



Australian Government

Department of Communications and the Arts



Commonwealth Held Spectrum

Consultation paper

May 2017

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Summary of draft proposals

1. **A strong governance framework**
Establish an advisory committee comprising relevant Commonwealth government agencies to provide advice to the Minister for Communications on issues of spectrum policy and identify and implement whole-of-government efficiency improvements that will deliver and enhance the management of Commonwealth spectrum holdings.
2. **Improving transparency**
The Government should publish a consolidated report outlining the value and use of Commonwealth spectrum holdings every two years. To facilitate this portfolio agencies should provide information on their spectrum holdings by value (price paid) and number of licences; the utilisation-over-time and purposes for which spectrum holdings are used; and future spectrum requirements including the timing of new spectrum allocations.
3. **Retaining benefits through sharing and trading of spectrum**
The Government should explore the implementation of a whole-of-government approach to the identification of sharing and trading mechanisms, including the examination of foreign government approaches and emerging technologies and processes to determine if there are opportunities for the Government to engage in sharing and trading of Commonwealth held spectrum.

Introduction

The Spectrum Review

The Department of Communications released its Spectrum Review (the review)¹ in March 2015. In August 2015 the Government announced it would implement the recommendations of the review, including agreement to:

1. replace the current legislative arrangements with new legislation that removes prescriptive process and streamlines licensing for a simpler and more flexible framework
2. better integrate the management of public sector and broadcasting spectrum to improve the consistency and integrity of the framework
3. review spectrum pricing to ensure consistent and transparent arrangements to support the efficient use of spectrum and secondary markets.

Recommendations regarding government holdings

Noting that Commonwealth spectrum management policy was a separate matter for Government, the review recommended that the following reforms be considered²:

1. requiring public sector agencies that hold spectrum to regularly report the value of their holdings
2. permitting agencies to either lease or sell the spectrum and retain the benefit of doing so.

These recommendations seek to enhance spectrum efficiency by improving transparency and incentivising Commonwealth spectrum holders to participate in spectrum sharing and trading.

While a good starting point, a review of spectrum literature as well as consideration of the measures being undertaken by governments, both internationally and domestically, suggest that a broader lens could be applied to this issue. To this end, this paper seeks not only to address the review's recommendations but also to identify other reforms that could deliver improvements to the efficiency of Commonwealth spectrum holdings.

Purpose and scope

This paper seeks stakeholder views and opinions on reform options that will improve the efficiency and effectiveness of Commonwealth spectrum management over the longer term. Draft proposals within this consultation paper should be treated as for-information-only, and have not been officially endorsed by Government. Feedback received will inform development of a final report for consideration by Government. The final report will set out staged reforms to the management of Commonwealth spectrum holdings in the context of the broader spectrum reform framework.

Purpose

Spectrum is essential to a digitally networked economy and a major contributor to Australia's economic and social wellbeing. It is a resource that supports essential services such as safety-of-life and security

¹ *Spectrum Review 2015*, www.communications.gov.au/publications/spectrum-review-report

² *Spectrum Review 2015*, 2.10 Recommendation 2 – Government Spectrum Use, page 35,

and improves the quality of life of users. It is critical infrastructure enabling production for industrial, commercial, educational and other social services. The economic value of Australia's spectrum to the national economy is estimated to be \$177 billion over 15 years³.

Technology has changed substantially since 1992 when the current regulatory framework was introduced. The framework has served the nation well and been a source of international competitiveness. However, sector wide changes are challenging the efficiency, productivity and accessibility of the current arrangements for spectrum management. As technology advances, there are increasingly novel ways to use spectrum to communicate and send information. This constant development means there is increasing demand for spectrum arising from an expanding array of uses. In addition, Australians as a whole are early adopters of new technologies, typically leading the world in the uptake of the latest technological products and services.

The extent to which the benefits of spectrum are realised or improved upon will depend in part on the ability of the spectrum management regulatory arrangements to accommodate rapid technological change and respond to increasing demand.

Commonwealth Government spectrum holdings are managed by individual agencies, each with their own governance arrangements. There are no whole-of-government mechanisms to ensure holdings are managed efficiently or effectively. There is little to assure the Government that spectrum used to deliver services and capabilities to the Australian public is used in the most effective and appropriate way.

Over recent years technological advancements have increased demand for spectrum in both the public and private sectors. This has – and will continue to – place increasing demand on the Government to ensure spectrum allocation is efficient, regulation is effective and improvements that promote the efficient management of spectrum are identified and implemented.

The increase in demand is illustrated by looking at how central mobile technology has become to operation of modern day Australia. The number of wireless mobile broadband subscriptions in Australia has increased from 47 subscriptions per 100 citizens in 2010 to 114 subscriptions per 100 citizens in 2015⁴, the 6th highest in the OECD and well above the OECD average of 85.5 subscriptions per 100 individuals. The deployment of fifth generation (5G) mobile technologies will also place upward pressure on demand for mobile data services.

Demand will also be driven by the continued expansion of the Internet of Things (IoT), the increased use of unmanned aerial vehicles, machine-to-machine technology, smart transport, automated farming and other yet identified uses. In addition to increasing private sector demand, the government will need to consider spectrum for new public use technologies, for example, smart cities and intelligent transport systems. The full scale of spectrum requirements may not become evident until many years after the implementation of these new technologies.

Increased demand and corresponding scarcity of spectrum will increase scrutiny of government spectrum holdings. While some agencies may seek to improve the efficiency of their spectrum holdings, there is currently little incentive to reduce holdings or to identify improvements in a whole-of-government context. There is no coordinated approach to future public sector demand or systematic consideration of the policy issues that government may need to make as both user and regulator.

³ 'The economic value of spectrum' – Research report prepared for the Department of Communications by the Centre for International Economics, January 2015.

⁴ OECD (2016), Wireless mobile broadband subscriptions (indicator). doi: 10.1787/1277ddc6-en (Accessed on 11 October 2016)

International experience shows that public sector spectrum reform is complex and staged over a number of years. The common thread to these reforms is a strong governance framework that enables issues to be considered in a whole-of-government context across each reform period.

A coordinated governance framework will allow for the delivery of flexible approaches to spectrum management in the future. Increased transparency of Commonwealth holdings is a key requirement to support a consolidated governance framework as it allows for measures of efficiency, effectiveness, and appropriateness to be developed while also assisting to identify economies of scale and other synergies such as areas of commonality or redundancy within Commonwealth holdings.

The options for reform explored in this paper seek to set parameters to support this initial framework.

Scope

The reforms explored in this paper only extend to the spectrum managed at the Commonwealth level (see Appendix A for a list of the Commonwealth departments and agencies within the scope of this paper).

The term 'Commonwealth spectrum holdings' is used broadly through the paper to represent all spectrum assigned to Commonwealth holders including that used by a commercial operator on behalf of a Commonwealth user. The paper does not limit the scope to any specific bands, footnoting⁵ or licensing processes. Rather, the broader reform principles proposed within the paper are intended to be applied to Commonwealth spectrum holdings where appropriate. For example, it may not be appropriate to include detail of some Commonwealth holdings in transparency measures where issues of national security are involved and similarly, there may be little justification to subject some holdings to pricing reform approaches if market-based mechanisms for pricing are already in place.

The National Broadcasters, ABC and SBS, are explicitly excluded from the scope of this paper. Broadcast spectrum pricing and allocation are currently being reviewed as part of a separate process.

Government Business Enterprises (GBE) that hold spectrum (such as NBN Co. Ltd (nbn) and Australia Post) are also excluded from the scope of this paper as GBEs operate as Commonwealth companies at arm's length from the government. GBE's spectrum pricing arrangements are similar to or the same as other non-Government users of spectrum.

The GBEs are also excluded to remove any potential competitive advantage that may be garnered from participating in the proposed Government Spectrum Steering Committee (discussed in detail later in the paper). The Government's Competitive Neutrality Principles specify that '*GBEs should not enjoy any net competitive advantage simply as a result of their public sector ownership*'. Being part of the committee may be considered a conflict of interest for nbn, as the company will continue to be in the market for spectrum in the future.

As part of the wider spectrum reforms, the Department of Communications and the Arts will consider how to encourage efficient use of spectrum for GBE spectrum holders.

Management of spectrum held by state/territory governments is not specifically addressed. However, it is recognised that there are certain inter-governmental relationships between Commonwealth and

⁵ Footnotes in the international Table of Frequency Allocations (Article 5, the ITU Radio Regulations), to which Australia is a signatory, specify how frequencies are to be assigned or used. Article 5 informs the Australian Radiofrequency Spectrum Plan, which applies these footnotes along with so-called 'AUS' footnotes that are unique to the Australian radiocommunications environment. Some AUS footnotes are used to earmark certain frequency bands for specific government functions, for example defence.

other government users around specific spectrum allocations (for example 400 MHz harmonised government spectrum). Commonwealth involvement in these relationships is not necessarily outside the scope of anything proposed within this paper.

Matters relating to Public Safety Mobile Broadband (PSMB) capability and the findings of the Productivity Commission's (PC) 2016 report are not addressed in this paper. In response to the PC's findings, the Australian Government has announced that it would establish a committee of senior officials to consider fully scoped proposals for a nationally inter-operable PSMB capability from states and territories. A report will be prepared for the Council of Australian Governments in 2017.

While pricing for Commonwealth held spectrum is touched upon in this paper, it will be further explored as part of the Spectrum Pricing consultation paper. As most Commonwealth users are subject to the same pricing structure as other users, proposals from the Spectrum Pricing consultation paper will also apply to Commonwealth users.

The Government's role in spectrum

As the regulator

The Commonwealth Government is the largest holder of spectrum in Australia with the Department of Defence being the primary user. The Government is also the regulator of spectrum in Australia through the Australian Communications Media Authority (the ACMA). Spectrum is regulated under the *Radiocommunications Act 1992* (the Act) and the ACMA's spectrum management functions are set out in the *Australian Communications and Media Authority Act 2005*. Unlike a number of overseas jurisdictions, responsibility for all spectrum regulation resides solely with the ACMA rather than being split across a number of agencies.

Planning of Australia's radiofrequency spectrum is bound by international spectrum harmonisation standards as derived through the International Telecommunication Union (ITU) Radio Regulations⁶. Australia, as a member state of the ITU, plays an active part in the development of the Radio Regulations through the quadrennial, treaty-level, World Radiocommunication Conference (WRC) meetings. Australia's obligations under the Radio Regulations are reflected in the Australian Radiofrequency Spectrum Plan (ARSP), which is prepared by the ACMA. In addition to international harmonization through the ITU, there are some frequency bands covered by bi-lateral or multi-lateral treaty arrangements. These include bands used by NASA and European Space Agency projects in Australia under Australia-US or Australia-Europe agreements.

Specific sectors are also subject to regulatory oversight from other United Nations' bodies such as the International Civil Aviation Organisation and the International Maritime Organisation. Compliance with these standards and arrangements facilitates safe, efficient and cost-effective transport providing trade benefits and growth opportunities for Australian businesses and travel and a wider range of consumer options for Australian citizens.

As a policy advisor

The Minister for Communications is responsible for managing spectrum policy on behalf of the Commonwealth, with the Department of the Communications and the Arts and the ACMA providing advice to the Minister on spectrum policy set in a complex regulatory environment with increasing demand on spectrum availability. Spectrum policy must also take account of broader government

⁶ Harmonisation arrangements ensure that safe and efficient worldwide operation of critical services and infrastructure is not impeded by differing international standards while also providing the economies of scale required to allow device manufacturers to bring products to market.

policies to which spectrum is a key input (e.g. The Smart Cities Plan). Currently there is no coordinated approach to forecasting future public sector demand or systematic consideration of the policy issues and potential trade-offs that Government may need to make as both user and regulator.

Australian policy interests must also be represented at the international forum of the ITU Radiocommunication Sector (ITU-R). This forum meets every three to four years at the World Radiocommunication Conference (WRC) to revise radio regulations, the international treaty governing radiofrequency spectrum use and satellite orbits. The WRC is transforming from a technical to a policy forum, with competing domestic and international policy issues⁷ arising during WRC negotiations. Increasingly these issues are cross-portfolio and require considered policy oversight to ensure Australia's negotiating position reflects the Government's broader interests. The recent *Review of the Australian Communications and Media Authority* recommended that head of delegation roles in key international forums, including the WRC, should be transferred to the Department, and that it take responsibility for developing policy positions and signing the final acts. It further recommended that clear guidance and negotiating parameters be provided by the Department to heads of delegation.

As a user

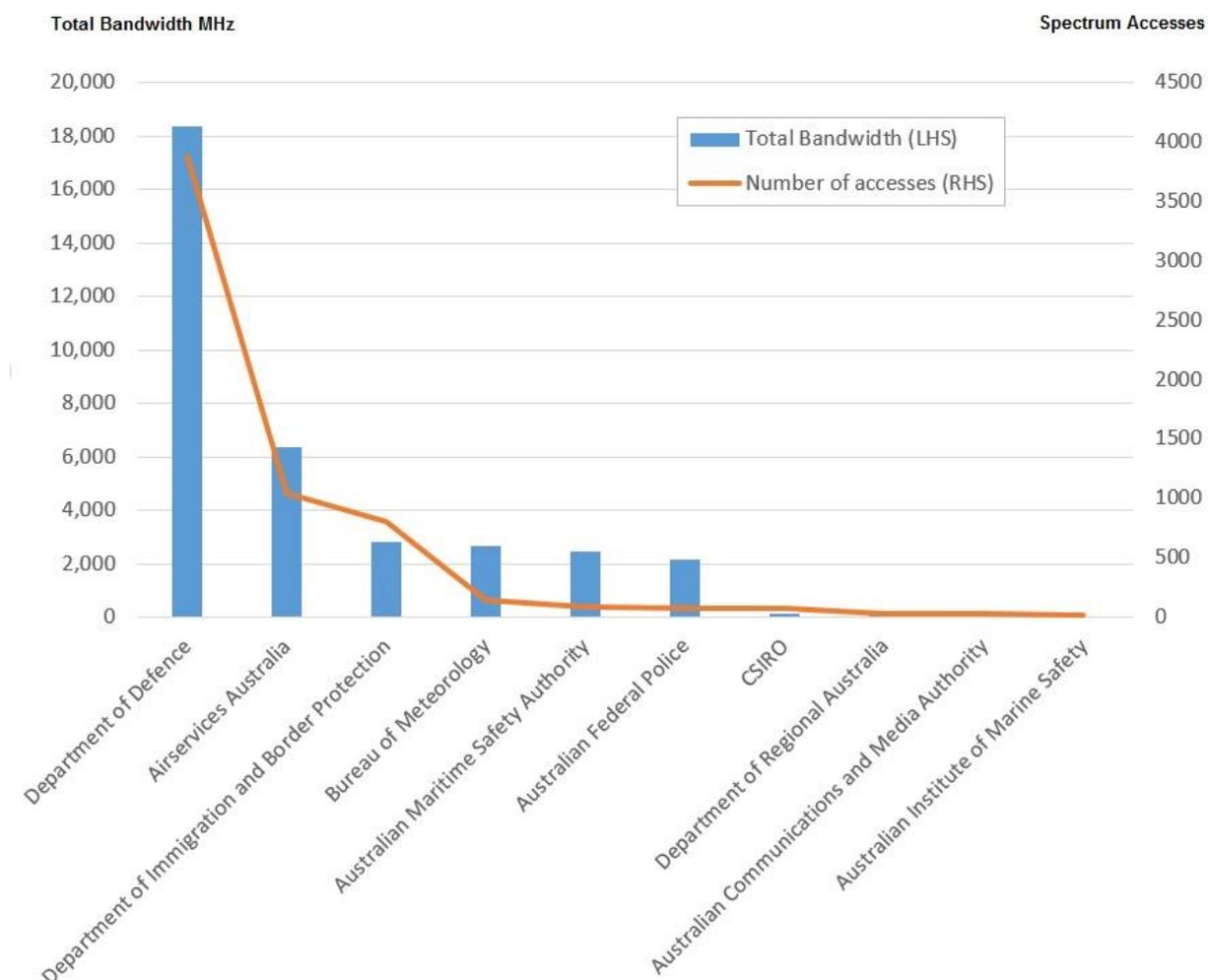
Data provided by the ACMA shows that in February 2017 36 Commonwealth Government agencies were licenced to access spectrum across Australia.

Measuring the totality of Commonwealth agency spectrum use is difficult. Factors such as bands allocated via footnotes or through international harmonisation can produce misleading results. Although a band has been allocated to a particular use it does not necessarily indicate that those bands are being actively licensed for use by Commonwealth users. Footnotes can also specify that the band may have a non-Commonwealth secondary user or simply be an intention that the band be given priority to a certain purpose, rather than a strict requirement. This also affects the determination of the extent to which the Commonwealth is denying use to other market participants through its own stock of holdings.

The following chart shows the top 10 Commonwealth holders of spectrum by number of accesses and total megahertz licenced bandwidth. It's worth noting that the chart does not provide any measure of utilisation, rather it is the summation of bandwidth and number of accesses. As not all bandwidth is in the same area, this provides a rough guide only.

⁷ *Review of the Australian Communications and Media Authority Draft Report, May 2016, page 38*

Figure 1: Commonwealth Government spectrum – 10 largest users by bandwidth and spectrum accesses 21 February 2017.



Historically, international harmonisation through footnoted bands has prioritised public sector use of spectrum over private sector use, with allocations to public users in those bands potentially being considered generous. Arguably this is justified as there is an expectation that the Government will provide a range of services and capabilities that either cannot or should not wholly be provided by the private sector. These are often of vital national importance and include capabilities such as defence, aviation and maritime safety, meteorology and scientific research.

Noting the extensive spectrum holdings within the Defence portfolio, the Department of Defence has established a Defence Spectrum Office (DSO) to coordinate spectrum management across the armed forces and the Department more broadly. The DSO has its own spectrum management strategies that operate within the broader radiocommunications regulatory framework which is administered by the ACMA.

In regard to non-Defence government spectrum holders, many agencies may only hold a small number of licences and do not require the formal governance arrangements in place in Defence. However, all agencies – irrespective of the size of their holdings – need to demonstrate efficient spectrum use and consider opportunities to improve efficiency of their spectrum.

To this end under current arrangements there is no consolidated reporting or other external accountability measures to provide Government with an indication of the efficiency with which these holdings are being managed.

The value of spectrum to government

Spectrum is of critical importance to the Commonwealth. The ability to access and use spectrum enables the Commonwealth to provide important services and capabilities to the Australian public.

As is the case in the private sector, government users for the most part obtain access to spectrum administratively rather than through market mechanisms. Commonwealth spectrum holders generally pay an administrative price to access spectrum using the same formula as applied to non-government or commercial spectrum users. Department of Defence is charged a reduced price in part due to the planning and technical restrictions that apply to the spectrum that is used. In certain situations the Department of Defence, are excluded from licensing requirements and therefore exempt from licence charges⁸.

To a large extent the use of administrative pricing is driven by the need to comply with internationally harmonised standards which make certain spectrum bands unavailable for other uses.

While this formula provides a consistent and transparent way of determining licence prices it does not necessarily reflect the underlying value of spectrum as the price paid reflects the minimum value of spectrum to the buyer (either government or private buyer). When attempting to measure the value of spectrum to the Commonwealth, the relevant question is the additional costs that would be incurred by Government in delivering public goods without the benefit of spectrum. These additional costs could be much greater than the price paid for spectrum.

The public good characteristics of the services enabled through government held spectrum sometimes make it difficult to measure the true value of spectrum to the Commonwealth. When the Government decides to provide spectrum for the provision of public goods and capabilities it has potentially chosen to forgo other higher monetary value outcomes, however the incremental public value can greatly outweigh the administrative cost paid for use. Any allocative inefficiencies that arise out of the Commonwealth holding onto spectrum without demonstrating strong public value will likely, over time, have negative effects on the general public and broader economy.

The Spectrum pricing consultation paper will review administrative prices in more detail, and excluded user arrangements will be explored further in the general legislative reforms.

International comparisons

Internationally, governments have begun to explore and implement reforms focused on improving the efficiency and management of Government spectrum holdings. Measures include agency-level reporting, demand forecasting, release of targets for public sector spectrum, financial incentives to encourage agencies to relinquish or share unused/underused spectrum and consideration of spectrum as part of procurement decisions.

The following provides an overview of the reform programs being implemented in the United Kingdom and the United States.

⁸ *Division 4, Part 1.4, Radiocommunications Act 1992*

United Kingdom

Following completion of the *Independent Audit of Spectrum Holdings Report* (the Cave Review) by Professor Martin Cave in 2005⁹, the United Kingdom Government has implemented a range of reforms aimed at improving the efficiency of spectrum management in public sector bands.

These reforms initially focused on improving the transparency of public sector spectrum holdings, wider use of Administered Incentive Pricing, implementation of regulatory tools to enable trading and the investigation of band sharing opportunities. Over the last six years, the focus has shifted to facilitating the release of public sector spectrum for private sector use. In 2010, the UK Government set a target to release or share 500 MHz of public sector spectrum by 2020. To date the release of 384 MHz has been secured¹⁰.

The 10 year time frame recognises the long lead time required to release spectrum. Prior to releasing spectrum, feasibility studies and remediation work is undertaken to address issues such as international harmonisation requirements, the movement of existing users and managing transitional and interference processes¹¹.

When a positive economic case for releasing public sector spectrum is established (through a cost-benefit analysis), financial incentives have been made available to cover remediation costs where a department is unable to meet the costs from within its budget. The introduction of Administered Incentive Pricing, tiered to reflect private sector demand and the opportunity cost of continuing public sector use, also provides a financial incentive as departments can release valuable spectrum to minimise their Administered Incentive Pricing charges.

Strong governance and institutional arrangements have underpinned these reforms. This enables spectrum policy issues to take account of whole-of-government objectives. In recognition of the potential improvements to economic growth arising from spectrum release the UK Spectrum Strategy Committee (UKSSC) was established to oversee the spectrum reform and reallocation policies. Co-chaired by senior officials from the Department for Culture, Media & Sport and the Ministry of Defence, the UKSSC was formed to bring government (including departments, agencies and statutory bodies) together to coordinate the policies and plans necessary to efficiently manage spectrum.

The UKSSC released a Strategy for Management of Major Public Sector Spectrum Holdings in 2009¹², outlining its action plan to implement the recommendations arising from 2005 report.

United States

The Government Accounting Office and the Commerce Spectrum Management Advisory Committee (within the National Telecommunications and Information Administration) have recommended a number of reforms to improve spectrum efficiency.

⁹ *Independent Audit of Spectrum Holdings*, <http://www.spectrumaudit.org.uk/pdf/caveaudit.pdf>

¹⁰ *Enabling UK growth: Public Sector Spectrum Release Programme annual report, April 2016*, page 13

¹¹ *Enabling UK growth: Public Sector Spectrum Release Programme annual report, April 2016*, page 5.

¹² *A Strategy for Management of Major Public Sector Spectrum Holdings, April 2009*, <http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file46420.pdf>

The 2012 *Middle Class Tax Relief and Job Creation Act* included provisions to encourage agencies to more efficiently manage their spectrum holdings. Provisions included¹³:

- Amending existing statutes to authorise the use of auction receipts deposited into the Spectrum Relocation Fund to cover agencies' spectrum relocation and sharing costs, including planning costs
- Authorise the Director, Office of Management and Budget (OMB) to make payments from the Fund in advance of a scheduled auction to encourage quicker completion of spectrum relocation or sharing.

The Act also directed OMB to update and revise its guidance under Circular A-11 (Preparation, Submission, and Execution of the Budget)¹⁴ to incorporate incentives to use spectrum more efficiently, thus enabling spectrum allocated for federal use to be made available for other purposes. This included the requirement for Federal agencies to include in "*their budget justification for procurement of major radio spectrum-dependant communications-electronics systems consideration of the economic value of spectrum being used*". Further, budget justifications for procurement of systems are required to address a number of spectrum-related matters including¹⁵:

- In request for proposal to procure the system, the requirement that the respondents address spectrum efficiency factors
- Whether the system will share spectrum with other Federal or non-Federal systems/operations and the nature and extent of the sharing relationship
- Identify improvements in spectrum efficiency and effectiveness between the replacement and existing system.

Separately, the United States Defence Spectrum Organization has implemented strategic plans that embrace spectrum sharing, emphasise the need for advances in spectrum efficiency, flexibility, and adaptability for defence systems; agility in defence spectrum operations; and, timely evaluation and response to spectrum regulatory and policy changes affecting defence.

Further detail on international approaches, including the chronology of key reforms, is at Appendix B.

While it is recognised that these jurisdictions have differing institutional and regulatory arrangements and operating contexts there is much still that can be learnt from these international experiences and applied in an Australian context.

Draft proposals

Given increasing demand for spectrum, the importance of the services and capabilities provided by the Commonwealth through spectrum and the broader economic trade-offs the government makes when holding spectrum, there is an obligation on the Commonwealth to ensure that processes are in place to continually identify and implement efficiency improvements to the management and use of spectrum holdings.

The reforms proposed below incorporate the findings of the review and lessons from international experiences in Government spectrum reform. The international experiences highlights that any reform to the management of Commonwealth spectrum holdings will require staged implementation.

¹³ http://www.gao.gov/duplication/action_tracker/Spectrum_Management/action1#t=1

¹⁴ Circular No. A-11 preparation, submission, and execution of the budget, July 2016, https://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/a11_2016.pdf

¹⁵ Circular No. A-11 preparation, submission, and execution of the budget, July 2016, page 191-192.

The implementation should initially focus on creating appropriate governance arrangements and developing robust data collection processes. Once these frameworks have been established the identification and implementation of longer-term improvements can be explored.

A staged approach will also allow for the broader spectrum reforms (new radiocommunications legislation and pricing reforms) to be fully implemented.

These proposals have not been agreed by the Government but rather set out a proposed direction. Your feedback to these proposals will inform the final report to Government.

A strong governance framework

DRAFT PROPOSAL 1

Establish an advisory committee comprising relevant Commonwealth government agencies to provide advice to the Minister for Communications on issues of spectrum policy and identify and implement whole-of-government efficiency improvements that will enhance the management of Commonwealth spectrum holdings.

The Minister for Communications is responsible for managing spectrum on behalf of the Commonwealth. Historically, Government spectrum holders have primarily considered themselves users of spectrum rather than parties to the Government's overarching policy objective of efficient spectrum management.

In 2007 the *Independent Review of Government Spectrum Holdings* (the IRGSH) noted that the ACMA may be required to make spectrum decisions with implications that extend deep into government policy, however there is no authoritative whole-of-government view about spectrum priorities¹⁶. Separately, the *Review of the Australian Communications and Media Authority*¹⁷ noted that there is a lack of clarity as to decisions which are best made by the regulator and those which are policy decisions for government, particularly in areas that are increasingly contested such as spectrum allocation.

There is also an increased need to consider policy at the whole-of-government level ahead of international forums. The World Radiocommunication Conference (WRC) is transforming from a technical to policy forum, with competing domestic and international policy issues¹⁸ arising during WRC negotiations. While Australian Government representatives participate in the relevant working groups there is no forum to specifically consider domestic spectrum policy issues from a whole-of-government perspective in the lead up to WRC.

An overarching governance body, a 'Government Spectrum Steering Committee' (the committee), would provide an appropriate framework to facilitate whole-of-government consideration on issues of spectrum policy. The committee could also identify and implement wide ranging improvements to the management of Commonwealths spectrum holdings.

Under this framework each agency would continue to manage its own spectrum holdings, with the committee providing guidance to the Minister for Communications and the Government on issues of spectrum policy and management. This includes identifying, evaluating and driving initiatives which would improve the overall efficiency of Commonwealth spectrum holdings, formulating whole-of-government positions on Commonwealth spectrum issues (including those relating to international

¹⁶ *Independent Review of Government Spectrum Holdings*, April 2007, SpectrumWise Radiocommunications Consulting, page 12.

¹⁷ *Review of the Australian Communications and Media Authority Draft Report*, May 2016, www.communications.gov.au/file/17746/download?token=inR3DIMs, page 6

¹⁸ *Review of the Australian Communications and Media Authority Draft Report*, May 2016, page 38

forums and harmonisation obligations), and identifying and evaluating emerging risks and opportunities across the broader spectrum management landscape where they relate to the Government as a user of spectrum. Under this framework, a working group would also be established to provide support and advice to the committee.

Membership

Proposed membership of the committee would be open to all significant Commonwealth government users of spectrum¹⁹ that consider spectrum management issues to be essential to operation. Ideally committee members would be senior level staff from within each organisation who are able to provide direction and assistance to ensure the committee can deliver measureable outcomes. Membership of the working group would be comprised of representatives of the same departments/agencies, but with an operational knowledge of key issues to be discussed. Central agencies and other related parties, such as state and territory government departments, while not having membership on either the Committee or working group, would have a standing invite in an observer role (or will be engaged on an as needed basis).

While not a formal member of the body, the ACMA's role would be as a technical advisor that provides the committee, and subsidiary working group, with the required expertise for examining issues and developing advice. The ACMA will retain ultimate responsibility for spectrum planning and licence allocation decisions consistent with its statutory obligations.

Proposed two-year program

The committee would deliver an assessment to the Minister on the efficiency of Commonwealth held spectrum, including potential areas for reform and key linkages between spectrum policy and other government policies. The Department of Communications and the Arts has already commenced a Commonwealth-wide stocktake on the use, policy settings and related governance approaches to spectrum management across the Commonwealth. The first analysis of this information will be on the major holders of Commonwealth spectrum.

In particular, the committee will review how the Commonwealth could engage with trading or sharing of spectrum towards the goal of increased efficiency. The overall assessment on the efficiency of Commonwealth holdings, and proposed improvements, would be presented as a reform roadmap, outlining the key dependencies and milestones required over several years.

The committee will also assist in the development of coordinated Australian Government positions on spectrum policy matters arising in international forums, in particular the WRC. The next WRC is scheduled for 2019, prior to which there will be a number of Asia-pacific region and domestic Australian preparatory group meetings.

The committee will also be an important forum to discuss implementation and policy in relation to reform of the *Radiocommunications Act 1992*.

The work plan and necessity for the Committee, and working group, would be reviewed after two years.

¹⁹ Including the seven Commonwealth departments that account for approximately 99 per cent of all Commonwealth department spectrum bandwidth holdings and any other Commonwealth agency whose operations are significantly impacted by their ability to access and use spectrum.

Improving transparency

DRAFT PROPOSAL 2

The Government should publish a consolidated report outlining the value and use of the Commonwealths spectrum holdings every two years.

To facilitate this portfolio agencies should provide information on the their spectrum holdings by value (price paid) and number of licences; the utilisation-over-time and purposes for which spectrum holdings are used; and future spectrum requirements including the timing of new spectrum allocations.

The Spectrum Review proposed regular reporting of the value of Commonwealth public sector spectrum holdings. It was hoped that by improving the transparency of Commonwealth spectrum holdings efficiencies could be more easily identified and implemented.

At a macro level the Australian Radiofrequency Spectrum Plan (Spectrum Plan), provides visibility of the types of services (including some government uses) that can operate in each band. Further, information regarding spectrum holdings can be derived from the ACMA's online register of licences although at times this register has issues of currency and data quality. There is limited information available regarding the prices paid, the purposes for which agencies hold spectrum and the extent to which these holdings are used or plan to be used in the future.

In some cases this information is intentionally not disclosed to the public, for example, in cases where disclosure may compromise national security or defence. Outside of this, the lack of a regular and consistent approach to the reporting of government held spectrum makes it difficult to objectively assess the efficiency of government spectrum use and therefore scope for improvements.

There may be elements of public sector spectrum holdings that could be of significant value to the private sector (or even could be put to better use by other Commonwealth organisations). If alternative bands could be identified for existing holders to move to, thus vacating the valuable bands for alternative use, improvements to spectrum allocation could be achieved.

Additionally, it may be the case – either due to the historical assignment of spectrum or changes in technology – that spectrum provided to government is no longer in use. In these cases vacating these bands may lead to increased use if other private or public sector entities use this vacated spectrum.

A comprehensive whole-of-government examination of significant spectrum requirements prior to assignment will ensure that issues are identified early in the allocation process and allow for the exploitation of potential economies of scale. It will also ensure that procurements are conducted taking account for the needs of government users, the Commonwealth's broader spectrum policy framework and the wider Australian economy.

Coordinated and detailed regular reporting of Commonwealth spectrum holdings could enable efficiency improvements such as identification of excess holdings and cross department economies of scale.

The Department has already written to all Commonwealth departments and agencies that hold spectrum seeking information on the amount of spectrum accessed or managed for subsidiary users, the spectrum's purpose and intensity of use, a spectrum outlook for the next 5 years, and details on formal processes or frameworks in relation to management or procurement processes. This baseline report on Commonwealth use will be collated by the Department (in consultation with the ACMA) and published on the Department's website with the final report on Commonwealth held spectrum. The key focus of the report will be on the major holders of spectrum in the Commonwealth.

Retaining benefits through sharing and trading of spectrum

DRAFT PROPOSAL 3

The Government should explore the implementation of a whole-of-government approach to the identification of sharing and trading mechanisms, including the examination of foreign government approaches and emerging technologies and processes to determine if there are opportunities for the Government to engage in sharing and trading of Commonwealth held spectrum.

The Spectrum Review recommended that agencies be permitted to retain the financial benefits of leasing or trading spectrum to incentivise them to seek out and engage in such arrangements in order to boost the efficiency of Commonwealth spectrum holdings.

Some Commonwealth spectrum holders have partaken in ad-hoc spectrum sharing arrangements. This is usually facilitated by the holder agreeing that the ACMA issue an apparatus licence to another user in a frequency bands which are footnoted for government purposes.

These are often only short term localised arrangements which are entered into without any financial transaction taking place beyond what is required for the purchase of the apparatus licence.

Anecdotally financial implications do not seem to be a significant consideration for Commonwealth spectrum holders in determining if they will engage in sharing and trading arrangements. Rather it is other non-financial incentives, such as a lack of demand, administrative burden and certainty requirements, which are more likely to limit engagement in sharing and trading arrangements.

Additionally, there are no clear market signals to indicate that there is enough demand to support the operation of a strong secondary market for large parts of government held spectrum. This lack of demand has limited the market from maturing in a manner that will be of financial benefit for Commonwealth users. The key future demands point to spectrum sharing rather than trading being the foundation to increased efficiency.

The applicability of trading or sharing within (and beyond) Commonwealth held spectrum will be a key deliverable for the committee, supported by policy research from the Department in consultation with the Department of Finance. This research will focus on the non-financial barriers and identify opportunities where any financial gains accruing to the Commonwealth through trading or sharing arrangements can be used to further enhance the productivity and effectiveness of government spectrum use.

Conclusion and next steps

Noting the importance that Commonwealth use of spectrum affords through the provision of public goods and services and the operation of national capabilities, it is clear that a more cohesive management of spectrum issues at the Commonwealth level would allow for the Commonwealth to identify and implement opportunities to improve the allocative and productive efficiency of the Commonwealths spectrum holdings. It would also allow the Government to form more robust and considered positions on issues of spectrum policy.

Given the increasing importance spectrum plays in the growth of the economy and the daily lives of Australians, the Commonwealth should seek to ensure its spectrum management processes are consistent with world best practices by setting up frameworks that focus on continual improvement in spectrum efficiency over the long-term.

A cohesive, transparent and robust framework to identify and implement improvements to Commonwealth management of its spectrum holdings will allow the Government to position itself as a

leader in spectrum management and respond proactively to changing demands and applications of spectrum in a considered way for the benefit of Australia.

Feedback options

The Government welcomes feedback on the ideas presented in this paper and any other ideas to make broadcasting spectrum planning, access and licensing simpler. The easiest way to provide feedback is to visit our website at www.communications.gov.au/what-we-do/spectrum/spectrum-reform.

Alternatively, you can provide written comments to:

- Spectrum Reform
Department of Communications and the Arts
GPO Box 2154
Canberra ACT 2601
- Or by email to spectrumreform@communications.gov.au

Submissions close on 30 June 2017.

Please include:

- contact name
- organisation name, if applicable
- contact details, including telephone number, postal and email addresses
- confirmation whether or not your submission can be made public – published – or kept confidential.

All submissions to be made public need to meet the [Digital Service Standard](#) for accessibility. Any submission that does not meet this standard may be modified before being made public.

If your submission is to be made public, please ensure you do not include any personal information that you don't want to be published.

Appendix A: Commonwealth government spectrum holders (within scope of this paper)

- Australian Antarctic Division
- AirServices Australia
- Australian Communications and Media Authority
- Australian Crime Commission
- Australian Federal Police
- Australian Institute of Marine Science
- Australian Maritime Safety Authority
- Australian Nuclear Science and Technology Organisation
- Australian Radiation Protection and Nuclear Safety Agency
- Australian Securities & Investments Commission
- Australian Sports Commission
- Australian War Memorial
- Bureau of Meteorology
- CSIRO (and CSIRO Marine Research)
- Department of Agriculture
- Department of Defence
- Department of Environment
- Department of Health
- Department of Immigration and Border Protection
- Department of Infrastructure and Regional Development
- Department of Industry, Innovation and Science
- Department of Parliamentary Services
- Department of Social Services
- Director of National Parks
- Family Court of Australia
- Geoscience Australia
- Great Barrier Reef Marine Park Authority
- High Court of Australia
- Indigenous Land Corporation
- National Gallery of Australia
- National Library of Australia
- National Museum of Australia
- National Portrait Gallery of Australia
- National Science & Technology Centre
- Office of the Official Secretary to the Governor-General
- Old Parliament House

Appendix B: International spectrum management frameworks

Country	Governance structure	Reporting of public spectrum use	Valuation	Reallocation initiatives
United Kingdom	Interdepartmental spectrum policy body led by the UK Spectrum Strategy Committee (UKSSC)	No, but plans to create a real-time spectrum use database	Administrative incentive pricing (aka opportunity cost pricing). Plans to develop new valuation method.	Yes
United States of America	National telecommunications and Information Administration (NTIA)	No, but plans to create a real-time spectrum use database	Not yet developed, but plans to develop a statistically valid method for valuation	Yes – used reallocation fund since 2004
New Zealand	Ministry of Business, Innovation and Employment	No	N/A	No
Canada	Ministry of Innovation, Science and Economic Development (formerly Industry Canada)	No, but plans to create a real-time spectrum use database	N/A	Yes
France	Interdepartmental spectrum policy body led by the Angence Nationale des frequences (French Radio Spectrum Assignment Authorities)	No	Unclear other than values attained through final auctions	Yes – used reallocation fund since 1997
Japan	Ministry of Internal Affairs and Ministry of Communications	No	N/A	Yes

Timeline comparison of international reform activities

Year	United Kingdom	United States of America	Australia
2004	Chancellor of the Exchequer commissioned Independent audit of Spectrum Holdings		
2005	Professor Martin Cave publishes Independent Audit of Spectrum		
2006	Government releases response to report and agrees to implement recommendations and establishes UKSSC		ACMA commissioned SpectrumWise for Independent Review of Government Spectrum Holdings
2007			SpectrumWise presents final report to the ACMA
2008		Department of Commerce releases Federal Strategic Spectrum Plan—outlining the state of Government use of spectrum	
2009	UKSSC releases Management of Public Sector Spectrum Holdings, action plan for implementing the recommendations from the 2005 report		
2010	Public Sector Spectrum Release Programme established, target of 2020 set to release 500 MHz of public sector spectrum.	FCC releases the National Broadband plan—a plan to improve spectrum management. Plan announced for NTIA and FCC to make 500 MHz of public/commercial spectrum available for wireless broadband by 2020	
2012		PCAST release report recommending improved spectrum reporting and identifying priority data bands on a cost-benefit basis. PCAST publish report outlining new framework for spectrum management, calling for 1,000 MHz of public spectrum to be released and public spectrum information database.	
2014			Minister for Communications announces review of Australia's policy and spectrum management framework
2015		NTIA announced it was on track to achieve 500 MHz goal, having freed up 245 MHz of spectrum	Government announces it will implement the recommendations from the review
2016			Consultation paper on Commonwealth spectrum holdings to be released by end of 2016
2017			Final report, including action plan and timeframes to be released