the mineral resources sector and the South Australian Government reinforced the potential value of the WPA for mining, and the national economic importance of that activity. The potential of the WPA notwithstanding, interlocutors pointed to the challenge of operating in a remote environment with minimal infrastructure, the significant depth of mineral deposits, the difficulty of penetrating some types of mineral cover, and scarcity of water in some areas. They all saw further potential in developing mines in the WPA, but did not envisage many new or expanded operations in the near-term. Noting the typically long lead time required to develop operating mines, some interlocutors said it would be reasonable to expect one new mine established in the WPA over the next ten years, but probably no more than that. Even a single new mine, however, would provide an important economic boost and jobs for the local region and South Australia.



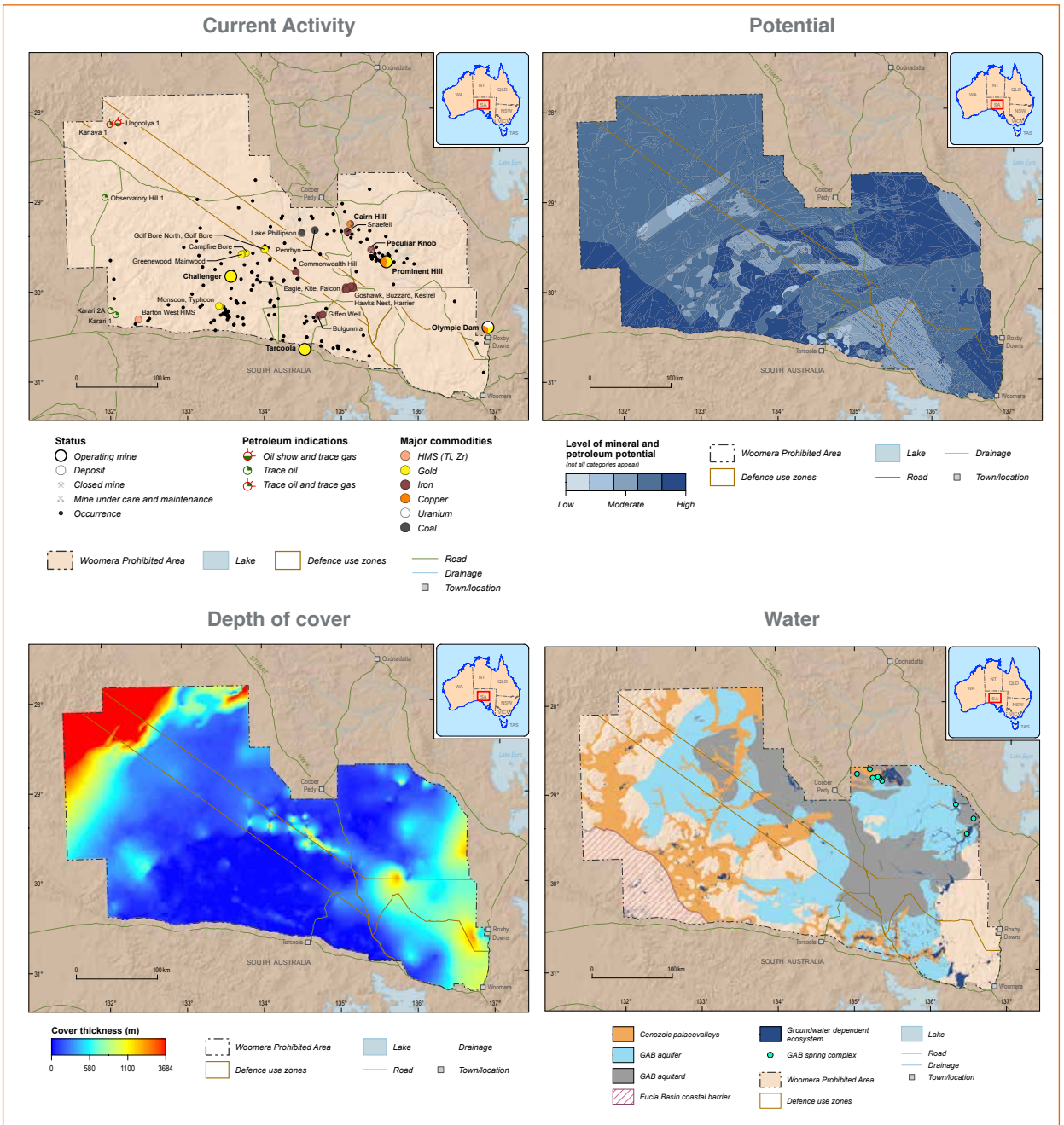


Figure 12: Resource potential and challenges of operating in the remote environment of the Woomera Prohibited Area. Credit: Geoscience Australia.

### Future Defence requirements from the WPA

Defence anticipates that its operations within the WPA will increase steadily and substantially from 2019. Over the next decade, the area will become more important for the development of new Defence capabilities, particularly high-speed, long-range and non-kinetic weapons, which require increasingly large and secure test facilities.



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For Defence testing, the WPA offers an environment unique in the Western world. Its key assets are its large geographic size, low population density, electromagnetic quietness and secure environment. Test ranges in some other countries can no longer accommodate some activity because of the encroachment of people, population centres and electromagnetic and other technological interference. While that is an issue to be managed in the WPA, its remoteness and minimal population in the area have helped to preserve the value of the area for Defence, and maintain its ability to safely and securely host a range of Defence activities.

The WPA is, and will remain, a prized location for testing of conventional kinetic military systems – bombs, missiles and other explosive ordnance. As traditional munitions become smarter, are developed to travel further and become progressively more capable of direction changes during flight, the size of the WPA is increasingly critical to ensuring the systems are tested to their fullest capability but done so with minimal risk to safety.

As technology continues to advance there will be a growing need for Defence to access the WPA for research and development and evaluation of new systems and capabilities. These include unmanned systems, hypersonic vehicles, directed energy weapons, autonomous aerial systems, intelligence, surveillance and reconnaissance capabilities, navigation warfare and force protection, among others.

The greatest growth area will be the testing of non-kinetic systems that do not rely on explosive force or chemical reaction, and instead use the electromagnetic spectrum to, for example, damage or degrade systems reliant on wireless or radio frequency networks. Because these systems are invisible, deliver an effect over a wide area and cannot always be easily contained, testing must be done in an area like the WPA where there is reduced risk of conflicting with civilian infrastructure or communications systems – or of civilian systems interfering with Defence equipment.

Defence's ongoing investment in modernising its force will see systems become more connected. The ability to operate Navy, Army and Air Force platforms together will expand the test footprint

*F-35A Lightning II Joint Strike Fighters.  
Credit: Department of Defence.*



*Taranis Unmanned Combat Air Vehicle technology demonstrator programme. Credit: BAE Systems.*



both on the ground and in the air, driving increasingly complex and integrated testing. While platforms might be separated by large distances across the WPA, they will be sharing, and responding to, data from the various sensors to operate more effectively as a combination.

The transition to next generation capabilities will see a growing focus on development of a joint and integrated force across land, sea and air platforms. The WPA will provide the physical and electronic space needed for various joint programs, including the electronic warfare integration program and integrated air and missile defence program.

The WPA is anticipated to become more valuable as an area for international engagement and cooperation, particularly with the United States and United Kingdom. Both see significant value in the unique conditions offered by the area, including its secure and safe environment. The United Kingdom, for example, undertook the first ever flight of its Taranis Unmanned Combat Air Vehicle technology demonstrator programme in the WPA in 2013.

## **Views on coexistence and the WPA Rule 2014**

### *Coexistence and the WPA Rule*

Feedback to the Review through submissions and consultations was that the coexistence framework and WPA Rule are, overall, working effectively.

Mineral resources companies, pastoralists, Aboriginal groups, the South Australian Government and representatives from other government and industry sectors all praised the arrangements for providing clarity around access requirements and clear processes. The South Australian Chamber of Mines and Energy (SACOME) said in its submission to the Review that the broad consensus among its member companies was that the coexistence framework was working well. It noted that establishing zones and the accompanying time share model had been useful for providing some certainty about when and how access for non-Defence users occurs.

The South Australian Government similarly pointed in its submission to the success of current arrangements, noting the model was based soundly on multiple land use principles. It said the coexistence framework had increased positive interactions among the various stakeholders

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in the WPA, as well as increasing awareness and understanding of the many interests, rights, requirements, and concerns of the various user groups.

At the open information session the Review held in Adelaide in May 2018, one exploration company presented on its experience operating under the WPA Rule. It highlighted that while there was an administrative overhead that applied to work in the WPA, it was able to navigate the process effectively and had been able to achieve its exploration objectives under the current arrangements. That experience was echoed in the Review's other consultations.

The Review received many proposals to improve current arrangements, but there was no suggestion of any serious systemic problems with the coexistence framework or the WPA Rule. In fact, given that reviews tend to focus attention on improvements at the margin rather than strengths, the Review considers that the feedback received is a strong endorsement of the fundamentals underpinning the current approach.

The importance of the WPA for military activity was universally recognised by the other users of the area. Both the South Australian Government and SACOME submissions acknowledged the importance of the WPA as a national security asset. Other groups emphasised that they wanted to work with Defence to protect the security of the WPA in support of coexistence. It was broadly understood and accepted that Defence requirements of the area would curtail some other user activity and would at times increase the cost and complexity of business operations there. The key was to ensure that businesses were able to calculate any additional costs in advance and were aware of restrictions from the outset.

### *The value of relationships*

A recurring theme during consultations was that strong, productive and open relationships are critical to coexistence. The South Australian Government submission stated that 'the current coexistence framework led to opportunities to engage and build relationships with a range of stakeholders, particularly with the traditional custodians and Aboriginal groups with Native Title rights and interests over the WPA'.

Key individuals, particularly within the Department of Defence, were highlighted as making exceptionally strong contributions to the relationships of WPA coexistence. They were noted as always looking to minimising tensions inherent in the WPA arrangements, and maximise the collective value of the area for its multiple purposes.

WPACO was also highlighted as providing valuable, professional and generally timely assistance on WPA processes and procedures.

Almost all Aboriginal groups emphasised that the improved relationship was the result of enhanced people-to-people links between Defence and Aboriginal groups, particularly efforts made by the WPA Range. For example, there had been valuable collaboration between the Range and Aboriginal groups on preserving areas of significance and ensuring that Defence testing did not unintentionally damage any culturally sensitive sites. WPACO's one-on-one meetings with Aboriginal groups to develop working level agreements were also seen as valuable.

SACOME's submission to the Review echoed the positive sentiments on the WPA Range and WPACO. It stated that their members 'have excellent working relationships with Defence

personnel and expressed their enthusiastic support for initiatives like the Woomera Open Day which helped to build these relationships’.

The Review found that there were good relationships between Defence and pastoralists who had worked together in the spirit of coexistence. Discussions with pastoralists indicated strong support for Defence’s use of the WPA, noting that they typically worked together for mutual benefit. For example, pastoralists had been able to access some of the infrastructure that Defence maintained in the WPA, such as roads and water, to support the running of their property. At the same time, pastoralists had also worked closely with the WPA Range on security and safety, providing important situational awareness about activity – including any unusual activity – in the area.

Mine operators, pastoralists, Aboriginal groups and the rail operator pointed to efforts by the Range to consult them when planning testing activity that resulted in amber or green zone activations, or the requirement to evacuate areas of the range or close road and rail. Defence goes to considerable lengths to avoid any unnecessary inconvenience to other WPA users, and, even then, remains pragmatic about making schedule adjustments if they can be accommodated.

On-the-ground cooperation in the WPA reflects the fact that Defence personnel in the area are an important part of the remote but closely connected community in the WPA region.

The CSIRO – which is working to determine the best options for preparing radioactive waste material currently stored in the WPA – also provided positive feedback on cooperation with Defence. It highlighted that Defence personnel based in Woomera have been working closely with the CSIRO team as it applies innovative robotic technologies to inspect the physical integrity of storage drums located on the range.

*Visitors at Woomera Prohibited Area stakeholder open day inspect a Hornet aircraft, 2013.  
Credit: Department of Defence.*



# A Contemporary Coexistence Framework

## Introduction

In proposing a contemporary coexistence framework for the WPA – as is required in the Review's terms of reference – a key judgement of the Review is that the existing coexistence arrangements and the WPA Rule are fundamentally sound. Overwhelmingly, they have provided the guidance and certainty that non-Defence users, particularly the resources sector, sought in 2010-11.

That said, there is scope to make some valuable improvements to the arrangements. There are also emerging pressures that will require careful management over the coming years.

This section of the Review report makes recommendations and observations in response to the constructive feedback that was provided in submissions and consultations. It incorporates views formed by the Review in the course of its work.

## Contemporary coexistence is as much about relationships as rules

The effectiveness of current WPA coexistence arrangements reflects the innovative policy and legal foundations set by the 2010-11 WPA Review. That review process and its productive collaboration set a strong foundation. The success of current arrangements must, however, also be credited to the dedication, pragmatism and good judgement of those involved in implementing the framework – both in spirit and letter. Defence, and the positive role of key Defence individuals, has been pivotal alongside strong support from the South Australian Government, the resources sector, Aboriginal groups, pastoralists and many others.

The Review recommends that in delivering a contemporary coexistence framework, as much focus is given to strong and productive relationships as on sound legal and policy frameworks.

The judgement of the 2010-11 WPA Review that Defence and the South Australian Government have shared responsibility for managing the WPA remains sound. Given the enduring importance of the area to national security, the Review recommends that Defence use of the area continue to be given precedence, and managed in the context of the WPA also having national significance for Aboriginal cultural heritage, mineral resources, pastoral operations, environmental research and other scientific activity.

## Recommendations

- 1. Building on the success of current arrangements, contemporary coexistence in the WPA should focus as much on strong and productive relationships as on sound legal and policy frameworks. Defence national security requirements within the WPA should continue to take precedence. As well as being critical to Defence testing and evaluation, the WPA should continue to be managed as a place of national significance for Aboriginal***



cultural heritage, mineral resources, pastoral operations, environmental research and other scientific activity. The Commonwealth and the South Australian Governments should continue to approach their custodianship of the area as a shared responsibility, with the goal of maximising the value of the area for state and national benefit.

## More flexible zoning arrangements

Resources companies, some pastoralists, the South Australian Government and Defence all asked the Review to consider the feasibility of more flexible zoning arrangements in the WPA, particularly the green zone which is the largest portion of the area. There were several suggestions for a more granular model.

The current zoning arrangements reflect the recommendations of the 2010-11 WPA Review, which proposed the establishment of four discrete usage areas (see figure 13), along with a timeshare arrangement that set a maximum number of days each area could be available to Defence for its exclusive use by declaring periods of exclusion.

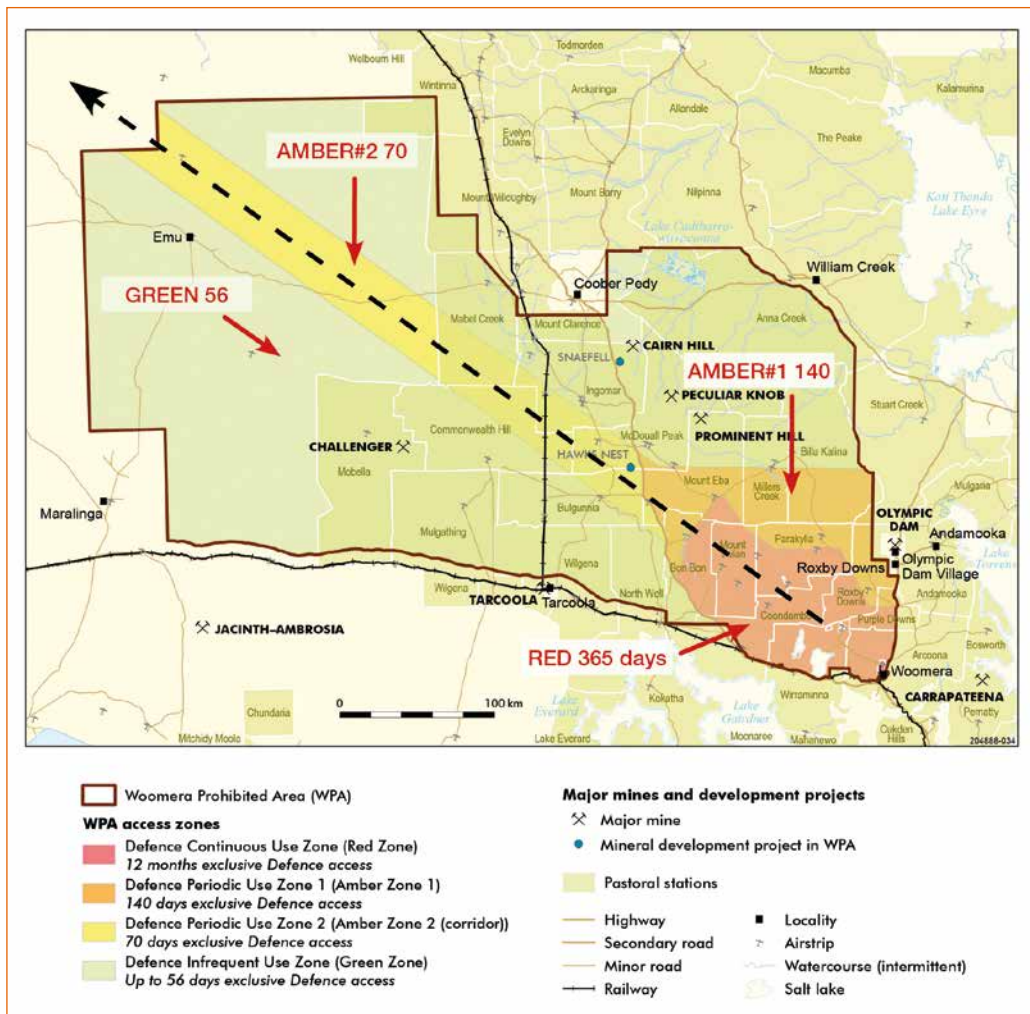


Figure 13: Current usage zones in the Woomera Prohibited Area. Credit: Department for Energy and Mining, Government of South Australia.

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The period of advance notice Defence is required to provide before the commencement of an exclusion period is specified in the WPA Rule, and following the conclusion of an exclusion period there are minimum periods an area must remain open before Defence can use it again:

- the red zone is for Defence's continuous use, noting that existing users (mainly pastoralists and Aboriginal groups) can still access the area. Defence has access to the area for 365 days a year and the area is essentially closed for non-Defence activity;
- in the amber zone 1, Defence may use the area for up to 140 days a year, with a minimum of 42 days between closures;
- the amber zone 2 may be used for a maximum of 70 days a year, with a minimum of 42 days between closures; and
- the green zone may be used for up to 56 days a year, with a minimum of 90 days between closures.

The zoning and timeshare model has been highly successful in providing increased certainty for all WPA users and helping them plan for closures well in advance. As a new arrangement it was intentionally rigid. There is scope now, however, to introduce more flexibility to the arrangements and capitalise on the high levels of trust and understanding that have been built over the years of operationalising the 2014 system.

A more flexible arrangement would help better balance some of the inherent challenges in the zoning and timeshare systems. For example, the requirement for Defence to provide long periods of advance notice of exclusion means that it will often need to specify a longer period of use than is ultimately required. This is due to the nature and complexity of military testing, which typically means an exact test plan cannot be settled until weeks before a trial. Even then, factors such as weather and reliability of experimental systems mean any test requires a flexible approach. There is a direct trade-off between the amount of notice Defence is required to provide, and how precise it can be with the time actually required for a test.

The requirement to exclude people from an entire zone, rather than just part of it, can result in unnecessary inconvenience. And the long periods that a zone must remain open between testing before Defence can close it again, means that Defence will sometimes keep a zone activated to conduct non-sequential tests even though there might be a gap between them. Some flexibility in the times between exclusions may benefit Defence and other users.

The Review has consulted WPA users on a proposal for a grid-based approach to managing the green zone. It is the largest portion of the WPA at 92,276 square kilometres or 86 per cent of the range. Under this proposal the existing amber corridor (amber zone 2) would be folded into an even larger green zone which would then be managed as a series of 15-nautical-mile grid squares. Defence would then exclude people from only those squares that were required for a test, rather than the entire area.

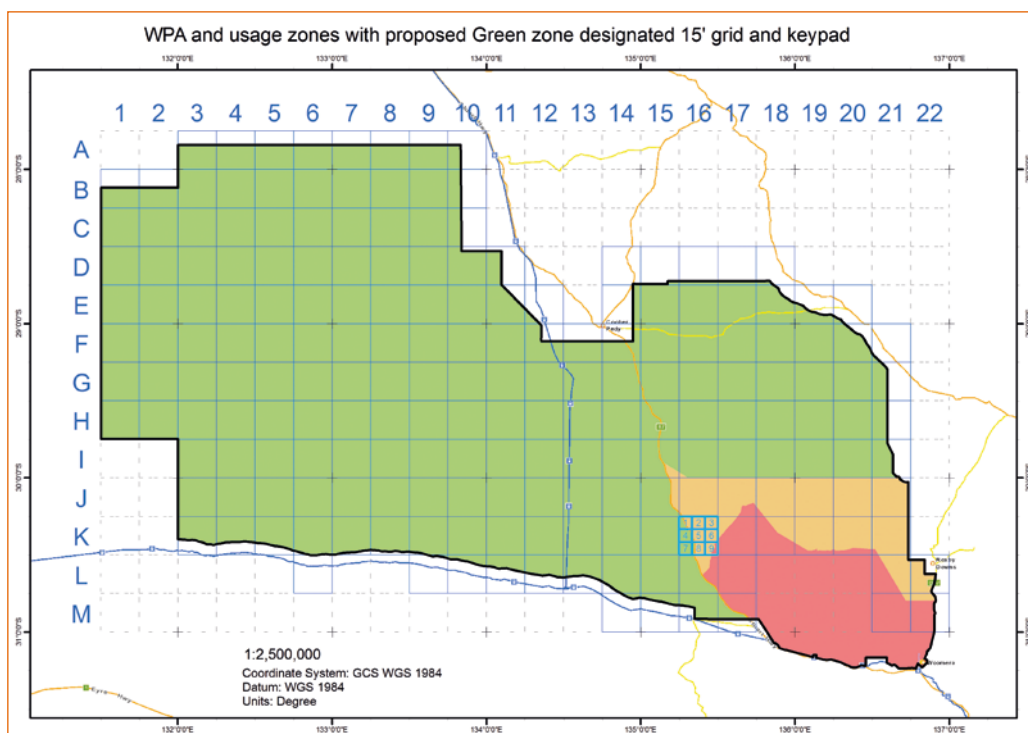


Figure 14: Green zone concept - grid square configuration. Credit: Department of Defence.

Responses to a concept paper on the grid-based green zone proposal were overwhelmingly positive. Among the benefits identified were the ability to more frequently avoid closing roads such as the Anne Beadell Highway, resulting in fewer disruptions to tourist traffic (an issue raised specifically with the Review).

The stakeholder environment in the WPA is, however, complex and different users of the area have different needs. Mineral exploration companies, for example, said they planned their activities well in advance and they would be concerned if notice periods become too short.

The Review recommends that the feasibility of a grid-based green zone concept be determined through a collaborative co-design process managed by Defence and the South Australian Government, in cooperation with industry and other WPA representatives. Collaborative co-design is well suited for complex environments like the WPA, and will help ensure the diversity of interests are taken into account.

Implementing a grid-based green zone may require a change to the way in which the zones are prescribed in section 6 of the WPA Rule. Amendment of the South Australian Government Plan (DMITRE Plan 204192-001 dated 1 September 2014) that describes each of the zones may also be needed.

It is important to emphasise that while the greater flexibility of the new green zone arrangement stands to provide many benefits, Defence will still need from time-to-time to close the entire area. Anybody operating in the WPA – but particularly mines – should continue to plan for shut-downs. That must be an integral part of their business model. Tourists and others that use

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infrastructure such as roads and railways in the WPA must continue to be alert to closures. The nature of some Defence testing means it can only be done safely and securely if the entire WPA area is closed to other activity.

## *Recommendations*

**2. Defence and the South Australian Government should employ a collaborative co-design process to determine the feasibility of a more flexible grid-based arrangement for the WPA green zone,** in close cooperation with the resources industry and other WPA stakeholders. If required, the Government should amend relevant legislation to give effect to the new model. Even with a more flexible green zone arrangement, companies operating in the WPA must continue to incorporate shut-downs in their business models. Tourists and others relying on roads and rail in the WPA must remain alert to closures.

## **Technology and next-generation Defence systems**

While the WPA will remain important for the testing of conventional military equipment – bombs, missiles and other kinetic weaponry – the next-generation of Defence systems will rely increasingly on non-kinetic systems which use the electromagnetic spectrum. This is sometimes referred to as electronic warfare. Like other nations, Australia is investing in electronic warfare capabilities such as the EA-18G Growler, which is an electronic attack aircraft capable of disrupting, deceiving or denying a broad range of military electronic systems, including radars and communications.

The WPA's sparse population makes it well-suited for testing these systems. Its quiet electromagnetic environment provides a noise-free area for calibrating and operating equipment. Minimal infrastructure on the ground means there is lower risk of military systems interfering with civilian equipment and vice-versa.

Mining companies, mineral explorers, scientists, pastoralists and infrastructure operators such as the railway are all, however, also looking to increase their use of technology in the WPA. For example, pastoralists are installing long-range Wi-Fi networks to remotely monitor stock movements and water points. Mining companies are looking to establish private mobile telecommunications networks to enable the high-speed data flows necessary for automation and technologies such as autonomous vehicles. Unmanned aerial vehicles are potentially useful for many different purposes, and range from cheap consumer-grade models to sophisticated commercial drones.

Managing technology coexistence within the WPA will become more important, complex and costly over the next decade. It will require new procedures and relationships among those with an interest in the area. Given the rapid pace of technology change, a forward looking and agile effort will be needed.

WPA permit holders already have obligations to notify – and seek approval from – Defence when introducing certain equipment and technologies to the range. This is typically referred to as 'notifiable equipment'. At present, notifiable equipment is managed by listing it in the WPA Rule as a condition applying to all permits, or – for those with permission to access the area under Regulation 35 of the Defence Force Regulations (including pastoralists and some



mining companies) – as a condition to the deed. For example, under section 29(3) of the WPA Rule a permit holder must not possess, or operate, an unmanned aerial vehicle (UAV), erect a building or any other structure that is more than 7.5 metres high, or possess a firearm or explosives without first obtaining written approval from the Minister for Defence. This approach of specifying notifiable equipment in the WPA Rule does not provide the agility to both add and remove items that is required in today's fast-paced technological environment.

The Review recommends that a new mechanism be developed for determining what constitutes notifiable equipment and any conditions on the operation, use or possession of it within the WPA. The WPA Rule should be amended to allow the Defence Minister (or their Delegate) to make a determination by legislative instrument which specifies the particular types of equipment for which a permit holder must notify Defence. The determination would specify classes, types or specific items of equipment which are notifiable and any conditions that apply to their use. A determination of this type would be similar to how notification is provided for exclusion periods that apply to WPA access zones.

Subject to the final form of any determination of notifiable equipment the *Legislation Act 2003* will require the lodgement and registration of a legislative instrument on the Federal Register of Legislation and require the tabling of the instrument before both Houses of Parliament. Upon tabling, the instrument would then be subject to a disallowance motion, in whole or in part. If a motion cannot be resolved within 15 days, the instrument would be disallowed and cease to have effect.

For those with access to the WPA under the Defence Force Regulations, changes to notifiable equipment would be reflected in updates to the conditions of their permission.

If the recommendation to grant the Minister a power to specify notifiable equipment by way of a determination is not supported, then the Review recommends that the relevant section of the WPA Rule be amended to provide a more contemporary list of notifiable equipment. This approach is considered less suitable as any further updates or amendments to the list would be a slower process than a determination.



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Whether it is done by determination or amending the WPA Rule, Defence should – in close consultation with the WPA Advisory Board – review the list of notifiable equipment and associated conditions annually to ensure that it keeps pace with rapid technology change and does not become overly restrictive on businesses operating in the WPA. Given the emerging challenges in managing technology coexistence, the WPA Advisory Board should regularly consider technology issues as part of a forward work plan and engage with businesses on what technologies they are looking to use in the WPA.

The Review also recommends that Defence and Defence SA identify a suitable company – or companies – that specialise in defence matters and could be available to provide technical support to WPA users wanting to introduce significant new technology or equipment into the area. These third-party technical advisers would be available on a fee-for-service basis, with Defence's contribution being to provide them access to relevant (and if appropriate, classified) technical data on Defence activities in the area. For example, if a mining company were looking to use autonomous vehicles in the WPA, it could engage a third-party technical adviser to help it develop a proposal that would account for any unique WPA requirements – for example, operating on (or avoiding) certain communications frequencies, or hardening electronics to guard against electromagnetic emanations.

The Review believes that the private sector is best placed to provide such technical advice. The alternative is that Defence spends its resources considering and negotiating proposals that have not taken into account the specific operating requirements of the WPA. That has both a dollar and opportunity cost to Defence. Third-party technical advisers would help ensure that Defence receives high-quality proposals for consideration that already account for any additional WPA-specific requirements.

The use of third-party technical advisers would not be mandatory – and would not itself guarantee Defence approval for the use of technology in the WPA – but would be recommended strongly for any significant new project or use of technology in the WPA.

## **Recommendations**

**3. All users of the WPA should give greater emphasis to managing the introduction and use of technology in the area** – particularly Defence, mineral resources companies and pastoralists. The Woomera Prohibited Area Rule 2014 should be amended to introduce a mechanism for the Minister for Defence to determine by legislative instrument what constitutes 'notifiable equipment' that must be approved by Defence before being brought into the WPA. In consultation with the WPA Advisory Board, Defence should annually re-examine and, if necessary, update the notifiable equipment list to ensure that it remains contemporary and practical for the WPA. WPA users proposing to introduce new technology or equipment into the area should consider engaging third-party technical advisers with the appropriate expertise and security arrangements to assist them develop proposals that account for the unique requirements of operating in the WPA. Anybody who lawfully accesses the WPA should ensure they are aware of obligations to seek approval from Defence before using notifiable equipment or technology within the area, and should consult with Defence if they are uncertain.

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## Foreign investment

Foreign investment in the WPA was raised frequently in consultations and in submissions to the Review. The South Australian Government, South Australian Chamber of Mines & Energy (SACOME) and several other submissions recommended developing 'clear and prescriptive' guidelines for foreign investment in the WPA. The South Australian Government submission noted that 'transparency of decisions about foreign investment is critical to not only supporting the future economic development of the WPA but also to Australia's reputation as a low risk investment destination.'

The Australian Government has a longstanding policy of commitment to an open and non-discriminatory foreign investment regime. Investment from overseas has been integral to Australia's prosperity, and continues to be particularly valuable to the mining sector as a source of capital, ideas and technology.

For foreign investment in the WPA, however, there are additional security considerations that must apply. The WPA hosts a range of sensitive Defence activities that need to be protected. Any compromise of them could severely harm Australia's national security and diminish Australia's standing with allies and friends.

Ensuring the security and suitability of the WPA environment for Defence testing must remain the dominant concern.

Restrictions or additional requirements for foreign investment in areas of national security sensitivity are not unusual. They recognise that while, in the vast majority of cases, capital and investment from overseas brings substantial benefits, there is also a risk of it being used by governments to advantage themselves, including for intelligence, defence or political gain. Countries likeminded to Australia – including the United States, United Kingdom and Germany – are carefully considering how to approach foreign investment in or around national security assets, and updating their policy approaches accordingly.

### *Ownership, control and influence considerations for access to the WPA*

While there are some exceptions – for example some pastoralists, Aboriginal groups and South Australian Government employees – a company or person wishing to access the WPA must apply to Defence for an access permit. Defence assesses all applications on a case-by-case basis. It looks to identify if the proposed access would harm Defence activity in the WPA, particularly from a security point of view. If concerns are present, Defence will consider whether they can be mitigated by adding conditions to a permit.

If security concerns cannot be mitigated – or it is unlikely that an applicant will comply with the conditions of the permit – then Defence may refuse to issue the permit.

There is, however, a presumption in the governing legislation that access permits are granted.

If there is foreign investment and relevant financial thresholds are triggered, investment in the WPA may also attract scrutiny by the Foreign Investment Review Board (FIRB). In these cases a broader set of national interest considerations apply through the FIRB process, but an access approval from Defence for the WPA is still required and is considered in parallel.

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Foreign investment is a particularly important consideration for Defence when it assesses access applications. But it is only one of many factors that are reviewed. The emphasis on foreign ownership, control and influence recognises that while Australia benefits substantially from investment from overseas, it can in some rare circumstances also provide avenues and opportunities for foreign intelligence collection and/or foreign interference.

The practice of assessing all applications on a case-by-case basis according to their merits is a strength of current arrangements. It allows a comprehensive consideration by the Minister for Defence of any proposals for commercial or related activity in the WPA, and is consistent with Australia's commitment to enabling foreign investment. It provides an important process to determine whether mitigations can be put in place to facilitate activity. It gives flexibility to take into account the specific circumstances of every application.

No company is immune from being used by another nation for intelligence benefit, but businesses that are overwhelmingly Australian typically present the least security risk. Accordingly, when assessing the foreign investment aspects of any proposals to access the WPA, the Review considers that to ensure the security of the WPA a key consideration for Defence should be whether companies have substantive Australian ownership, control and influence.

Businesses wishing to operate in the WPA should be able to demonstrate strong transparency, independence in decision making, and an institutional resistance to exploitation by any foreign government for intelligence gathering or foreign interference, or malicious personal action.

Consistent with the case-by-case approach, there is no single way for a business to demonstrate such qualities. Membership of the Defence Industry Security Program (DISP) would be an indicator. Other factors Defence should consider include whether a business:

- outlines a clear strategic direction and commercial rationale for operating in the WPA;
- is listed on the Australian Securities Exchange (ASX) and/or is able to demonstrate a high level of transparency such as through disclosure of business practices, structure and number of employees;
- demonstrates good corporate governance principles consistent with those listed by the ASX, including:
  - has formalised functions for the board and delegated and distinct functions for management;
  - has an independent board of directors (and additionally for the WPA substantive Australian representation on the board, a focus on security, and security clearance by one or more directors and responsible officers, as necessary);
  - has an established code of conduct for company officers; and
  - has established business policies for the oversight and management of material business risks.
- is willing to identify its beneficial owners (an individual who directly or indirectly owns 20 per cent or more of the business, consistent with the *Foreign Acquisitions and Takeovers Act 1975* and the *Corporations Act 2001*), and to notify proactively any changes to beneficial ownership during the life of the WPA permit;

- demonstrates robust internal procedures and training for managing security of information, assets and resources, and active prevention of corrupt business practices;
- demonstrates ability to comply with security risk mitigation arrangements, including those that might be applied as permit conditions; and
- is likely to provide accurate, reliable and timely notification to Defence on changes to ownership or other factors that would have a material adverse effect on capacity to comply with a permit.

These should not be viewed as a prescriptive, mandatory or exhaustive list of requirements. It would not, for example, be reasonable to expect every business to be listed on the ASX. At the same time, ASX listing would not necessarily itself indicate that a business is suitable to access the WPA.

Demonstration of these qualities would not guarantee a permit. But it would provide a degree of confidence that the applicant is committed to genuine transparency, and to behaviours and processes that are necessary for assuring the integrity of the WPA.

There should be early and ongoing engagement between businesses and Defence to facilitate a common understanding of what information should be provided as part of the application process, to allow each case to be considered on its merits.

### *Arm's-length foreign investment framework*

Where foreign influence or related factors are still a concern – for example, where there is a risk that cannot be mitigated of a company being subject to extrajudicial directions from any foreign government that conflicts with Australian law – foreign investment in the WPA could be facilitated by an arm's-length arrangement.

One option would be to leverage the recently refreshed Defence Industry Security Program. Although it is primarily designed to provide confidence and assurance in the security practices of businesses that partner with Defence, the Review believes it could have significant value in the WPA. As well as enabling arm's-length foreign investment, DISP membership could be employed as a broader risk management initiative to strengthen businesses security practices in the WPA, and help manage the more challenging security environment there.

To facilitate arm's-length foreign investment, conditions could be applied to a company's WPA access permit. They would limit tightly (or entirely preclude) physical access to the area and require that on-the-ground operations, and provision of plant and equipment, be by a DISP member mining services provider or providers. Such an arrangement would not be unusual in the mineral resources sector. It would be analogous to the owner-contractor model that is commonly used – an arrangement where the owner of the tenement does not have the mining equipment and/or employees to conduct operations on the ground and contracts a mining services company to provide those resources.

To achieve DISP membership the mining services contractor would need to meet certain eligibility and suitability criteria and provide details such as on foreign ownership, control and influence. Security officers with the requisite national security clearance must be appointed (see figure on the following page).

Given that businesses operating in the WPA are not required to handle classified Defence material, they would only be required to meet the entry requirements of the DISP, which are the least onerous to attain and maintain.

There would be discretion within this framework to provide additional guidance to potential investors in line with contemporary security circumstances and government policy.

### Defence Industry Security Program entry level requirements

Governance	Security	Information and Cyber Security
Provide business details	<b>Personnel Security</b> Security Officer has no ability to sponsor security clearances	<ul style="list-style-type: none"> <li>• Provide a description of information and cyber security practices and accreditations. For example:               <ul style="list-style-type: none"> <li>– Unclassified network in accordance with the Defence Security Principles Framework</li> <li>– Information security management ISO/IEC 27001/2:2013 (International Organisations for Standardisation)</li> <li>– ASD Top 4 (strategies to mitigate targeted cyber intrusions)</li> <li>– Protecting Controlled Unclassified Information in Nonfederal Systems and Organisations (NIST SP 800-171 Rev.1 – US ITAR requirement)</li> <li>– Cyber security for defence suppliers (Def Stan 05-138)</li> </ul> </li> </ul>
Provide points of contact		
Must have a nominated Chief Security Officer (must be able to meet AGSVA eligibility requirements for Baseline clearance)	Provide a description of employment screening practices	
Must have a nominated Security Officer (must be able to meet AGSVA eligibility requirements for Baseline clearance)	Employment screening is the minimum standard for all new recruitments	
Security Officer must understand and effectively manage personnel/facilities and information and cyber security up to an Unclassified level	<b>Physical Security</b> Provide a description of physical security and access controls at each facility and their location	
Report changes in Foreign Ownership Control & Influence		
Implement Security Policy & Plans		
Insider threat program		
Security Standing Orders		
Risk assessment		
Undertake training and awareness		
Introduction to DISP course to be completed by the Security Officer		
Annual Security Awareness Course – to be completed by all personnel		
Reporting and management of security incidents and foreign contacts		
Conduct travel briefings		
Complete annual assurance activities		
Annual Protective Security Self-Assessment – exception reporting to Defence		
Maintain an appropriate system of risk oversight and management (i.e risk register including security considerations)		

Figure 15: Defence Industry Security Program entry level requirements

**Note:** The entry level requirements are current as at December 2018 and are subject to change as the program develops.



## *Overriding concern for national security in granting and renewing permits*

National security requirements of the WPA remain an overriding concern in considering and renewing applications for access and commercial activity. The Minister for Defence has, and should retain, the discretion to deny applications, or to not renew them, in the interests of ensuring the security of Defence activities in the area – and to take into account shifts in the national security environment.

## *Recommendations*

### **4. To manage the risks to national security associated with investment in the WPA, a key consideration for Defence when it assesses WPA access applications should be whether companies have substantive Australian ownership, control and influence.**

*Defence should require businesses wishing to operate in the WPA to demonstrate strong transparency, independence in decision making, and institutional resistance to exploitation by any foreign government for intelligence gathering or foreign interference, or malicious personal action. Defence should implement a policy of arm's-length foreign investment in the WPA for operations where foreign influence or related factors are a concern, under an arrangement where the investor has limited or no physical access to the area, uses only approved contracted services for any on-the-ground work or plant and equipment, and is subject to strong compliance.*

## **Accessing the red zone for mineral exploration**

The Review was asked to consider the possibility of non-Defence access to the red zone for mineral exploration. The submission from the South Australian Government emphasised the prospectivity of the entire WPA, given its overlap with the Gawler Craton, and recommended that work be undertaken to gain a more detailed understanding of the mineral, energy and other resources that may be present. Discussions with the resources sector highlighted that the red zone was of particular interest, as there has been very limited on-the-ground exploration in that area to date, and none since the WPA Rule was put in place.

The WPA red zone was established in response to the 2010-11 WPA Review recommendations and was formally gazetted following the introduction of the WPA Rule in 2014. At just under 10,000 square kilometres it is approximately eight per cent of the WPA and about three times the size of the greater Adelaide region. The Kokatha Native Title Determination Area overlaps a large portion of the red zone and there are nine pastoral leases lying partly or wholly within it.

The red zone is where the majority of Defence's testing and evaluation activity occurs. It is closed to resources exploration or other commercial uses. The WPA Rule prohibits the Minister from issuing permits to access the area but there are provisions allowing access for South Australian and Commonwealth Government employees. Pastoralists and Aboriginal people whose traditional lands are covered by the WPA are permitted access to the area under the *Defence Force Regulations 1952*. They are, however, required to evacuate for safety and security purposes as required by Defence.

Consistent with the outcomes of the 2010-11 WPA Review, geophysical surveys have taken place across the WPA, including the red zone. In 2017, the South Australian Government in

partnership with Geoscience Australia began the world’s largest high-resolution airborne geophysical and terrain imaging program to better understand the mineral resources potential of the Gawler Craton. The Gawler Craton is the oldest and largest geological province in South Australia covering approximately 392,000 square kilometres of mainland South Australia. The WPA covers almost 30 per cent of the Gawler Craton. It holds economically important mineral deposits, including those associated with the four mines within the WPA and at the Olympic Dam and Carrapateena mines adjoining the WPA in the east. With Defence support, the aerial survey activity includes overflight – and associated data collection – of the red zone.

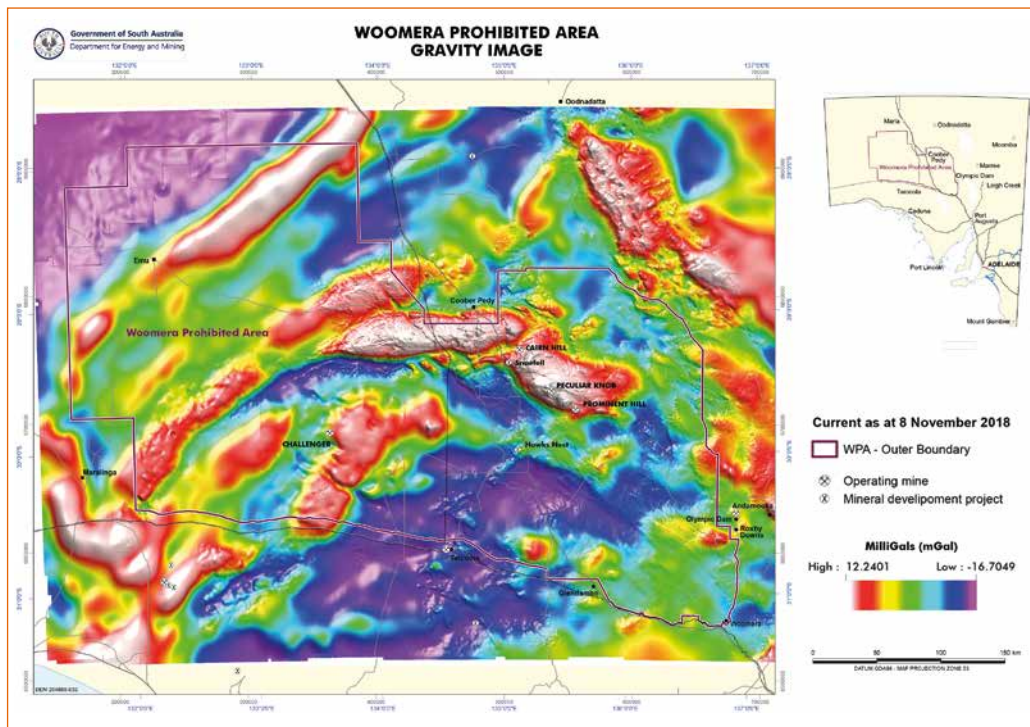


Figure 16: Gravity image of the Woomera Prohibited Area showing variations in the density of the underlying bedrock. Lighter colours (whites and reds) correspond to areas where the underlying rock types contain more iron bearing minerals and are therefore slightly more dense than rocks in the areas with darker colours (blues and purples). This information is used to help understand the distribution of different rock types across an area, particularly where the rocks are covered and not exposed. Credit: Department for Energy and Mining, Government of South Australia.

Data from the Gawler Craton Airborne Survey is already available publicly for analysis and further releases – including covering the red zone – will come on-line over the coming months. As the red zone is closed to mineral exploration there is little additional data available from drill holes and physical sampling from that area, which typically provides greater confidence in interpreting magnetic surveys and forming judgements about buried geology and mineral prospectivity.

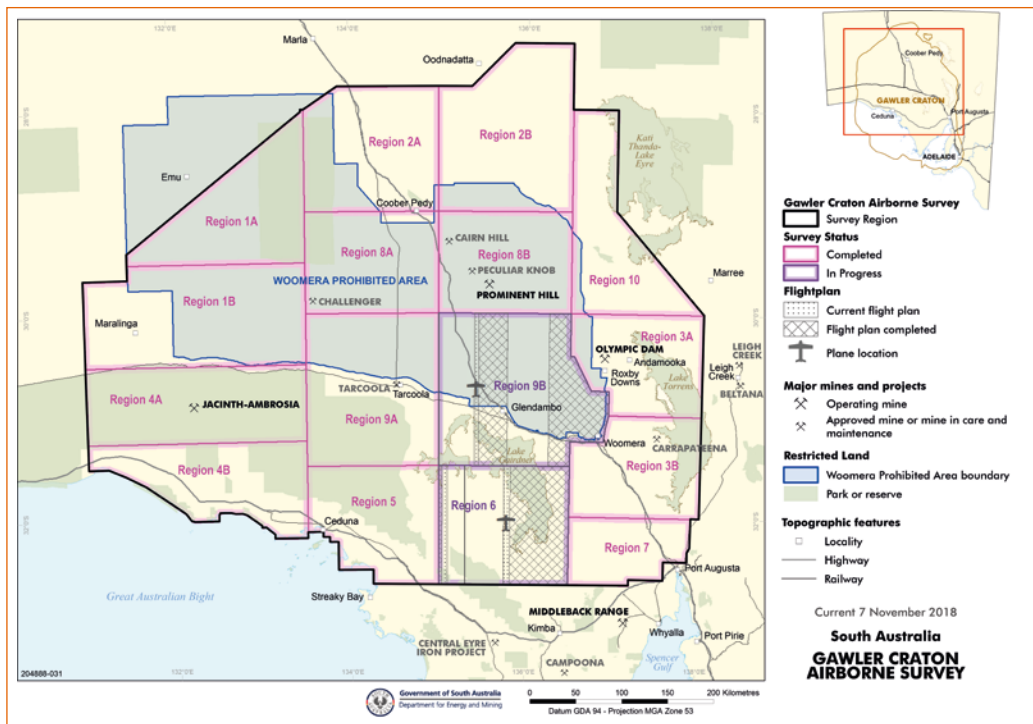


Figure 17: Gawler Craton Airborne Survey. Credit: Department for Energy and Mining, Government of South Australia.

The Review supports existing arrangements for the red zone whereby the Minister for Defence is not able to issue permits to access the area, making it effectively closed other than for Defence, South Australian Government, pastoral or Aboriginal native title activities. Having an area where Defence can operate with certainty and exercise a very high degree of control is fundamental to coexistence. It allows Defence to be more flexible in areas outside the red zone.

The Review sees significant value in better understanding the mineral and energy potential of the WPA, including the red zone and the broader Gawler Craton area. Knowledge of the area's economic potential ensures that decisions on how to best manage the WPA balance the diversity of interests in the area, and informs infrastructure planning. Such activity not only identifies potential areas of mineral, energy and groundwater resources, but also areas (both within the red zone and more broadly) that are unlikely to ever be commercially viable and could potentially be quarantined for greater or exclusive Defence use.

Defence has invested significantly in fixed infrastructure in the WPA over several decades. Approximately \$900 million will be spent there in the decade 2015-2025, with the majority of that funding earmarked for infrastructure in the red zone. Ensuring the safety and security of that area is critical to the integrity of that investment and Defence's ability to meet Australia's military test and evaluation requirements. That said, a resources find on the scale and economic potential of Olympic Dam could, for example, warrant a national conversation about future use of the red zone and whether development of that resource could be used to fund relocation of some Defence activity.

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Improving understanding of mineral potential of the red zone must not come at the expense of degrading the area's value to national security.

The Review recommends South Australia and the Commonwealth work together to better understand the mineral, energy and groundwater resources potential of the Gawler Craton area. This would build on – and leverage the data from – the Gawler Craton Airborne Survey initiative when it is completed in 2019. It would be valuable for government decision making on the WPA and related matters, but also provide critical information to guide exploration and development of mineral resources in the Gawler Craton.

Consideration should have at least two phases. Phase one would focus on a contemporary geological and economic analysis of the mineral, petroleum and groundwater resources potential of the Gawler Craton area, including the red zone. A second phase would evaluate whether additional data is required – particularly in and around the red zone – to further inform government and market knowledge about the mineral, petroleum and groundwater resources potential of the area including strategically important minerals such as copper, cobalt and rare earths. It would also consider what, if any, on-the-ground data acquisition activity could be accommodated in the red zone without jeopardising Defence activity there.

Any activity within the red zone would need to be a government initiative and not commercial exploration. It may be that data acquisition efforts are initially better targeted outside the red zone area, as that would still inform a better understanding of the geological and economic potential inside the area.

The WPA Advisory Board should be involved closely in this work. It should consider an evaluation of a first phase of geological and economic analysis, and provide input into any further proposals for a follow-on phase (or phases) of government initiated on-the-ground data acquisition activity in the red zone.

While there is no identified funding for this work it would be consistent with the recommendations of the recently released report of the Resources 2030 Taskforce, which examined how Australia's resources sector can remain globally competitive and sustainable. That report recommended expanding the Exploring for the Future program to make it a national initiative. Exploring for the Future is a \$100.5 million initiative by the Australian Government, in collaboration with state government and Northern Territory Government partners, dedicated to boosting investment in resource exploration in Australia.

The four-year program led by Geoscience Australia focusses on northern Australia and parts of South Australia to gather new data and information about the potential mineral, energy and groundwater resources concealed beneath the surface. The new pre-competitive data and information will be made publicly available and released over the next three years to support and de-risk resource decision making and investment.

The Resources 2030 report also advocates for further development of the UNCOVER initiative, a program that was established to enhance exploration capabilities in frontier areas and develop knowledge and technology to substantially increase the success rate of mineral exploration in undercover areas.

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Current programs such as the National Mineral Exploration Strategy and the National Drilling Initiative may also provide opportunities that could be applied to the WPA.

## *Recommendations*

**5. Geological and economic analysis of the mineral, energy and groundwater resources potential of the Gawler Craton area, including the red zone within the WPA, should continue**, led by the South Australian Government in consultation with the Department of Industry, Innovation and Science. Decisions by Government about coexistence in the WPA should be fully informed about both Defence technology and economic prospects. A first phase should draw on new data that will become available from the South Australian Government's aerial geophysical surveys of the Gawler Craton, and should not involve any on-the-ground work in the red zone. A second or later phase should incorporate an evaluation and cost benefit analysis – with input from the WPA Advisory Board – of the findings from phase one, for decision by the Minister for Defence. The evaluation should determine what, if any, on-the-ground data acquisition activity in the red zone would be required to further understand its mineral prospectivity, the likely costs and benefits, and whether government conducted geoscience survey activity could be accommodated without jeopardising Defence activity.

## **Transitioning from mineral exploration to production**

During consultations and in several submissions, the Review was asked whether greater certainty could be provided that Defence would approve mineral resource discoveries in the WPA being developed into operating mines. This was seen as important to encouraging exploration activity, given that investment relies on the viability of exploiting any findings. Suggestions were also made for a greater focus on infrastructure planning and development in the WPA, like shared infrastructure zones, potential future road and rail transport routes, and communication and power supply options.

The current zoning and timeshare arrangements introduced as a result of the 2010-11 WPA Review were in part a response to requests from the resources industry for greater certainty on how they could access the WPA and develop mines there. Overwhelmingly, feedback to the Review is that those arrangements are working well and they have provided much of the clarity businesses were seeking. For its part, Defence has been pragmatic and accommodating in its application of the zoning and timeshare arrangements for existing mines in the WPA, requiring only one evacuation of a mine site in almost a decade – despite time-share arrangements that allow Defence to determine an exclusion period for the area for up to 56 days a year.

That said, arrangements for transitioning from exploration to mining operations have not been well tested, mainly due to economic conditions that have reduced the viability of new mining proposals.

A strength of existing arrangements is that they allow consideration of any proposal for resources sector activity in the WPA on a case-by-case basis, according to their merits and taking into account the impact they would have on the value of the WPA for Defence testing and





evaluation. Case-by-case consideration is consistent with the majority of mining projects, which are typically complex ventures requiring multiple levels of approval and considerable shaping to accommodate environmental, cultural heritage and a host of additional considerations. In the case of the WPA, there is a presumption in the governing legislation (the WPA Rule) that any applications will be approved.

The Review recommends that Defence publicly reaffirm its commitment to coexistence, including case-by-case consideration of new mining ventures that meet safety and security requirements, and which do not jeopardise the suitability of the area for Defence testing (limited electromagnetic noise, for example).

The Review also recommends that Defence and the South Australian Government work with industry to develop guidelines that companies should take into account when considering commercial prospects in the WPA. They might include, for example:

- proximity to the amber and red zones, which would require greater consideration of security and exclusion for testing;
- minimising equipment and infrastructure footprints within the range and locating infrastructure such as accommodation, power generation equipment and control functions outside the range boundary. Mineral processing equipment would ideally be external to the range or constructed in a way that has the least potential impact on

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Defence testing activities (and can be shared, or located in a centralised infrastructure area). The permanent presence of any personnel within the range boundary should be minimised wherever possible. Proximity to any Defence-owned structures within the WPA should be avoided;

- using or connecting to existing infrastructure wherever possible, including power, water, haulage roads and railheads;
- considering remote and automated operation, although this would need to be balanced with electromagnetic emanation and security considerations;
- a preference for fixed (copper or fibre) communications networks or other low emission wireless technologies, and a clear understanding of where in the electromagnetic spectrum any communications systems operate;
- comprehensive cyber controls and a framework that identifies and informs Defence of any cyber incidents in the WPA. Companies would be encouraged to use information and communications technology products that have been evaluated by the Australian Signals Directorate and are listed in its Evaluated Products List;
- the ability to control and audit personnel and equipment movement into, and within, a mine site, coupled with strict access control and monitoring practices (visitor control and compliance with government standards such as the physical security management guidelines);
- security screening of employees and any contracted service providers, and policies to employ only individuals who have a 'checkable background history' and have undergone basic police checks;
- security awareness briefings and annual updates;
- a program for reporting any security concerns or incidents to Defence;
- clear social media policies which reflect the requirements specific to the WPA (such as prohibitions on photography) and the implications of sharing information on Defence activities in, or around, the WPA; and
- a system of self-check and audit to confirm compliance with WPA-specific internal policies and practices.

The WPA Advisory Board should be involved closely in the development of guidelines and, as part of its forward work program, should review them regularly. The forward work program should also include consideration of infrastructure requirements and development in the WPA, with a view to encouraging proposals that most closely align with the needs of the area. The South Australian Government should lead an outreach effort with industry to determine what forward-planning – such as shared infrastructure or identified zones for centralised infrastructure – would assist in consideration of new mining operations in the WPA and coexisting with Defence activity.

The Review believes that the concept of identified third-party technical advisers (see recommendation three) would be valuable in the establishment of new mines in the WPA. With their expert insight on defence issues and relevant security clearances, third-party technical advisers could be engaged by mining companies to help develop detailed technical proposals

that take into account the unique requirements for operating in the WPA and the need to minimise the impact on Defence test and evaluation activity.

## *Recommendations*

**6. To address concerns about the feasibility of developing new mines in the WPA, Defence should reaffirm publicly its commitment to coexistence in the WPA, including case-by-case consideration of new mining ventures that meet safety and security requirements. In proposing new mining operations, proponents should consider employing the services of a third-party technical adviser (see recommendation three) and work closely with Defence and the South Australian Government to develop proposals that take into account the unique requirements of the WPA and have the least impact on Defence activities. As part of the WPA Advisory Board's forward work program (see recommendation seven), the South Australian Government should lead an outreach effort with industry to examine what forward planning would assist in facilitating potential new mines in the WPA and minimising their impact on Defence testing, such as shared infrastructure or nominated infrastructure zones.**

## **WPA boundary adjustments**

The Review received suggestions to both reduce and expand the boundaries of the WPA. Some were developed proposals, others were simply mentioned during discussions. Each was considered carefully on its merits. The Review did not, however, consider that any of the proposals presented a compelling case for change at this stage.

In considering the suggestions, the Review took into account:

- impacts – positive and negative – on Defence testing requirements;
- economic, cultural, environmental and social implications;
- whether there were existing or alternate mechanisms that could achieve the same, or similar, objectives and outcomes;
- any precedents that would be set; and
- available trade-offs (for example reducing one boundary and expanding another).

Some suggestions called for a large reduction in the WPA to enable economic activity, especially in the northeast part of the WPA, but the Review considered these would significantly undermine the capacity and security of Defence testing.

There were some suggestions that the WPA be expanded to the north-west, including to compensate for reductions in the northern and eastern portions of the range. It was noted that the former is sparsely populated, electromagnetically very quiet and likely to be less viable for mineral resources development.

The north-west part of the WPA stands to become more valuable for Defence testing, particularly as systems require greater land and airspace for safe and secure testing, and to avoid potential interference with civilian infrastructure. It is, however, one of the most remote locations in Australia. With limited water and extreme temperatures, it is an unforgiving environment. There is no major infrastructure in the area.

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While there could be substantial benefit for Defence in investing in infrastructure in the north-west – for example, upgrading the historical Emu airstrip into a runway suitable for military aircraft – there is presently no meaningful trade-off equation between the north-west, and northern and eastern parts of the WPA. Over the long-term, there is value in all parties remaining open to the possibility of extending the WPA in that direction. Given the area is held as freehold title by two Aboriginal groups, a major consideration would be negotiations with those communities.

## **Governance and the WPA Advisory Board**

The primary governance mechanism for the WPA coexistence framework is the WPA Advisory Board. It was established in October 2012 following agreement to the recommendations of the 2010-11 WPA Review. The Advisory Board is headed by an independent Chair (currently The Hon Amanda Vanstone) and Deputy Chair (currently The Hon Paul Holloway) as agreed by Commonwealth Ministers and the Premier of South Australia. It includes ex-officio members from the Commonwealth Government (Departments of Defence; and Industry, Innovation and Science) and South Australian Government agencies (Department for Energy and Mining; and Defence SA). Secretariat support for the Advisory Board is provided by the Woomera Prohibited Area Coordination Office based in Defence in Canberra.

The Advisory Board's operations are guided by a terms of reference which sets its objectives as being to:

- monitor and report on the balance of national security and economic interests in the WPA;
- oversee the implementation of the coexistence policy arrangements; and
- foster strategic relationships between Defence and non-Defence users of the WPA.

Consultations for the 2018 Review found that the level of awareness of the Advisory Board's existence, role and operation differed widely among WPA stakeholders. Some stakeholders were either unaware of its existence or did not understand its role. Some stakeholders were aware of the Advisory Board but were unsure how their views or interests could be presented to it. Some felt the Advisory Board reflected only State and Commonwealth Government considerations and did not adequately represent all users of the WPA.

In its submission to the Review, the South Australian Government noted the Advisory Board was effective as an 'honest broker', and instrumental in building trust and confidence among those with an interest in the WPA. It highlighted that the Board played an important role in the decision by Defence to excise Section 400 (Maralinga and its surrounds) from the WPA in 2014, and during the consultation phases leading to the development of the WPA Rule legislative framework.

The South Australian Government emphasised in its submission the important role the Advisory Board plays in bringing the Commonwealth and South Australian Governments together to collectively manage WPA issues. It noted periods of irregular Board activity, and suggested that its role – and the role of the WPA Advisory Board – could be formally recognised in an amendment to the WPA Rule.

In considering its own role, the Advisory Board said that a collective governance body to monitor and oversee coexistence was critical, and that there was no obviously better

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arrangement. It saw an important ongoing role for the Board. It also acknowledged, however, challenges in making the Advisory Board relevant to day-to-day activity in the WPA. There was broad agreement that more needed to be done to strengthen the Advisory Board's connection with stakeholders, ensure a strategic approach to WPA issues and expand its role outside of the scheduled twice-yearly meetings.

The WPA Advisory Board produces an annual report that is released publicly on the Defence website. WPA stakeholders are invited each year to provide input to that report, and it is regarded as an important vehicle (along with the annual stakeholders activity held in the Woomera Village) to update the public on WPA issues and how they are being managed.

Several submissions suggested the establishment of a WPA stakeholder reference group or similar body as a way for the Advisory Board to more closely connect with people and institutions with an interest in the WPA. Others, however, questioned how such a structure could be constructed, noting the diversity of (sometimes specific) interests in the WPA and a general reluctance for one WPA user to be represented by another. They believed a large reference group would quickly become unwieldy and easily preoccupied with issues relevant to only one, or a few, participants. It was for these very reasons that the WPA Advisory Board decided against establishing a formal stakeholder reference group, instead agreeing to facilitate engagement through alternative means, when it considered the issue previously.

The Review considers that the WPA Advisory Board remains an important mechanism for the Commonwealth and South Australian Governments to acquit their responsibilities as joint custodians of the WPA coexistence arrangements. The independent Chair and Deputy Chair provide valuable informed impartiality and diversity of view. There is considerable scope, however, to bolster the role of the Board and more closely connect it with WPA stakeholders. It would also be timely for the Board to update its terms of reference, including to give greater recognition to the diversity of interests in the WPA and especially the economic, cultural and environmental value of the area for Aboriginal groups.

Rather than a stakeholder reference group, the Review recommends that the Advisory Board develop a strategic forward work program to consider issues of current and emerging importance for coexistence in the WPA. Many of those issues would reflect the recommendations of this report, and would include:

- maximising economic opportunities for Aboriginal groups in the WPA;
- validating the final proposal for a more flexible grid-based green zone;
- helping manage the introduction of technology to the WPA, and reviewing notifiable equipment requirements;
- outreach to industry to examine what forward planning would assist in facilitating potential new mines in the WPA and minimising their impact on Defence testing;
- developing guidelines to assist industry when considering commercial prospects in the WPA;
- consideration of infrastructure requirements and development in the WPA;
- monitoring initiatives to better understand the mineral potential of the Gawler Craton area, and ensuring those activities are compatible with Defence requirements of the red zone; and



- monitoring the timeliness and extent of any compensation payments made as a consequence of Defence testing in the WPA, particularly to pastoralists.

The forward work program should maximise engagement opportunities with respective stakeholders and stakeholder groups and assist the Commonwealth and South Australian Government to acquit their responsibilities as joint custodians of the WPA coexistence arrangements. Its development should be led by the South Australian Government, in consultation with Defence, to ensure the priorities and interests of its constituents are emphasised.

The Review supports the South Australian Government's suggestion that a Memorandum of Understanding (MoU) between the Commonwealth and South Australia be finalised as a matter of priority. In addition to existing policy statements and commitments, a MoU is the most appropriate mechanism to formally recognise South Australia's joint role with the Commonwealth in managing coexistence in the WPA. It should articulate the principles of contemporary coexistence and set out the roles and responsibilities of each in administering non-Defence user access to the WPA and consultative mechanisms and protocols.

The MoU should acknowledge the shared nature of administration and provide equal opportunity for both Defence and the South Australian Government to set the agenda for Advisory Board meetings and these, along with associated secretariat support, should be an alternating responsibility.

The Review recommends that Defence introduce a policy mechanism for the Advisory Board Chair (or in their absence the Deputy Chair) to provide a non-binding recommendation in the event of a request to the Minister for Defence for a review of a decision made under the WPA Rule. The specific circumstances under which a review can be sought are set out in Section 62(1)(a) of the WPA Rule, but it would generally be open to any applicant to appeal a decision made by Defence. The mechanism would be embedded in Defence standard operating procedures so that when a review of decision is lodged, Defence would request a non-binding recommendation from the Advisory Board Chair/Deputy Chair, and provide them relevant details on the matter. Additional consultation would be at the discretion of the Advisory Board Chair/Deputy Chair.

Improved situational awareness and information sharing among parties will also be critical to ensuring the Board can effectively provide oversight of issues. Two areas of note that came to light during the Review as important in this context were the need for Defence to ensure the Advisory Board is informed before any major closures in the WPA – such as of the Stuart Highway, the Tarcoola to Darwin rail line or the William Creek Road. And from the South Australian Government, regular advice on the sale or transfer of pastoral leases, proposals for development of infrastructure or broader activity with relevance to the WPA, should be provided to the Advisory Board and Defence. Both of these matters should become standing agenda items for the Advisory Board and discussed out of session as required.

The Advisory Board should make use of intersessional Board discussions by telephone or video conference to deal with matters in a timely way.

## Recommendations

**7. To strengthen the role of the WPA Advisory Board**, it should refresh its terms of reference and develop a strategic forward work program that more closely connects the Advisory Board to WPA stakeholders, and assists the Commonwealth and South Australian Government to acquit their responsibilities as joint custodians of the WPA coexistence arrangements. A Memorandum of Understanding between the Commonwealth and the South Australian Government should be finalised as a matter of priority. Defence should introduce a policy mechanism for the Advisory Board Chair (or Deputy Chair) to provide a non-binding recommendation in the event the Minister for Defence is asked to review a decision taken under the Woomera Prohibited Area Rule 2014. It should ensure the Advisory Board is informed ahead of major closures in the WPA.

## Space and other commercial activity

From time-to-time the Department of Defence is required to consider requests to access the WPA from commercial industries other than the more usual pastoral, resources exploration, mining or tourism operations.

One example is the space sector. Three public submissions to the Review sought expansion of non-Defence use of the WPA to include non-military space launch, landing and recovery of space material. Another pointed to the WPA's value for automotive field testing.

In considering commercial use of the WPA it is important to emphasise two points.

- First, Defence's authority extends only to permitting or denying physical access to the area. Any business wishing to operate in the WPA must also comply with relevant State and Commonwealth laws – and in some cases, such as the space industry, international conventions.



Former ELDO launch site.  
Credit: Department of Defence.

- Second, Defence's authority to exclude people from the WPA applies only to the 'testing of war materiel'. This means Defence cannot require people to leave the area just to allow third party commercial activity. It could not, for example, evacuate any part of the WPA to allow for the safe re-entry and recovery of a commercial space vehicle. Defence can only require the evacuation for the purposes of an exclusion period when it is conducting its own Defence test and evaluation activity.

In relation to space, the WPA has a relatively short but notable association with space launch. That connection remains, however, historical. In 1957, the British Government, with support from Australia, began testing high altitude rockets and other space-related technology at Woomera. The 1960s saw an increase in space activity with the European Launcher Development Organisation (ELDO) testing ten rockets from a purpose built launch area at Lake Hart in the WPA, none of which were successful. The most significant year for space testing in Australia was 1967, with nine launches by the United States. That led to an opportunity for Australia to secure a rocket suitable for space launch. On 29 November 1967, Australia became only the fourth nation – behind the USSR, United States and France – to successfully build and launch a satellite into orbit from its own territory.

The last successful satellite launch at Woomera was in October 1971. There have been no launches of that nature since. The space launch facilities and supporting infrastructure for large-scale rocket launches at Lake Hart were decommissioned and/or removed over 40 years ago. In any case, the southern location of the WPA significantly limits which orbital options are available. Launches from the WPA (at approximately 30 degrees latitude) would restrict orbit options and require post-launch manoeuvre. Changing orbit is costly and reduces the life of a satellite. Areas closer to the equator in far northern Australia allow a launch trajectory for equatorial orbits that maximise the advantages of the earth's rotational speed – offering the potential for increased payloads or reduced fuel loads required for launch.

The Review understands Defence is committed to working with industry and the Australian Space Agency to support industry innovation on a case-by-case basis. Any such activities would need to be consistent with Australia's international obligations.

Despite the WPA not being an ideal location for space launch, interest in using the WPA for space-related commercial activity is expected to increase in the coming years. Its history, size and population sparseness make it intrinsically attractive for space-related activity. The Australian space industry is expected to grow substantially over the next decade, and the Commonwealth Government is investing \$41 million to establish an Australian Space Agency.

Contemporary coexistence in the WPA should recognise that the area's value for commercial activity may change over time, and has the potential to expand beyond its current focus on agriculture and mining. Using the example of space again, that industry and related technology is developing quickly. It is likely that new space-related commercial markets will be created in the coming years – perhaps including new methods of space launch, or activities that have not yet been fully imagined.

The Review recommends that any applications to access the WPA for commercial purposes – especially those that would add substantially to the South Australian economy or Woomera

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area communities – be given particularly careful and favourable consideration by the Department of Defence.

That said, the Review also acknowledges that caution is required. The characteristics that make the WPA such a valuable test and evaluation site – notably its security and quiet electromagnetic environment – would be difficult, and perhaps impossible, to replicate elsewhere. Degrading those qualities, even incrementally, could undermine irreparably the unique value of the WPA. The long-term cost to national security could far outweigh any near-term economic gains.

The Review finds that existing arrangements that require case-by-case consideration of applications to access the WPA for commercial activity are appropriate. Moreover, the Review considers that Defence’s authority to exclude non-Defence users from the WPA should remain restricted to the testing of war materiel. It would not be appropriate for Defence to exclude people from the WPA for the commercial benefit of a non-Defence user. If exclusions were required for commercial or other activity, then authority should be derived from other Commonwealth or State legislation and not the *Defence Act 1903* or the WPA Rule.

## **Managing and mitigating security**

### *Security of commercial operations in the WPA*

Businesses operating in the WPA – particularly mines – have important security responsibilities. Their personnel have privileged access to the area, and their fixed or mobile infrastructure can be vulnerable to exploitation for intelligence purposes.

WPA companies should ensure they have policies and practices in place to account for the sensitivities of operating within the WPA. They should limit access to only those personnel that are essential for operations, with as much activity as possible conducted outside the WPA (for example, general administration, sales and accounting). Site visits by non-operational staff or associates should be discouraged, and limited to only those that are essential.

Businesses should have procedures for inspecting anomalies in any new equipment brought on-site, and regularly inspecting existing structures and equipment.

Engagement of a third-party technical adviser with security specialisation is encouraged.

Defence should give greater scrutiny to applications for entry to the WPA sponsored by businesses, and impose more conditions in order to limit personnel access to only what is genuinely required for business operations. The Review recommends Defence grant WPA access authorisations with conditions that are appropriately tailored for specific security circumstances.

One way for businesses to bolster their security would be through Defence Industry Security Program (DISP) membership. DISP is a recently refreshed framework, designed to provide confidence and assurance in the security practices of private entities that partner with Defence.

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While DISP membership is most applicable for businesses that provide goods and services to the Department of Defence, it could also be applied to the WPA. In this context, DISP membership would be part of a security risk management program that strengthens the security practices of businesses operating in the area. Given that security is fundamental to the enduring success of coexistence, a DISP membership framework would be an important addition to WPA arrangements.

To be eligible for DISP membership a business would need to meet specific criteria, including that it is able to be registered as a legal business entity in Australia, is financially solvent and has employees that can fulfil the roles of a Chief Security Officer and Security Officer. A business that meets the eligibility requirements will then be assessed for suitability based on information provided in a Foreign Ownership, Control and Influence form. To maintain membership to the DISP, businesses will be required to report any changes to their eligibility and meet reporting requirements.

The Review recommends that in addition to using DISP to facilitate arm's-length foreign investment in the WPA, Defence will work with WPA companies to encourage them to become DISP members as part of a greater overall emphasis on the security considerations for a business operating in the WPA. The Review encourages all the relevant parties to consider how DISP membership could be encouraged, for example, through efficiencies it might bring in reducing the WPA-specific administrative burden. Some WPA businesses told the Review they would see value in being able to use DISP member contractors that managed their own WPA administration. Under current arrangements it is the contracting company that must seek WPA access and related approvals. There would be an efficiency gain if DISP member companies operating in the WPA were free to work for multiple clients without having duplicative paperwork filed.

The Review emphasises that security should be a shared responsibility in the WPA. Anybody accessing the area, but particularly businesses operating there, should be both conscious of their security obligations and prepared to contribute to the security of the area – for example, notifying Defence of any suspicious activity and/or calling-out poor security behaviour by others. Anybody with an interest in the longevity of the WPA coexistence arrangements also has an interest in its security.

## *Recommendations*

**8. *There should be a greater collective emphasis on the security of companies operating in the WPA.*** *Defence should work with WPA businesses on a framework to encourage Defence Industry Security Program membership. Regardless of DISP membership, WPA companies should ensure they have policies and practices in place to account for the sensitivities of operating within the WPA, including limiting access of personnel and equipment to only those essential for operations. Defence should grant WPA access authorisations with conditions tailored for specific circumstances. Security should be a priority for anybody entering the WPA, and particularly for companies operating there. Security is fundamental to the WPA and goes to the heart of coexistence. Over recent years, security threats to the area have intensified in line with a general increase in the level of espionage and foreign interference directed at Australia and its allies.*



## Aboriginal groups

The WPA is home to the traditional lands of the Maralinga Tjarutja (MT), Anangu Pitjantjatjara Yunkuntjatjara (APY), Antakirinja Matu-Yankunytjatjara (AMY), Kokatha, Arabana and Gawler Ranges people. As pre-existing traditional custodians and users of the WPA, the access to the WPA for these groups is provided for under the *Defence Force Regulations 1952*.

Consultations with Aboriginal groups in the WPA reaffirmed the importance of engaging with each group individually. All groups, however, told the Review that they wanted to work closely with Defence to identify further economic opportunities for their communities, protect and preserve the cultural heritage of their traditional lands, and ensure responsible management of the natural environment.

The Air Force Regional Compliance Officer (RCO) program was highlighted by many as a particular success. Introduced by the RAAF in 2016, it provides a mechanism for representatives from Aboriginal groups in the WPA to join the WPA Compliance Monitoring Team (CMT) as part of an Indigenous Reserve Force capability.

RCOs are recruited through engagement with the elders of the traditional custodian groups and, following basic RAAF training, are awarded the rank of corporal. Their responsibilities include patrolling the WPA in cooperation with Aboriginal communities and providing security to Defence testing activities. A minimum of 100 days employment a year are provided for under the program.

RCOs provide a critical link back to their communities and have promoted reconciliation and understanding between Defence and traditional custodians of the area through the exchange of history, culture and language. The unique and personal perspectives that RCOs bring to the

*Defence Compliance Monitoring Team and South Australian Government representatives conduct a joint patrol in the Woomera Prohibited Area.  
Credit: Department of Defence.*



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role have enhanced Air Force personnel's knowledge of the land and of the communities with which they work closely to support coexistence.

At the same time, the RCO program has provided employment and financial opportunities for Aboriginal communities in the WPA and opened the doorway to possibilities of further career opportunities in Defence.

To date, eight reserve positions have been taken up on the RCO program. The success of the program has encouraged other Air Force bases to introduce comparable programs, with RAAF East Sale looking to recruit two local traditional custodian representatives in 2019. Air Force Test Ranges Squadron is considering expanding the program to include representatives from the Wardaman people whose lands are associated with the Delamere Training Area in the Northern Territory.

As well as expanding the RCO program, the Review believes there is significant potential to build on the strong relationships between Defence and Aboriginal groups that already exist in the WPA. Current initiatives and programs of work could be leveraged or expanded, and there is potential for new initiatives.

Initial priority should be given to finalising Working Level Agreements with each WPA Aboriginal group and the WPA Heritage Management Plan.

- Working Level Agreements between Defence and each Aboriginal group in the WPA are being negotiated. They are intended to formalise permission for access, set out a framework for cooperation, outline mutual rights and responsibilities, and articulate how Defence will engage with each of the groups to manage safety and the protection of

*Air Force Test Ranges Squadron personnel, Flight Sergeant Stuart Meddings, and Corporal Joey Hull (RCO), on the rooftop of the Instrumentation Building at the Woomera Test Range. Credit: Department of Defence.*



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Aboriginal cultural heritage in the WPA. The agreements were developed in response to requests for clarity around the conditions of access to the WPA under the *Defence Force Regulations 1952*.

- The WPA Heritage Management Plan will, among other things, identify areas of significance to each Aboriginal group in the WPA, set out measures to protect them, establish agreed protocols on cultural knowledge, and underpin Defence's understanding of the significance of the WPA for Aboriginal people. It will be an important planning tool for future development of the WPA. In finalising the WPA Heritage Management Plan, Defence should consider whether any sites currently in operation should be relocated or require additional mitigation to reduce the risk of damage to sensitive sites.

Once that work is complete, the Review recommends a program of structured dialogue between Defence, the South Australian Government and Aboriginal groups in the WPA (collectively and individually as appropriate) to investigate options for mutually beneficial cooperation in the WPA. Possible initiatives to consider should include:

- strengthening the RAAF Regional Compliance Officer program, including by increasing the number of days each officer is employed from 100 a year as is currently the case, to 180-200 days a year. This would increase the pool of Aboriginal people nominating for the positions as it would provide a more sustainable employment opportunity;
- establishing a cultural immersion program at Woomera. This would build on the existing cultural awareness programs that Aboriginal groups offer to the mining sector. It could initially be considered for emerging Defence leaders, with an option to expand participation to other Commonwealth agencies and the South Australian Government. As well as offering the potential for Defence staff to experience Aboriginal culture and providing economic and job opportunities for local Aboriginal people, the program would have the additional benefit of highlighting the value of the WPA coexistence arrangements;
- leveraging the existing Indigenous Ranger program – in which some Aboriginal groups in the WPA already participate – to provide services on the Woomera Range;
- opportunities under the Commonwealth Indigenous Advancement Strategy – which funds and delivers a range of programs for Aboriginal and Torres Strait Islander peoples – to build the capacity of local Aboriginal corporations to participate in the large program of infrastructure works that are planned in the WPA over coming years;
- discussions with schools and partner organisations in Coober Pedy, Roxby Downs and other appropriate areas about their capacity to support an Air Force cadet program and/or work experience in the Woomera Village; and
- a scholarship program under Air Force (or as an initiative of the Defence Reconciliation Action Plan) to improve opportunities for Aboriginal people to be directly employed within technical roles, including on the Woomera Range.

One submission to the Review was received from an Aboriginal community in Western Australia with strong links to the WPA. It noted that the closure of the amber zone 2 – and therefore the Anne Beadell Highway – for up to 70 days a year had resulted in the loss of income from



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tourists who would otherwise be travelling on the road and purchasing fuel and artworks. The proposed introduction of a grid-based green zone (see recommendation two) and removal of the amber two corridor may reduce the need for disruption to the Anne Beadell Highway, though some closures will still be required. Defence is committed to working with that community to minimise the potential impacts of Defence testing wherever possible.

## *Recommendations*

**9. Defence and Aboriginal groups in the WPA should continue to build on their already strong relationships.** Priority should be given to finalising Working Level Agreements and the WPA Heritage Management Plan. A program of structured dialogue between Defence, the South Australian Government and Aboriginal groups in the WPA should investigate options for further mutually beneficial economic and cultural cooperation, including those suggested in this report.

## **Pastoralists**

Relationships between pastoralists and Defence are well developed, long-standing and productive. The two have coexisted in the WPA since it was declared a prohibited area in 1947. Pastoralism was well established in the area by the early 20<sup>th</sup> century and there are now 26 pastoral stations covering 39 leases within the WPA.

While some pastoral leases are owner-occupied, the majority of businesses employ managers on their behalf. Many leases are small to medium-size family-run operations or Aboriginal Corporations. Others are held by larger pastoral businesses or are owned by mining companies such as BHP Billiton. One is managed as a nature reserve.

*Cattle at Ingomar Station, 2009.  
Credit: Department for Environment and  
Water, Government of South Australia.*



Since the WPA's establishment, pastoralists' access to the area has been governed under the *Defence Force Regulations 1952*. In recognition of those longstanding arrangements it was decided not to include pastoral operations in the WPA Rule. A need, however, was identified to clarify arrangements and in 2017 Defence provided written permission to pastoral lease holders. This permission formalised long-standing informal access arrangements and clarified requirements under the *Defence Force Regulations 1952*. Under the permission, pastoralists have obligations to notify Defence of an intention to sell or transfer a lease, record details of visitors, seek permission to operate certain equipment and advise Defence of any incidents for the purposes of the *Work Health and Safety Act 2011*. Additional conditions of access can be introduced.

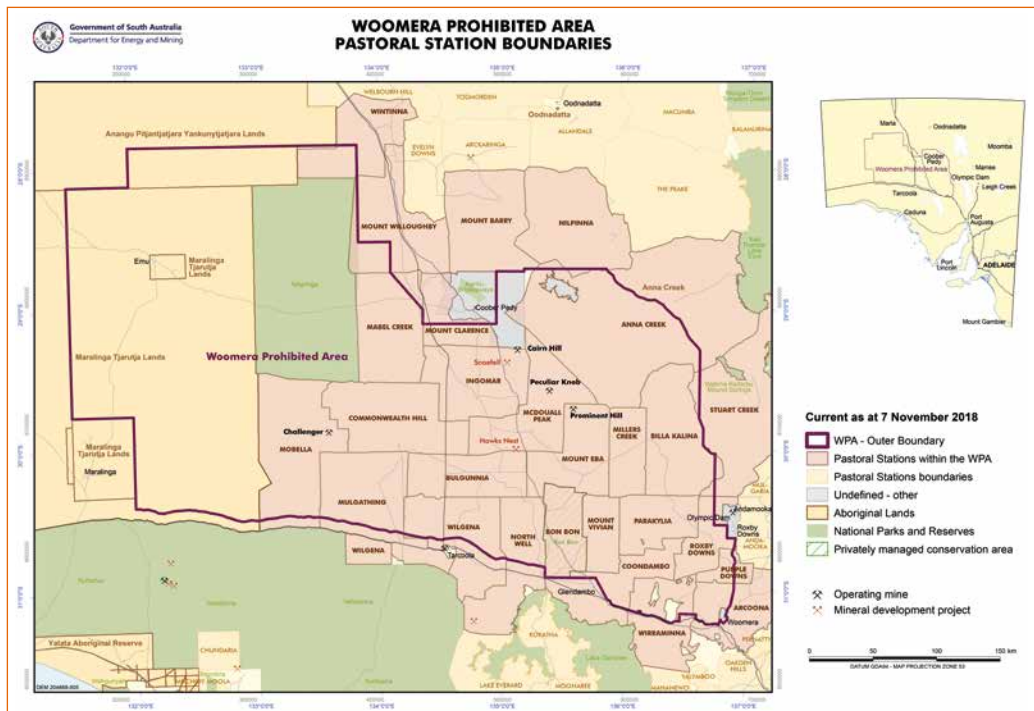


Figure 18: Pastoral stations in the WPA. Credit: Department for Energy and Mining, Government of South Australia.

Pastoralists who made submissions to the Review, or who were otherwise consulted, said that their experience with coexistence – and Defence – was overall a positive one. Several saw some potential for improvement, but concerns were characterised more as frustrations or inconveniences, rather than systemic problems with WPA coexistence arrangements.

Some frustrations were also seen as temporary, for example, recent incidents with contractors involved in range upgrade works accidentally disrupting water supplies and concerns around increased road use by heavy vehicles supporting Defence.

Of all groups in the WPA, pastoralists are arguably the most directly affected by Defence activity. Pastoral operations are typically characterised by small workforces, high workloads, unpredictable requirements and – particularly within the WPA – operating over a large physical



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environment. Those located in the red zone, the Defence continuous use area, are the most heavily inconvenienced.

Defence employs a District Liaison Officer to consult with pastoralists and ensure their requirements are taken into account in the planning and execution of Defence tests. Still, the impact of Defence activity on residents can be significant, for example, in the case of one family that recalled evacuations during School of the Air examinations which had proved particularly stressful.

The main issue raised with the Review was the timeliness and complexity of compensation claims which are made under regulation 36 of the *Defence Force Regulations 1952* for loss or damage as a result of Defence testing. While compensation claims are not regular, there is no standard format or guidance for lodging a claim and those affected recalled there was often protracted dialogue with Defence before it was satisfied it had all the information required for a claim to be paid.

There are some small portions of pastoral leases that are – or have been – used frequently by Defence and are not currently well suited for pastoral operations. For example, the demolitions ground is largely devoid of vegetation and has limited use for grazing. The Review recommends Defence engage with pastoralists and the South Australian Government on how these areas are best managed. One possible option is for Defence to control and manage the affected areas under a lease agreement with the South Australian Government. Consultations to date indicate this would be feasible, but additional consultation, particularly with pastoralists, would be required. At least one pastoralist noted to the Review differences in Defence policy or statements over the years on the partial or whole acquisition of leases, particularly within the WPA red zone.

## *Recommendations*

**10. Consideration should be given to new ways of managing small parcels of land no longer suitable for pastoral activity, and greater guidance provided to pastoralists for claiming compensation for losses due to Defence testing.** *Defence, the South Australian Government and pastoralists should consider whether Defence may lease small portions of pastoral land which are currently unsuitable for pastoral activity due to Defence testing activities, and provide advice to the Government before the end of 2019.*

# Administering Contemporary Coexistence

The WPA coexistence framework is primarily administered by the Woomera Prohibited Area Coordination Office (WPACO) in the Department of Defence in Canberra, in close consultation with the Woomera Test Range and the South Australian Government Department for Energy and Mining. Collectively, they are responsible for processing access permit applications, administering personnel access, activating and notifying test activity and exclusion periods, providing secretariat support to the WPA Advisory Board – including drafting the Advisory Board’s annual report – and managing stakeholder relationships.

The Review received suggestions, both in submissions and consultations, for improvements to WPA administrative arrangements. Several interlocutors called for better use of technology and an associated streamlining of processes to reduce duplication and unlock efficiencies.

Administrative aspects of the coexistence regime that stakeholders felt could be improved included:

- simplified and more accessible personnel application, approval and management processes;
- improved communication with stakeholders;
- earliest possible advice of revoked testing periods;
- cross-accreditation of mining services personnel who may work for more than one entity in the WPA;
- consistent and comprehensive notification processes in the lead up to testing; and
- advice on the presence of unexploded ordnance in the WPA.

Day-to-day administration of WPA arrangements need to be streamlined and modernised. Existing processes are largely manual, and data cannot be easily captured or made available – which means that WPACO and WPA businesses typically operate from different manually compiled lists. Enhancements could also be made to communications channels and approaches. There is not presently an obvious way to subscribe to WPA updates.

The Review found varying levels of understanding of WPA arrangements in the communities around the area. In Roxby Downs, for example, which is just outside of the eastern limits of the WPA, community representatives told the Review they were uncertain of the WPA boundaries. While they could sometimes hear and feel explosions on the range, they rarely had advanced notice of activity there. Defence staff at the Woomera Range actively engage with WPA stakeholders but, with limited resources, their communication efforts need to be backed by contemporary tools and processes.

A modern digital platform for WPA administration could allow online submission and processing of various applications, and allow companies to check the status of applications they sponsor. It could incorporate access through smartphones or tablets, and an ability to push messages to users as well as allowing them to access information on the WPA at their own initiative. A map



function could be considered so that users can easily identify WPA boundaries, including in relation to their present location.

As an initial priority, the Review recommends Defence examine the suggestions for administrative enhancements provided to the 2018 WPA Review and implement any of them that can be quickly and easily accommodated within the current system. That should include Defence and South Australia considering whether WPA opal mining permits can be processed in conjunction with South Australian licence processes, and any other efficiencies that be accommodated without jeopardising WPA security.

Defence should also examine whether more immediate notice can be given when Defence no longer requires parts of the range from which users have been excluded as part of a zone activation. The many variables involved in military testing such as weather and complex equipment means that planned activity may be cancelled or suspended, sometimes at short notice. Current practice is to lodge a legislative instrument to revoke an exclusion and return use of the area to non-Defence users. That process can take many days. The Review understands there may be options for this to become more immediate.

On unexploded ordnance (UXO) in the WPA, Defence now has in place a 'clean range' policy to minimise any hazards to users of, or visitors to, the WPA and to keep the WPA as free as possible from testing debris. Defence has prepared a safety pamphlet describing potential WPA hazards, including unexploded ordnance which may be found on the WPACO website. The Defence Unexploded Ordnance website ([www.defence.gov.au/uxo](http://www.defence.gov.au/uxo)) provides further detailed information about the different types of unexploded ordnance and relevant precautions. The potential remains, however, for unexploded ordnance to be discovered in the WPA. Users should be vigilant and inform Defence of any concerns or discoveries.

The resource burden for managing the WPA coexistence framework falls overwhelmingly to WPACO and the Woomera Test Range in the Department of Defence. Their workload has risen in line with the more complex WPA environment, and will increase further over the coming

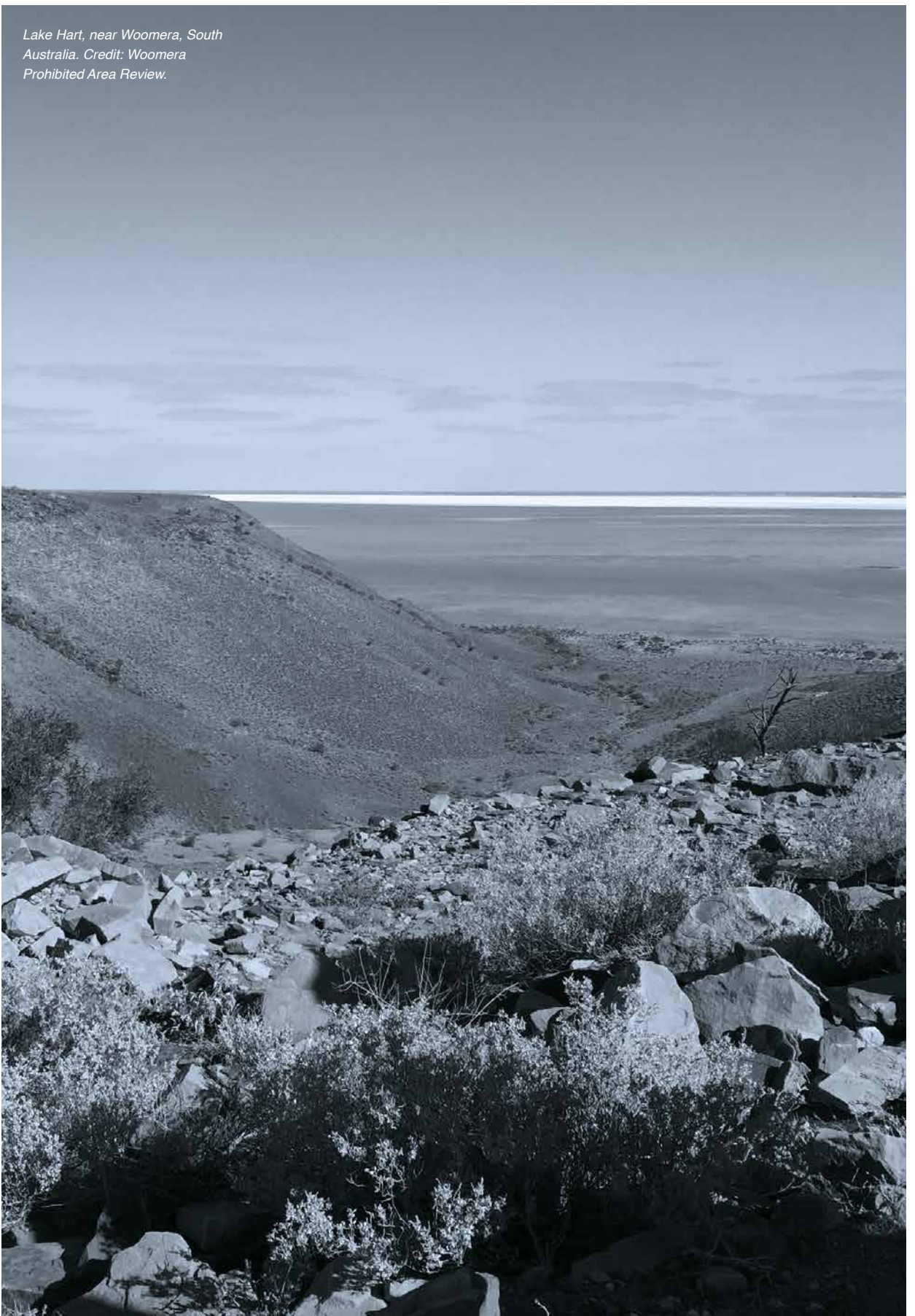
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months and years. Implementing the recommendations of this report will require a dedicated effort. The Review recommends that additional resources be dedicated to WPA administration, particularly in WPACO.

## **Recommendations**

**11. Administration of the WPA coexistence arrangements should be modernised.** *Defence should review feedback on suggestions for administrative enhancements provided to the 2018 WPA Review, with a view to immediately implementing those that can be done quickly and later development of a modern digital platform and accompanying smartphone/tablet interface. Defence and the South Australian Government should examine arrangements for opal miners to determine if any efficiencies can be made without undermining WPA security. Defence should determine the feasibility of quicker processes for revoking exclusions from the range when testing does not proceed as planned. Additional resources should be dedicated to administering the WPA framework, particularly in the WPA Coordination Office.*

*Lake Hart, near Woomera, South  
Australia. Credit: Woomera  
Prohibited Area Review.*





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# Conclusion

## WPA and coexistence – looking ahead

As has been the case in the period since the 2010-11 Review, the WPA will continue to be shaped by local, national and global developments. It is a complex environment that engages multiple and diverse interests. Continued attention will need, therefore, to be given to how the coexistence framework is operating, and any unanticipated pressures.

From a Defence perspective, systems being tested in the WPA will be increasingly networked, move further and faster, and become more autonomous as artificial intelligence and unmanned technology develops. The trend towards development of electronic warfare and cyber capabilities is likely to accelerate. Traditional kinetic systems will continue to be important.

Live testing of Defence systems will remain critical. But it will be increasingly mixed with virtual elements. A test, for example, may begin in a computer-generated virtual world but then extend into live, real-world activity on a military testing range such as the WPA – or even simultaneously across several ranges in Australia and overseas. This will allow greater collaboration between Australia and its international partners, and may also require changes in the WPA, including so that relevant data can be captured, stored and distributed.

As military ranges overseas become even further encroached upon by people and electronics, there may be greater interest from Australia's friends and allies to use the WPA, putting pressure on the timeshare arrangements.

The mineral resources industry is highly innovative and quickly embraces change. While the remoteness and harsh physical environment in and around the WPA will continue to present challenges for mining and resources exploration, there will be opportunities to leverage technology for unmanned and semi-autonomous systems and address the economic challenges associated with remote operations. Technologies to improve both airborne and ground-based exploration – especially communications technologies that enable real-time exploration data processing and ore body modelling – will allow for more immediate and complete understanding of mineral prospectivity. Similarly, the application of automated or robotic mine development and extraction processes, including new mineral recovery technologies, may also provide opportunities to lower the cost of accessing new mineral deposits in remote and arid conditions like the WPA.

Resource developments like petroleum production and emerging alternative energy industries such as wind and solar have not been tested under the WPA coexistence arrangements. While there have been no economically viable petroleum reserves or contingent resources identified within the WPA to date, exploration is continuing in the Arckaringa Basin in the north-east of the WPA green zone. The development of a commercial petroleum field within the WPA would present new challenges – particularly given its typical requirements for pipelines, well-heads and associated infrastructure. Wind farms present a hazard to low-flying aircraft and produce electromagnetic noise.

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Socio-economic changes to communities in and around the WPA would also have implications. Larger communities make managing the security and safety of the area more challenging, while smaller populations would reduce workforce availability and make some infrastructure less sustainable. A changing climate could force changes to the way Defence conducts testing in what is already a remote and harsh environment.

The WPA Advisory Board stands to play an important role in ensuring that the diversity of interests is taken into account as the WPA coexistence framework evolves. It will principally, however, be the responsibility of Defence and the South Australian Government to monitor the environment for disruptive change, drive engagement with stakeholders and navigate complexity.

Given the intricacies of the WPA arrangements and the inevitability of change, the Review recommends that there be a further wholesale Review of the WPA coexistence arrangements by 2025.

### *Recommendation*

**12. A further complete review of WPA arrangements by 2025** should re-examine coexistence and the need for any changes in response to local, national and international developments.

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# ANNEX A: 2018 Review of Coexistence in the Woomera Prohibited Area – Terms of Reference

## Aim of the Review

The 2018 review will deliver a contemporary coexistence framework for the management of the Woomera Prohibited Area (WPA) that:

- a. Acknowledges that the WPA is a significant national security asset and that its use by Defence and Australia's partners will continue to evolve.
- b. Balances and responds to evolving Defence and non-defence use including the economic interests within the WPA.
- c. Maintains the primacy of Defence use governed by national security and Defence's capability needs while committing to continued coexistence with other stakeholders to maximise the economic value of their activities: the resources sector; pastoral operations; Aboriginal communities; and other current and emerging interests.
- d. Provides for investment access by non-defence users within a framework that offers current and prospective investors clarity on strategic and national security considerations in granting access.
- e. Provides for public and private consultations to inform stakeholders and their submissions that will contribute to the review.

## Objectives

The review must:

- Determine the current and evolving use of the WPA:
  - For Defence, future capability testing needs including the national security and risk environment.
  - For the resources and other economic sectors, domestic and foreign investment and access to the WPA.
  - For other non-defence users and native title interests, access to the WPA.
  - Scope for other non-defence use.
- Determine the primacy of Defence use:
  - Capability and strategic imperatives.
  - National security considerations.
  - Compatibility with maximising the economic value of the WPA.

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- Determine the economic value of the WPA:
    - Contemporary assessment of the resources and other economic sector potential.
    - Factors in the emerging economic environment required to realise the prospective potential of economic sector investment.
    - Access and investment considerations within the coexistence framework, including means to encourage Australian permitted economic sector investment.
  - Consider the lessons from the 2010-11 review of coexistence:
    - For Defence, implementation of the coexistence framework including any capability impacts.
    - For the South Australian Government, the resources and economic sectors and other non-defence users, the operation of the coexistence framework including the system of permits and access.
  - Determine the economic, legal and other possible consequences of any proposed policy, legislative or regulatory changes on existing non-defence users including any transitional agreements.
  - Determine a contemporary governance framework:
    - The legislative and regulatory framework required for the management of non-Defence user access.
    - Australian Government and South Australian Government governance requirements for the WPA Coordination Office.
    - The role and future of the Advisory Board in supporting coexistence.

## Outcomes

The findings of the 2018 Review of the Woomera Prohibited Area coexistence framework will form the basis for a contemporary policy context and enhancing legislative regime by which the economic and national security considerations are balanced within the WPA, and the national value of the WPA is realised to the full extent possible.

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## ANNEX B: 2018 Review of Coexistence in the Woomera Prohibited Area – Public Submissions

The 2018 Woomera Prohibited Area Review received fourteen written submissions from a cross section of resources, pastoral, research/academic and space industry organisations.

Eight respondents provided consent for their written submission to be made public via the Department of Industry, Innovation and Science Consultation Hub and are listed below:

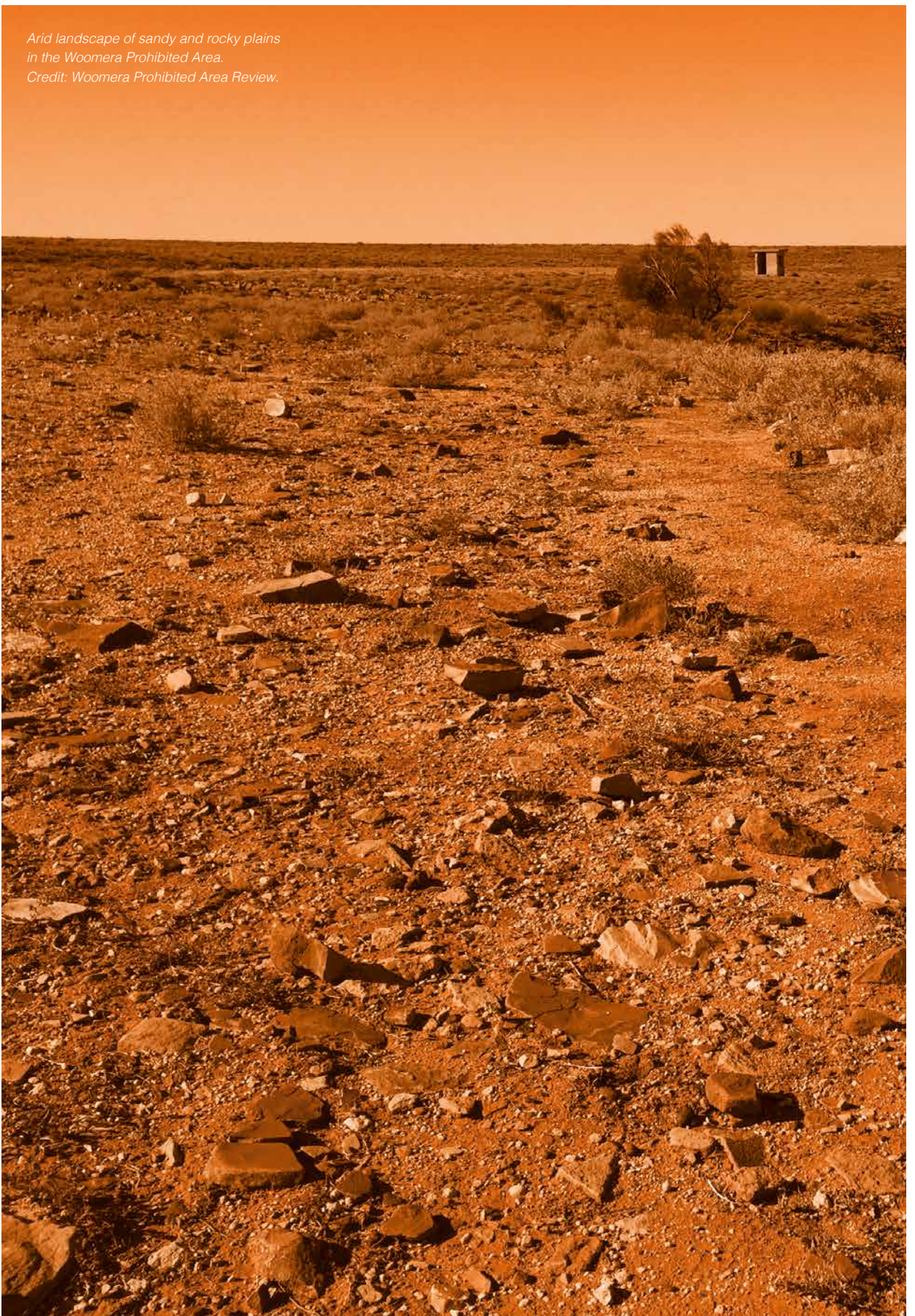
- Adelaide Law School, University of Adelaide
- Association of Mining and Exploration Companies
- Nutt Pastoral Nominees Pty Ltd
- Cu-River Mining Australia
- Ilkurlka Community
- South Australian Chamber of Mines & Energy
- South Australian Government
- Test Trak Australia

A further six respondents requested their submission remain confidential.

To view the public submissions go to <https://consult.industry.gov.au/resources/review-of-the-woomera-prohibited-area-coexistence/>



*Arid landscape of sandy and rocky plains  
in the Woomera Prohibited Area.  
Credit: Woomera Prohibited Area Review.*





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# ANNEX C: Mineral and petroleum resources and potential of the Woomera Prohibited Area, 2018 – Executive Summary

## *Geoscience Australia, with contributions from the Office of the Chief Economist – August 2018.*

The current coexistence framework for the Woomera Prohibited Area (WPA) was established in 2014; it seeks to balance interests of all users in the Area. Under this framework, the Department of Defence is the primary user of the WPA for the testing of weaponry and related war materials. Access to the WPA by a range of non-Defence users, including Aboriginal groups, the resources sector, pastoralists and tourists, is also provided for. The coexistence framework is being reviewed in August 2018.

As part of this 2018 WPA Review, Geoscience Australia, together with the Office of the Chief Economist, has undertaken the following tasks:

- updated the current understanding of the region's geology;
- assessed the known Economic Demonstrated Resources (EDR) and potentially undiscovered mineral and petroleum resources (including critical commodities) and groundwater;
- documented resource exploration activities in the WPA; and
- provided an economic assessment of the known mineral resources and possible future mine developments in the WPA.

Modelling of the economic impact of possible new mine developments was carried out for high-value commodities with high potential for discovery in the WPA. The commodities included in the possible future mine scenarios are gold, copper, silver, uranium, iron, titanium and zirconium. Two scenarios were modelled, conservative and optimistic.

The Net Present Value of Economic Demonstrated Resources in the WPA is estimated to be \$5.9 billion. The Net Present Value of possible future mines in the WPA is estimated to be between \$6.4 billion and \$19 billion. Annual direct employment across the future possible mines ranges from 150 people to 1,350 people per mine, with secondary employment between 70 people and 1,250 people. Annual value-add across the future possible mines ranges between \$8 million per mine to \$920 million per mine.

This 2018 assessment differs substantially in its treatment of the potential for discovery and development of a uranium mine in the WPA as compared to the 2010 assessment. Whereas the 2010 assessment included a scenario assuming that an iron oxide-copper-gold (IOCG) deposit of the grade and tonnage of Olympic Dam might be discovered and developed within the WPA,

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the present study has excluded this possibility. This is because grade-tonnage data for IOCG deposits in the WPA region and elsewhere in the world indicate that the Olympic Dam deposit is an extreme outlier, thus it is extremely unlikely that another Olympic Dam-sized IOCG deposit would be discovered and developed within the WPA.

The WPA covers an area of approximately 122,191 km<sup>2</sup> in South Australia and is characterised by very sparse population, an arid landscape of sandy and rocky plains, and a semi-desert climate. Buried beneath the surface, however, lie sedimentary basins and underlying basement rock sequences of the Gawler Craton, which is one of Australia's most highly endowed mineral provinces.

Twenty eight mineral deposits and over 150 mineral occurrences have been identified by explorers to date in the WPA (Figure 1). The major known mineral commodities in the WPA are copper, gold, iron, titanium, zirconium and silver. Key deposits in the WPA include the Prominent Hill copper gold and silver deposit, which also contains (currently subeconomic) resources of uranium; the Challenger gold and silver deposit; the Giffen Well and other magnetite iron deposits; the Peculiar Knob mixed hematite and magnetite iron deposit; and the Lake Phillipson and Penrhyn coal deposits. In addition to the major commodities listed above, there are a wide range of other resource occurrences, including lead, nickel, zinc, and petroleum.

'Critical commodities' are those that are recognised globally as metals and minerals of high economic importance but are subject to high risk of supply disruption. The Barton West heavy mineral sands (HMS) deposit contains the bulk of the titanium and zirconium (critical commodity) resources in the WPA. Other critical commodities identified in the WPA include the rare-earth elements (REE), platinum-group elements (PGE), potash, chromium, cobalt and tungsten. None of the critical commodity resources in the WPA are currently being produced.

Two mines are currently operating in the WPA: the Prominent Hill copper-gold and silver mine and the Challenger gold and silver mine. Additionally, the Cairn Hill iron and copper mine and the Peculiar Knob iron mine, are currently under care and maintenance (Figure 1). At present, there are over 50 mineral and petroleum exploration companies holding 143 mineral exploration and 54 petroleum or sequestration exploration licenses. In 2017, \$5.3 million were spent on mineral and petroleum exploration within the WPA. This is a significant reduction from the peak expenditure in 2012, when over \$90 million was spent on exploration in the WPA. This follows similar national mineral and petroleum exploration expenditure trends; the total exploration expenditure throughout Australia was \$2,178.2 million in 2017, and in 2012, \$4,678.9 million.

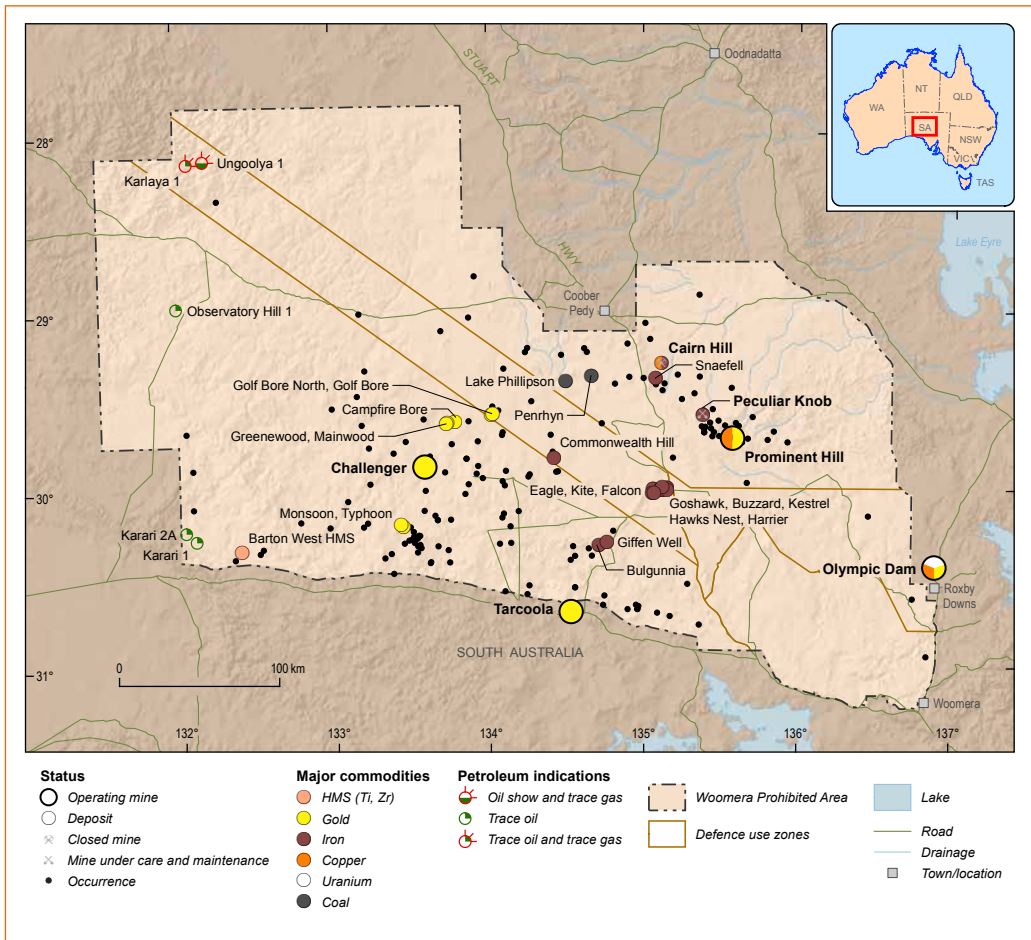


Figure 1. Mineral occurrences, deposits and operating mines, and petroleum wells in the WPA.

An assessment of the potential for undiscovered mineral and petroleum resources has been conducted by considering the results of Geoscience Australia’s 2010 WPA assessment and by updating those findings as far as practicable within the available time of the present Review. Overall, this assessment **confirms the results of the 2010 assessment** and shows that many parts of the WPA have moderate to high potential for the discovery of new mineral and petroleum resources (Figure 2). Analysis of new data by this 2018 assessment has also identified additional areas with potential for groundwater resources in the WPA.

There is high potential for the discovery of new deposits, similar to those already known, especially of copper, gold, silver, iron, titanium and zirconium and uranium. Some of these deposits may contain economic REE and other critical commodities.

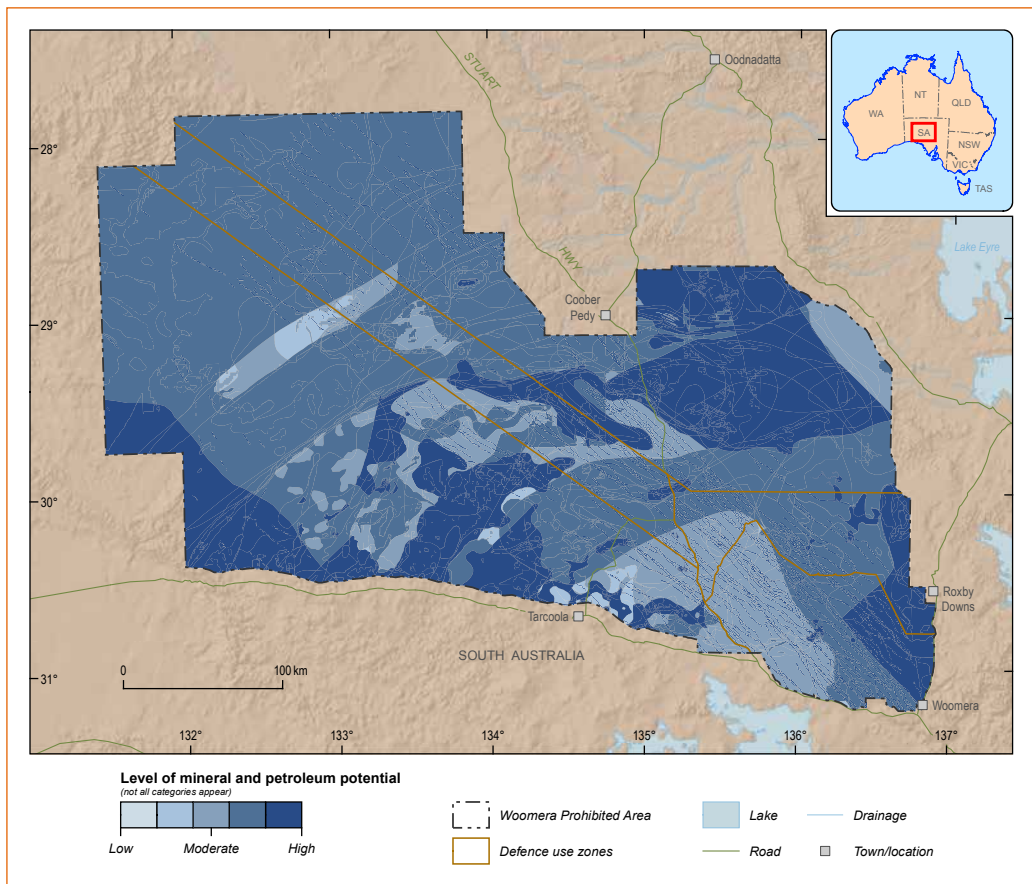


Figure 2. Combined resource potential in the Woomera Prohibited Area (including mineral, coal and petroleum resources).

Using Geoscience Australia’s geological data and knowledge, the Office of the Chief Economist has conducted economic assessments of the current known gold, copper, silver, iron ore and coal resources in the WPA, and possible future mine developments. These values have been estimated using projected commodity prices and the best available data on costs. These valuations are based on a range of assumptions, and should be read in conjunction with the commentary in Sections 2.3 and Appendix A.2, and in the Department of Industry, Innovation and Science (2018) report.

Although new geoscientific data and information have become available for the WPA since 2010, and would be expected to impact assessments of prospectivity of the WPA, it has only been possible to consider a limited number of these new datasets in the current assessment. To provide a more robust assessment of the undiscovered resource potential in the WPA than has been possible in this 2018 assessment, a number of recommendations are made to ensure a sufficient evidence base is available for future reviews of the WPA coexistence framework.

To view the full report please go to <http://pid.geoscience.gov.au/dataset/ga/124203>

Geoscience Australia. 2018. *Mineral and petroleum resources and potential of the Woomera Prohibited Area, 2018*. Professional Opinion 2018/08. Geoscience Australia, Canberra. <http://dx.doi.org/10.11636/9781925848311>



# ANNEX D: Economic Assessment of Mineral Resources within the Woomera Prohibited Area – Executive Summary

*Office of the Chief Economist in collaboration with Geoscience Australia – August 2018.*

As part of the Australian Government’s review of the Woomera Prohibited Area (WPA) Coexistence Framework, the Office of the Chief Economist within the Department of Industry, Innovation and Science has undertaken an economic assessment of mineral resources within the WPA.

The total Net Present Value of known resources in the WPA is estimated to be around \$5.9 billion. The possible future mines in the WPA are estimated to have a Net Present Value between \$6.4 billion and \$19 billion, based on the conservative and optimistic scenarios provided by Geoscience Australia, and the individual future possible mine Net Present Values presented in Table A below.

*Table A: Net Present Values of ‘known’ mineral resources and possible future mines*

‘Known’ mineral resources		Possible future mine developments	
Deposit	Net present value (\$ million)	Future possible mines	Net Present Value (\$ million)
Challenger	238	Challenger	354
Prominent Hill	2,110	Prominent Hill	
Cairn Hill	181	– No Uranium	4,347
Peculiar Knob	77	– Conservative Uranium	5,235
Giffen Well	1,761	– Optimistic Uranium	5,628
Hawks Nest	1,188	Peculiar Knob	119
Commonwealth Hill	19	Giffen Well	626
Lake Phillipson	98	Honeymoon	64
Penrhyn	216	Jacinth-Ambrosia	1,362
<b>Total</b>	<b>5,889</b>	Four Mile and Beverley	290

**Notes:** Values are in real 2018 Australian dollars.

In terms of economic impacts, summarised in Table B, large mineral developments, such as that modelled in the Prominent Hill future potential mine, have the potential to have large employment and value add effects. The economic impacts of the other future potential mines have relatively smaller effects, but would still have the potential to materially increase employment and economic activity.

Table B: Annual average economic impact of future possible mine developments

Future possible mine	Direct employment (no.)	Secondary employment (no.)	Value add (\$ million)	Royalties (\$ million)
Challenger	250	150	110	3
Prominent Hill				
– No Uranium	1,350	840	620	42
– Conservative Uranium	1,370	1,150	840	50
– Optimistic Uranium	1,380	1,250	920	53
Peculiar Knob	150	70	8	3
Giffen Well	550	120	14	13
Honeymoon	150	230	170	3.5
Jacinth-Ambrosia <sup>a</sup>	na	na	na	15
Four Mile and Beverley	150	280	200	3.5

**Notes:** <sup>a</sup> Secondary employment and value add cannot be estimated for Jacinth-Ambrosia due to data limitations.

To view the full report please go to <https://www.industry.gov.au/woomerareport>



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