

Regulatory Impact Statement

Clearing the digital dividend: Planning principles for the restacking of digital television channels

1. Background

Television broadcasting is primarily regulated by the Australian Communications and Media Authority (ACMA) through the *Broadcasting Services Act 1992* (the BSA) and the *Radiocommunications Act 1992*.

A total of 57 channels (15 VHF and 42 UHF) are used to provide analog television services across Australia. This means that analog television broadcasting currently makes use of 399 MHz of spectrum. A total of 50 channels (8 VHF Band III and 42 UHF) may be used to provide digital television services. This means that 350 MHz of the 399 MHz spectrum is also available for the provision of digital television services.

When digital television was introduced into Australia, its frequency allocations were fitted in around the existing analog television allocations. The Australian Government allocated broadcasters additional spectrum to simulcast in digital on the condition that the analog channels are returned to the government at analog switch-off.

The switchover to digital television and the vacating of spectrum by analog services will potentially yield a digital dividend in both the VHF and UHF bands.

Introduction of digital television

Planning for the introduction of digital television began in 1998 with the first services commencing in metropolitan areas in January 2001. The planning of digital television was guided by a number of documents including the [Digital terrestrial television broadcasting planning handbook – March 2005](#) (the *DTTB planning handbook*) and the [General approach to digital television planning – April 2002](#).

The rollout of digital television transmissions commenced in early 2001 and is complete in metropolitan areas and nearing completion in most regional areas of Australia.¹ Viewers in areas where digital services have been rolled out are receiving both analog and digital transmissions by virtue of the simulcast period and, where the simulcast period has ended, digital transmissions only. On 19 October 2008, the Minister for the Department of Broadband, Communications and the Digital Economy released the Australian Government's digital switchover timetable, setting out the timetable for the switchover to digital-only television.² The analog transmissions will be progressively switched off region-by-region across Australia by the end of 2013.³

The first Australian full analog-to-digital television broadcasting switchover took place in the Mildura/Sunraysia region, where analog television ceased broadcasting on 30 June 2010. Switchover to digital only transmissions is continuing according to the government's digital switchover timetable on a region by region basis. Following switchover, broadcasters are now delivering digital-only television services to viewers who receive terrestrial analog services in the licence areas.

¹ This statement is correct with respect to current broadcaster operated transmission sites. New gap filler and digital retransmission site conversions are also proposed for metropolitan and regional areas.

² Digital Switchover Taskforce, *Digital TV Timetable by Region*, www.dbcde.gov.au/data/assets/pdf_file/0007/88108/Digital_TV_Timetable_by_Region_-_Updated.pdf.

³ Digital Switchover Taskforce, *Rollout Map*, www.digitalready.gov.au/rolloutmap.aspx.

The digital dividend

The completion of the digital switchover process will result in the freeing up of parts of the spectrum formerly used for analog transmissions as a digital dividend, permitting reallocation of this spectrum for alternative uses.

In January 2010, the Australian Government released the Digital Dividend Green Paper, which indicated the government had agreed on a target UHF digital dividend of 126 MHz.⁴ Studies by the ACMA and by Kordia Solutions Pty Ltd, referred to in the green paper, demonstrated the feasibility of planning six services at each location and achieving a 126 MHz digital dividend.

The minister's announcement on 24 June 2010 confirmed the size (126 MHz) and frequency band (694-820 MHz) of the digital dividend.⁵

The digital dividend frequency band corresponds to current television channels 52–69. Removing these 18 channels from those available for digital television will reduce the number of available television channels to 32. DAB+ digital radio also needs to be accommodated within these channels and the minister has directed the ACMA to retain 14 MHz (equivalent to two television channels) in VHF for digital radio. This leaves 30 channels, or six VHF and 24 UHF channels, available for digital television services Australia-wide.

Regulatory background

The channel planning undertaken to date for the introduction of digital television services has been given effect by creating digital channel plans (DCPs). DCPs for metropolitan and regional licence areas are prepared under section 9 of the Commercial Television Conversion Scheme (CTCS) and section 9 of the National Television Conversion Scheme (NTCS). Metropolitan and regional DCPs are prepared having regard to the policy objectives set out in subclauses 6(3) and 19(3) of Schedule 4 to the BSA.

DCPs in remote licence areas are prepared under sections 94 and 88 of the CTCS and NTCS respectively and are prepared having regard to the policy objectives in section 90 of the CTCS and section 84 of the NTCS.

The conversion schemes were designed with the commencement of digital services in mind. At the time the schemes were drafted, little was known about what would happen after switchover. Consequently, while the DCPs remain in force after switchover (i.e. when the analog/digital simulcast ends) the ACMA may only vary a DCP in limited circumstances after this time. This makes DCPs of limited utility in giving force to restack channel plans after the end of the simulcast period.

Licence area plans (LAPs) prepared under Part 3 of the BSA are the only other current broadcast planning power that could be used. In December 2010, DBCDE published an exposure draft of proposed legislative changes that include a new power—a Television Licence Area Plan (TLAP). The DBCDE website states:

The Broadcasting Legislation Amendment (Digital Dividend and Other Measures) Bill (the Bill) would amend the Broadcasting Services Act 1992 (BSA) and the Radiocommunications Act 1992 to provide the Australian Communications and Media Authority with improved planning and enforcement powers required to effectively undertake the planning and stacking of digital television channels needed to achieve the digital dividend.

At the time of preparing this RIS, the *Broadcasting Legislation Amendment (Digital Dividend and Other Measures) Bill 2011* had passed through the Senate on 10 May but has not yet received Royal Assent.⁶

⁴ Page 12, [Australian Government Digital Dividend Green Paper – January 2010](#).

⁵ Media release, Senator the Hon Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, [Size and Location of the Digital Dividend](#), 24 June 2010.

Restack – what is it?

Following the switchover from analog to digital television a significant amount of spectrum will be freed up - the digital dividend. The minister's announcement in June 2010 identified the size (126 MHz) and frequency band (694–820 MHz) of the UHF digital dividend.⁷

There are three key areas of work related to yielding the digital dividend. The first is completion of the switchover to digital television, which results in the cessation of analog television services. The second is the process of clearing digital television services from the identified digital dividend band. The third is the configuration and allocation of the cleared spectrum to new users.

This RIS concerns early ACMA steps in the second process, the clearing of digital television services from the identified digital dividend band. This process is commonly referred to as the 'restack'.

The restack process will have two phases. The first phase will involve the revision, in consultation with broadcasters and other affected persons, of the channel plans to determine the channels to which digital television services will move. In this phase, the ACMA will also determine the timeframes in which the channel changes will need to take place.

The second phase of the restack involves broadcasters, transmission service providers and site owners implementing the channel changes. This will require changes to the transmission infrastructure to retune or replace the transmitters and related equipment such as the combiners used to combine the output of several transmitters in to the antenna feeder cable. In some cases, transmission antennas may also need to be changed, as may program input arrangements. In Australia there are around 450 digital television transmission sites broadcasting over 2000 television channels with the majority having at least some services operating in the digital dividend.

When the restack occurs at a particular transmission site, viewers receiving their television services from that site will need to retune their televisions or set-top-boxes to reacquire the television signals. Free to air terrestrial television has a very high penetration rate in Australia with most of the population being television viewers. As the ACMA develops implementation timetables for the restack, it will work closely with DBCDE, the government and industry on measures to assist or inform viewers in relation to retuning television receivers.

The minister's direction

The minister, in July 2010 directed the ACMA on a range of issues related to the replanning of digital television to yield the 126 MHz of digital dividend. The *Australian Communications and Media Authority (Realising the Digital Dividend) Direction 2010 (the minister's direction)* sets several of the high-level objectives for the ACMA's restack planning. These objectives include:

- the requirement to clear the dividend band (694-820 MHz)
- the requirement to complete restack as soon as possible
- the number of services to be planned at each location (generally 6 but 9 in licence overlap areas)
- the retention of VHF spectrum for digital radio purposes (14 MHz)
- specific planning arrangements for metropolitan area main transmission sites (all services to be in VHF)
- the requirement to consider viewer and broadcaster costs and viewer disruption resulting from any changes that are not necessary for, or consequential to, the achievement of the policy objectives of the minister's direction.

A copy of the minister's direction and the explanatory statement can be found on the Comlaw web site (www.comlaw.gov.au).

⁶ The bill can be accessed via this [link](#).

⁷ Media release: Senator the Hon Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, [Size and Location of the Digital Dividend](#), 24 June 2010.

Issue

Before the ACMA can plan the restack of digital television services to clear the digital dividend band, it is desirable to articulate a set of detailed planning principles that are informed by the high-level objectives of restack. The planning principles would guide the ACMA in the development of specific channel plans.

There are some important choices to be made in settling the planning principles. This RIS addresses ACMA actions in assessing the choices concerning the development of restack planning principles.

Risks

Getting restack wrong will mostly affect the broadcasting services and will have little impact on the digital dividend, other than possibly delaying access to the digital dividend. Potential negative impacts on television broadcasting include interference between television services and greater levels of cost and disruption to viewers and broadcasters.

If the restack planning principles are not established at this stage, the ACMA is at risk of failing to fulfil the minister's direction and failing to meet Government objectives for a spectrum auction in 2012 and clearance of the digital dividend band by 2014. Please see section 6 for a full discussion.

2. Objectives

The objective of the ACMA's development of restack planning principles is to facilitate the execution of government policy as directed by the minister's direction. The following objectives were proposed by the ACMA to industry in February 2010 after informal consultation with key industry representatives and DBCDE.

Some of these objectives have been set by the government through the minister's direction to the ACMA. Objectives consistent with those set out in the minister's direction are marked with an asterisk (*). A number of other objectives have been proposed that are either implicit in the restack task or otherwise desirable.

It is important to note that the settlement of the planning principles may require a balancing of competing objectives. Consequently, these objectives need to be considered together and not individually in isolation of one another. The objectives proposed were:

- clear the digital dividend band of broadcasting services as soon as practicable*
- plan for six digital channels at each transmission site⁸
- plan for six VHF channels at all metropolitan main station sites*
- plan such that coverage of all six channels is similar
- aim to maintain or improve digital television coverage
- aim to simplify viewer reception of terrestrial digital television
- aim to establish spectrum planning arrangements that support future needs
- retain 14 MHz of spectrum in VHF Band III for possible expansion of digital radio*
- comply with the legislated framework
- consistent with the minister's direction, the ACMA should wherever possible:*
- minimise viewer costs and disruption
- minimise commercial and national broadcaster costs.

Restack planning principles are guidelines that will be used by the ACMA's planners in preparing channel plans. Once defined, the ACMA's planners would follow the principles as closely as possible. If two principles conflict, a case-by-case judgement would need to be made. As policies rather than legislative instruments, the principles are not binding on the ACMA (although the minister's direction is binding). Where individual channel planning proposals depart from the principles, however, it is

⁸ In licence area overlap regions, nine services per site would be planned at existing transmission sites.

expected that a detailed explanation would be provided in the documentation accompanying the draft channel plan.

3. Options

The minister's direction reduced the optionality of the ACMA in some aspects of the restack planning principles and effectively removed the status quo option in that current digital channel planning principles are not suitable for restacking. Importantly there are not distinct, mutually exclusive sets of planning principles that the ACMA can choose from. In practice there is substantial optionality in choice of specific planning principles and overall sets of planning principles.

In February 2011, the ACMA released a discussion paper, "Clearing the Digital Dividend Planning objectives and principles for restacking digital television channels" (the discussion paper), seeking comments on its proposed restack planning principles. The primary role of the discussion paper was to consult on a proposed set of planning principles that will pave the way for restack channel plans to be developed in order to clear the digital dividend. A critical purpose of the discussion paper was to test some of the ACMA's key assumptions underlying its preliminary view on the choice of the channel planning approach to be used.

The proposed principles addressed the following restack planning issues:

1. the overall channel planning approach to be followed
2. the technical basis for planning
3. arrangements to support digital radio spectrum requirements
4. a range of lower level planning principles including the use of single frequency networks (SFNs) and channel assignment rules.

Other significant issues addressed by the planning principles include:

- how best to take account of existing viewer antenna populations
- treatment of broadcaster off-air feed arrangements.

Of these, the overall channel planning approach is by far the most complex and important issue needing to be resolved prior to the commencement of detailed restack planning. Two main candidate planning approaches have been identified and considered in detail: these have been termed the 'block' and 'minimum moves' planning approaches.

The block planning approach was initially proposed to the Australian Government by the commercial television sector during consultation prior to the digital dividend decision. It would take a green fields approach to channel allotments for each transmission site, placing all services at a site in one of five blocks of six contiguous channels.⁹

The alternative approach is referred to as the minimum moves approach. It would aim to minimise the number of channel moves by only changing the channel allotments where absolutely necessary. A necessary move is either: one where the current channel is in the digital dividend band, or a consequential move to make way for another service to move.

As previously mentioned, separate studies, referred to in the green paper of 2010, were carried out by Kordia and by the ACMA, which demonstrated the feasibility of planning six channels at each location and achieving a 126 MHz digital dividend.

⁹ In the UHF band, all blocks have six contiguous channels. In the VHF band, the six channels are spread across the eight channels in VHF Band III.

The ACMA studies were based on the approach of minimising changes to existing digital television services, which is essentially the minimum moves approach.

The two planning approaches are not the only possible planning approaches; rather they represent end points on a continuum. Hybrids or compromises are possible, however in the time available the ACMA chose to examine in detail the two approaches only, representing on the one hand an innovation strongly supported by all commercial television broadcasters and, on the other, an incremental approach that is characteristic of Australian television planning over many years.

There are costs and benefits to the various planning approaches. A major objective of the discussion paper was to identify and if possible quantify these benefits and costs in order to assist the ACMA to make an informed decision on the matter.

A number of lower level planning principle issues were also considered. Resolution of some of these other issues is not considered critical to the commencement of planning. Such issues can either be considered on a case-by-case basis and comment sought on the specific case as part of consultation on individual channel plans; or where the current planning principles are appropriate and could continue to be used in the interim.

4. Impact analysis

In consultation with industry, the ACMA has undertaken an extensive analysis of the costs and benefits associated with restack planning principles – particularly the critical issue of the overall channel planning approach, which, along with the restack implementation method, is a key determinant of the impact of the restack planning principles.

Groups of the community that will be impacted by the restack of television services, and therefore indirectly by the choice of restack planning principles, include:

- broadcasters which will have to implement changes to broadcast infrastructure,
- the viewing community (both the general public and business) which will need to, in many cases, retune their digital television receivers in order to view restacked (free to air) television services; and
- the federal government which will fund the restack of national (ABC and SBS) services.

It is important to note that regardless of the restack planning principles adopted by the ACMA, the restacking of digital television services will incur substantial obligations and associated costs to broadcasters.

The ACMA has compared the restack planning approaches in detail, evaluating each against the proposed objectives of restack planning and, in particular, the key issues of cost (including cost to broadcasters and costs to viewers) and viewer disruption, timing implications for completion of the restack and long-term benefits.

To test the feasibility of both planning approaches and compare their costs and timing implications, the ACMA prepared channel plans using the two planning approaches for Queensland and adjacent areas. Queensland was chosen as it contains the most congested part of the country for television channel planning (Brisbane and the south east corner) and represents a large enough sample of sites to help draw useful conclusions about how the approaches would compare nationally.

This extensive analysis was provided in the ACMA discussion paper on the matter. There were also four reports that should be considered in conjunction with the discussion paper. Three of these reports were prepared by the ACMA's broadcast planning engineers and one by a consultant commissioned by the ACMA. These reports were developed in order to compare and evaluate the alternative planning approaches.

In relation to costs, a critical finding from the Queensland case study is that the method of restack implementation chosen will have a much larger bearing than the choice of planning approach. Overall, the ACMA has devised three implementation methods in analysing the transmission infrastructure cost of restack and the time to implement restack. These were:

- The Replacement method;
- The TRU (temporary retune unit) method and;
- The Hybrid TRU method.

The analysis of the Replacement implementation method assumed that, in most cases, the equipment at a site (i.e. combiners and transmitters) is completely replaced with new equipment. Analysis of the TRU method assumed use of a truck (or container or equipment rack) with temporary retune equipment (ie a TRU) that comprises transmitters and a combiner (or combiners) that are pre-tuned to the final channels of a particular site. The purpose of the TRU is to maintain services on-air until the existing on-site combiners and transmitters are retuned to the new/post restack frequencies.

Further analysis considered a Hybrid TRU implementation method which is a variation on the TRU implementation method. The analysis assumed replacement of all combiners and the retuning of existing transmitters in-situ while a TRU (comprising only transmitters) is operated through a new combiner in order to keep services on air.

As a result of the analysis of costs under the different implementation methods the ACMA considers that the method of implementation will have a greater bearing on costs than the choice of planning approach.

Initial analysis, conducted prior to release of the ACMA discussion paper, considered only the Replacement and TRU implementation methods and led the ACMA to conclude that the cost of implementing the block approach is likely to be little different to that for the minimum moves approach if the TRU method (or similar) was chosen by broadcasters in implementing the restack. The ACMA analysis also indicated that restack is also likely to be completed in the same time or fractionally more quickly under a block planning approach using a TRU method. The ACMA has identified a number of long-term benefits of the block approach compared to minimum moves approach. These benefits are:

- coverage of services will be the most equal possible with all services at a location operating in the same band and over a smaller range of channels. (This means viewers who are able to receive one service should be able to receive all services in that area using a single receive antenna)
- new viewer antennas can be simpler and smaller
- master antenna TV systems can be simpler and cheaper
- the addition of future gap filler sites will be more cost effective as off-air inputs should be more readily available
- there are benefits for non-broadcast use of the 'white space' between television services.

Viewer retuning

Viewer retuning should involve minimal disruption. The retuning steps are preset in the menu of the digital television or the set-top box and the viewer need only follow these steps and invoke the relevant retuning option(s) from the menu. Any 'favourites' settings may need to be reapplied.

The basic retuning process would be the same for either approach.

Some multi-dwelling buildings may have Master Antenna TV (MATV) systems, which are used to distribute TV signals to each dwelling. As a result of restack, some equipment in the distribution system may need to be retuned or replaced depending on the complexity of the system. Again the requirements are likely to be similar under each approach.

The ACMA has noted that multi-dwelling locations may incur additional costs if they have MATV systems which require retuning or replacement. Submissions to the discussion paper indicate that the types and complexity of MATV systems varies considerably. Simple systems may need no adjustment as result of restack other than retuning each television set. The ACMA understands that systems requiring some equipment adjustment and checking could cost in the order of \$2000 for a large system with up to 100 televisions. Systems requiring considerable equipment replacement could cost up to \$10 000 depending on the number of channels that change at restack and the number of televisions in the system.

The ACMA will not be able to determine the number of multi-dwelling locations with MATV systems that will require retuning or replacement until the planning process is further underway. There are no known data sources that can give a reliable source of the number of MATV systems that have been implemented. Examination of the Geocoded National Address File (GNAF)¹⁰ database of address points gives some data on the number of buildings with multiple addresses and from this an estimate can be derived. Assuming that any location with more than 10 addresses has an MATV system leads to an estimate that there may be approximately 70,000 MATV systems Australia-wide.

The ACMA also notes that much of this cost for MATV systems will be a result of the earlier ministerial decision regarding the size and location of the digital dividend.

Broadcaster implementation of restack

The basic steps involved in a typical restack include:

1. Delivery of new transmission equipment to site.
2. New equipment would be installed in available space (vacated by decommissioned analog equipment)
3. Testing of new equipment to confirm operation and performance specifications
4. At the nominated changeover time, all transmitters would be shut down, any new equipment would be connected and existing equipment being reused would be retuned (if necessary) and adjusted to achieve required performance specifications – these steps would be repeated in sequence for the various components relating to each digital television service being restacked.
5. Field performance checks to confirm reception
6. Once the engineers are satisfied that the equipment performance is equivalent or better than that prior to restack, the site is deemed as restacked.

As with viewer retuning, the basic implementation process for transmission sites would be the same for either approach.

As the initial ACMA analysis found little difference between the two planning approaches in terms of viewer costs or disruption, and as the block approach has modest but real long-term benefits when compared to the minimum moves approach, and after considering all of the proposed objectives of the restack planning process, the discussion paper stated that the ACMA formed a preliminary view in favour of the block planning approach.

Following release of the discussion paper, initial comments from industry indicated that it would be impracticable for combiners to be retuned in situ as assumed in the TRU method due primarily to a shortage of suitable skilled technicians. This view was reiterated in many of the submissions received. Consequently it would appear that the TRU method as described in the discussion paper will not be able to be used. To consider the impact of this change, the ACMA has analysed an alternative implementation method that is a variation of the TRU method where all combiners are

¹⁰ The G-NAF® (Geocoded National Address File) is Australia's first authoritative geocoded address index for the whole country, listing all valid physical addresses in Australia. As at June 2009, it contained approximately 12.6 million physical addresses, each linked to its unique geocode (specific latitude and longitude of the address).

replaced instead of most combiners being returned. This alternative method is referred to as the Hybrid TRU implementation method.

The main characteristic of a hybrid approach is that it will reduce the costs of restack by not requiring the replacement of all or most equipment on each site with new equipment while retaining the efficiency of replacing equipment that cannot be easily returned on site for technical or other reasons. It will also allow the broadcasters a more effective deployment of a limited number of technical staff over a restack period.

Subsequent to the release of the discussion paper, the ACMA undertook further analysis of restack implementation methods, including the hybrid TRU implementation method, as applied to the indicative minimum moves and block channel plans for Queensland. This analysis compared the implementation cost and implementation time for the Hybrid TRU method against updated results for the TRU method and the Replacement method.

Table 1 below presents a summary of findings.

Table 1: Estimated overall costs and implementation times for different planning approaches and Implementation methods

	TRU Method		Hybrid TRU Method		Replacement Method	
	Minimum Moves	Block	Minimum Moves	Block	Minimum Moves	Block
Cost (\$M)	\$17.4 M	\$18.2 M	\$20.9 M	\$22.7 M	\$32.2 M	\$38.8 M
Implementation time (weeks) (4 teams working in parallel)	36.6 wks	36.4 wks	34.7 wks	40.0 wks	34.9 wks	40.3 wks

The ACMA also undertook extensive sensitivity analysis in response to comments that certain tasks could be performed more quickly and that some might take longer. If combiner replacement times are significantly quicker than estimated as some comments and submissions tend to imply, then the Hybrid TRU method may result in a shorter implementation time than the TRU method irrespective of the planning approach taken.

5. Consultation

The ACMA has established an informal consultation forum: the Restack Planning Advisory Group (RPAG). The RPAG provides a forum for the ACMA and industry to discuss proposals relating to replanning digital television channels to facilitate the restack as well as restack implementation and timing issues. It is one way in which the ACMA will gather evidence on which to base its decisions. The RPAG is not a substitute for public consultation on formal instruments, nor is it the only way industry may discuss restack related matters with ACMA officers.

Organisations represented on the RPAG include: national broadcasters (ABC and SBS), commercial television broadcasters, commercial radio broadcasters, FreeTV Australia, Commercial Radio Australia, Transmitters Australia, Broadcast Australia, DBCDE and the ACMA. The RPAG first met in November 2010 and a working group meeting was held in December 2010 to consider draft reports comparing and evaluating the alternative restack planning approaches. A subsequent meeting of the RPAG was held in March 2011 to discuss the ACMA discussion paper on restack planning objectives and planning principles (discussed further below).

Documents considered by the RPAG are available on the [ACMA website](#).

In addition to the RPAG process, the ACMA released a comprehensive consultation document, the discussion paper, on restack matters and four associated reports on 28 February 2010:

Discussion paper:

- Clearing the Digital Dividend - Planning objectives and principles for restacking digital television channels

Reports:

- Digital Dividend: Case study comparison of two restack planning approaches (Report TPS2011/01)
- Digital Dividend: Comparison of the costs of implementing two restack planning approaches (Report TPS2011/02)
- Digital dividend: Timing and sequencing analysis for implementation of Queensland indicative restack channel plans (Report TPS2011/03)
- Digital TV Restack Modular Costs - (Consultant's Report)

The primary role of the discussion paper was to consult on a proposed set of planning principles that will pave the way for restack channel plans to be developed in order to clear the digital dividend. A critical purpose of the discussion paper was to test some of the ACMA's key assumptions underlying its preliminary view on the choice of the channel planning approach to be used.

Submissions to the discussion paper closed on 4 April; however, late submissions (including supplementary material) were accepted until 13 April. The ACMA received seventeen submissions to the discussion paper including one submission marked commercial-in-confidence from the 'Australian Terrestrial Television Broadcasting Industry'. The sixteen other submissions are available on the ACMA web site.

Commercial broadcasters had no major concerns as they have been advocating a block planning approach. No submissions opposed the block planning approach.

The national broadcasters expressed no major concerns.

The commercial radio sector, while participating fully in the RPAG process, did not provide a submission, indicating that they have no concerns with the planning principles.

Broadcast Australia mainly offered comment around implementation methods rather than the planning principles.

The general tone of responses was supportive of the proposals put forward by the ACMA. A number of detailed comments and suggestions were made which were considered and subsequently viewed favourably by the ACMA.

6. Risks

If the ACMA does not adopt the restack planning principles at this time, it will be at significant risk of being unable to proceed with the implementation of the minister's direction in a timely and effective manner.

The restack of the broadcasting services is a key requirement for the yielding of the digital dividend. Detailed channel planning by the ACMA is a necessary component of restack, especially where there may be a need for revised transmission infrastructure by broadcasters. The government's aim is for the digital dividend spectrum to be cleared within 12 months of the final switch-off of analog services on 31 December 2013. The government is also committed to the planned 700 MHz spectrum licences

auctioned in 2012. Planning and implementation of restack will be time consuming and must commence in June 2011 to meet the government's 2014 clearance timetable and to settle a reliable timetable for restack to allow for the necessary marketing plan for the 2012 auction.

Delay will create an impact on government revenue if the auction is unable to proceed as currently desired.

Due to the extensive consultation that has already taken place, broadcasters are also well under way in planning restack of their television services, along with the ongoing digital switchover. Delay in the implementation of restack may cause difficulties, particularly with the orderly progress of the logistics of equipment supply.

7. Conclusion and recommended option

After considering the submissions to the initial ACMA discussion paper and the additional analysis of restack implementation methods, and noting that:

- the additional analysis, based on the same modular input cost and timing assumptions for each planning approach, indicates that the block planning approach may take slightly longer (14%) to implement and may cost slightly more (9%) to implement than the minimum moves planning approach for the Queensland case study;
- industry feedback has implied that the actual implementation may achieve both time and cost savings relative to the ACMA modelling results;
- the block planning and minimum moves planning approaches will result in similar levels of viewer disruption and cost;
- that the block planning approach has real but modest long term benefits, including:
 - coverage of services will be the most equal possible with all services at a location operating in the same band and over a smaller range of channels. (This means viewers who are able to receive one service should be able to receive all services in that area using a single receive antenna)
 - new viewer antennas can be simpler and smaller
 - master antenna TV systems can be simpler and cheaper
 - the addition of future gap filler sites will be more cost effective as off-air inputs should be more readily available
 - there are benefits for non-broadcast use of the 'white space' between television services.

The recommended option is for the ACMA to adopt the block planning approach for planning the restack of digital television services.

The choice of a block planning approach has consequently influenced key aspects of the finalised restack planning principles adopted by the ACMA.

8. Implementation and review

The ACMA's restack planning principles will be published in an informal manner (i.e. not under any specific legislative power or instrument) on the ACMA website. The ACMA will subsequently use these principles as guidance in the development, in consultation with industry, of detailed area by area restack channel plans.

Following statutory consultation on the instruments used to formalise channel plans, currently expected to be Television Licence Area Plans, the ACMA will make and publish the relevant

instruments. These instruments will create obligations on broadcasters in terms of when and to what channels they must modify their broadcast infrastructure.

Given that the restack planning principles are a statement of the ACMA's disposition only, these principles will be applied on a case by case basis during the planning of each area. If appropriate, these principles will be reviewed.