



25 November 2008

Mr Richard Home
General Manager
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Australian Competition and Consumer Commission
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Dear Mr Home

**ACCESS UNDERTAKINGS
DIGITAL RADIO MULTIPLEX TRANSMISSION SERVICES**

I write on behalf of the Community Broadcasting Association of Australia.

The CBAA is the peak body for community broadcasting licensees and is taking a lead role in the planning and implementation of digital radio in Australia.

Attached to this letter is the CBAA submission in response to the ACCC discussion paper and proposed Access Undertakings in relation to digital radio multiplex transmission services as lodged on 3 October 2008.

We have had the assistance of Minter Ellison Lawyers in assessing the proposed undertakings and welcome the opportunity to make this submission.

Yours sincerely

A handwritten signature in black ink, appearing to read 'M Bawden', is written in a cursive style.

Michele Bawden
GENERAL MANAGER



Assessment of Access Undertakings in relation to digital radio multiplex transmission services

**Submission by the Community Broadcasting Association of Australia
November 2008**

Assessment of Access Undertakings in relation to digital radio multiplex transmission services

Submission by the Community Broadcasting Association of Australia

1. Introduction

- 1.1 The Community Broadcasting Association of Australia (**CBAA**) is the peak representative body for community broadcasting licensees throughout Australia. The CBAA provides leadership, advocacy, and support for community broadcasters. Membership of the CBAA currently includes 226 permanently licensed community radio stations and 41 temporarily licensed community radio stations.
- 1.2 The CBAA welcomes the opportunity to make this submission to the ACCC in relation to the proposed Access Undertakings lodged by Commercial Radio Australia on 3 October 2008 on behalf of the Multiplex Licensees.
- 1.3 The CBAA's comments are directed towards two criteria in particular:
 - (a) whether the terms and conditions of access specified in the Access Undertaking are reasonable; and
 - (b) whether the terms and conditions of access specified in the Access Undertaking include access prices or pricing methodologies which are fair and reasonable.
- 1.4 Set out below is the CBAA's submission with respect to serious concerns in relation to a range of price and non-price terms and conditions. If these issues are not addressed, the ACCC cannot, in CBAA's submission, properly conclude that these undertakings satisfy the ACCC's criteria for acceptance.
- 1.5 The ACCC has stated in its October 2008 discussion paper that it will release a draft decision if legislation to extend the date for the introduction of digital radio services is enacted. The CBAA notes that the *Broadcasting Legislation Amendment (Digital Radio) Act 2008* (which commenced on 31 October 2008) extends the Digital Radio Start Up Day to a date not later than 1 July 2009. As a result, the CBAA assumes that the ACCC will make a draft decision, as foreshadowed in the discussion paper, prior to making a final decision on the Access Undertaking.

2. Submission on whether the terms and conditions of access specified in the undertaking are reasonable

2.1 Auction process

In the event that there is Excess Multiplex Capacity (and demand exceeds the excess capacity that is available) the undertaking proposes that this capacity be allocated to access seekers using an auction process.

While the use of an auction process is a requirement of the *Radiocommunications Act 1992 (the Act)*, an auction could have the potential to unfairly disadvantage community broadcasters. This is because:

- (a) the capacity allocated to community broadcasters is already insufficient to meet the requirements of the sector (relative to the capacity allocated to commercial broadcasters); and
- (b) community broadcasters will find it difficult, if not impossible, to compete with commercial broadcasters in an auction process.

If all existing stations in the community sector take up their access entitlements, the digital capacity provided to each station will, in every city, be less than 1/9th of the multiplex capacity (ie. less than 128 kbps) and in some cities (eg. Adelaide and Perth) less than what is properly required to emit an acceptable quality audio service.¹

If excess capacity is allocated under an auction process, not for profit community broadcasters could be forced to compete with commercial broadcasters to acquire excess capacity. Community broadcasters will find it difficult, if not impossible, to acquire further capacity if they are forced to bid against commercial broadcasters in such a process.

Attachment A to this submission sets out, in greater detail, the consequences of the current limitations on the capacity allocated to the community broadcast sector and the case for giving priority to the community sector with respect to the allocation of excess capacity.

Section 118NT(6) of the Act requires the use of an auction process that is 'open and transparent' to determine 'which content service providers are to have access to which fractions of multiplex capacity'. This criterion is reflected in clause 7.6(b) of the Access Agreement. While the auction process must be open to all 'Interested Parties' (as defined in Schedule 1 to the Access Agreement) it does not follow that all Interested Parties must compete for the same capacity. The CBAA submits that s 118NT(6) permits a Multiplex Licensee to allocate specific 'fractions of multiplex capacity' between different types of access seekers, and to conduct separate auctions for each set of capacity.

¹ See **Attachment A** to this submission for more detail

Provided the apportionment of excess capacity available to different classes of access seekers is fair and equitable, such a process would, in the CBAA's submission, satisfy the requirement in the Act for an 'open' auction process, while also satisfying the ACCC's requirement for 'reasonable' terms and conditions.

The CBAA submits that the ACCC should require this to be a feature of the auction process under the Access Undertakings and Access Agreements.

2.2 *Creditworthiness and security for payment*

The requirements in clause 15 of the Access Agreement should not apply to community broadcasters.

Community broadcast stations, which are operated on a not for profit basis, will be unfairly prejudiced if they are subject to a credit review or a requirement to provide financial security on the same basis as commercial broadcasters.

Even in the event that a community station ceases to operate, the capacity allocated to that broadcaster will continue to be reserved for the community broadcast sector (unless it is excess capacity). There is therefore limited value to a Multiplex Licensee in undertaking a credit review of a community broadcaster, as the capacity held by that broadcaster cannot, in most cases, be allocated to a commercial user even if the community broadcaster is found not to be 'creditworthy'.

For the same reasons, condition precedent 3 in Attachment A to the Access Agreement should not apply to a community broadcaster.

2.3 *Operations manual*

The CBAA recognises that there is a need for a Multiplex Licensee to develop an operations manual (**manual**) and to be able to modify that manual from time to time. However, the procedures for developing and amending the manual in clause 2.2 of the Access Agreement provide too much scope for unilateral variation by the Multiplex Licensee of the terms and conditions upon which Access Seekers can acquire Multiplex Transmission Services.

While obtaining the agreement of every single Access Seeker may not be practical, the CBAA submits that the operations manual should require the approval of the bulk of the users of the capacity (say 80%). Further, the Access Agreement should provide that an Access Seeker can use the dispute resolution process to obtain review of the manual or a change to the manual if the Access Seeker believes it has been unfairly prejudiced by a requirement of the manual.

2.4 *Service description*

The service description in Attachment A (**service description**) to the undertaking describes the Multiplex Transmission Service as consisting of three components:

- multiplexing digital channels from more than one Access Seeker into a single transport stream (Multiplexing Service);
- modulation of that transport stream using OFDM in preparation for radio frequency transmission (Modulation Service); and
- radio frequency transmission of the transport stream (RF Service).

Multiplexing Service

Paragraph 2.2(a) of the service description would benefit by:

- explicitly requiring that the audio coding used in the data stream supplied by the Access Seeker must be compliant with MPEG4 HE AAC v2 (DAB+); and should
- require and define a ‘standard interface’ for all Access Seekers.

If necessary, the interface can be fully described as a further attachment.

The physical location for the interface should be specified as being at the Multiplex Transmission site, or other nominated location for all Access Seekers and that the Service include a sufficient and equal amount of physical rack space for the interface equipment required for each and all Access Seekers. The CBAA's preliminary view is that the standard interface should provide for two options:

- IP connectivity using an agreed router configuration, security and protocols; or
- direct connection to the EMUX using DAB STI-D protocols or other protocols as agreed.

Paragraph 2.2 of the service description should include a new sub paragraph (d) which explicitly includes the provision of a framework for delivery Electronic Program Guide (EPG) data as being part of the Service. The new Paragraph 2.2(d) should also require that all Access Seekers be treated equally in relation to inclusion in this Electronic Program Guide framework.

A further note could be added that requires the Multiplex Licensee to negotiate with all Access Seekers and other digital radio multiplex licensees in the licence area to employ an ensemble wide EPG and to share EPG data on a multi-lateral basis.

RF Service

Paragraph 2.4 of the service description should make explicit that the RF service is for the one main multiplex transmission site only.

It is possible that at some future time some Access Seekers and / or the Multiplex Licensee will seek to implement a fully redundant second site to back-up the main transmission site.

The current design of the main transmission site is highly redundant. It is acknowledged that without full site redundancy there may be occasions where maintenance of common equipment and external plant would result in unavoidable outages of the RF Service.

It is also possible that at some future time some Access Seekers and / or the Multiplex Licensee will seek to implement further transmission sites to extend coverage and / or provide in-fill coverage.

The CBAA is of the view that the standard service for an Access Seeker should include the one main site only and that all Access Seekers should be on an equal footing for this base level service. Beyond that, individual Access Seekers should be able to opt in or opt out for additional service levels.

Therefore, the CBAA suggests the existing paragraph 2.4 of the service description be renumbered paragraph 2.4(a) and that a new paragraph 2.4(b) detail that the RF Service is for:

- (a) main site coverage, with defined coverage targets and service availability targets; and
- (b) Access Seekers may agree to pay but must not be required to pay additional costs in respect of future additional transmission sites for back-up, coverage extension and/or in-fill.

2.5 *Electronic Program Guide*

The Access Undertaking makes no provision for an Electronic Program Guide (**EPG**). The EPG is key to listing of station program feeds on digital radio receivers. The EPG lists each station program feed, with a drill down to individual program listings and extra information.

EPG information can be delivered on a 'per station program feed' basis. However, the preferred approach is to deliver an aggregate of all station's EPG data on the digital radio multiplex. This method is often referred to as an 'ensemble wide' EPG.

Carriage of EPG data on a per station program feed basis is inefficient. It would use approximately 8 kbps per station program feed. This is a significant overhead, especially in the context of limited capacity that is available for community broadcasters.

An ensemble wide EPG would typically require an overhead of 24-32 kbps – but only once and across the entire multiplex.

Digital radio receivers are generally designed to accept ensemble wide EPG data. It is unclear whether all receivers will accept EPG data on a per station program feed basis.

Multiplex capacity to deliver an ensemble wide EPG would logically be derived by agreement to use some of the excess capacity. The CBAA would support such use of excess capacity as it is in the interests of digital radio end users, and all station program feed providers.

EPG data will be carried on each and all of the digital radio multiplexes operating in each licence area. It is in the interests of the digital radio end user that EPG data from each digital radio multiplex is broadcast on all radio multiplexes. In that way an end user can be sure that all available services in that licence area will be displayed on their receiver.

This outcome is clearly in the interests of the end user and will require co-operation between broadcasters and the licensees of each digital radio multiplex.

With respect to the commercial and community services, in Brisbane, Melbourne and Perth the two Category 1 digital radio licences in each licence area are held by the one JV company and so it might be expected that co-operation can be achieved. In Adelaide and Perth there is only one Category 1 multiplex and so there is no issue.

It would be highly desirable to share EPG data on a multi-lateral basis with the ABC/SBS Category 3 multiplex in each licence area as well.

Accordingly, to ensure a best outcome for the end user, the ACCC should consider a requirement that:

- all digital radio multiplex licensees use an ensemble wide EPG; and
- all digital radio multiplex licensees operating in the same licence area share EPG data on a multi-lateral basis.

In the interests of equity to all Access Seekers, the ACCC should require that all Access Seekers be treated equally in relation to their inclusion in the framework for the EPG.

2.6 Other matters

- (a) While clause 6.4(e) of the Access Agreement provides that a Digital Community Broadcaster can outsource to third parties, no such right is conferred on the Representative Company. The same rights set out in clause 6.4(e) should be provided to the Representative Company.
- (b) Clause 12.2 of the Access Agreement provides for billing to be undertaken monthly in arrears. To facilitate the start up of new broadcasters, the undertaking should provide for billing to be undertaken 3 monthly in arrears. The undertaking should also expressly provide that:
 - (i) a third party may be invoiced or make payments on behalf of an Access Seeker; and
 - (ii) payment in advance shall not be required.
- (c) There is no requirement in the undertaking or Access Agreement for the Multiplex licensee to respond to capacity change requests in a timely manner.

3. Submission on whether the terms and conditions of access specified in the Access Undertaking include access prices or pricing methodologies which are fair and reasonable

3.1 *Categories of costs*

At the outset, the CBAA submits that it is difficult for the ACCC to undertake a proper assessment of this Access Undertaking without at least some estimation of the likely costs and charges that will be imposed by the Multiplex Licensee. The mechanisms currently set out in the Access Undertaking and Access Agreement for the review of price decisions are relatively weak. If the ACCC does not require at least some estimation of the likely costs and charges, there is a significant risk that the ACCC will approve an Access Undertaking that provides for charges in excess of those that would reflect efficient costs. The CBAA submits that the ACCC should require an estimation of costs from the Multiplex Licensee before deciding whether to accept the Access Undertaking.

3.2 *Rate of return*

Community broadcasting services operate on a not for profit basis and would have preferred to establish their own independent digital radio transmission facilities. As a general policy position, the community broadcasting sector will continue to advocate to the Australian Government that it should be permitted to do so in the future. In the situation where it establishes its own digital radio transmission infrastructure, the community sector would not seek to 'earn a normal commercial rate of return on its investment'.

Even commercial broadcasters, if they were to establish their own digital radio transmission facilities on a shared ownership basis, would not logically seek to earn a 'normal commercial rate of return on their investment' – the effect of such an approach would simply be to charge themselves more than necessary.

Earning a commercial return on investment is appropriately the domain of transmission facility providers (such as Broadcast Australia and TXA). Where the Multiplex Licensee JV Company makes use of services from these types of companies it will, of course, be paying commercial rates that will include a commercial return and these would become legitimate costs to the JV Company. However, in this case the Multiplex Licensee itself is - by legislation - comprised predominantly of broadcasters, not third party transmission suppliers.

In this situation, the proper approach to pricing of services for community broadcasters is one in which only efficient costs are recovered. The CBAA therefore submits that there is a need to amend clause 3.1 in Schedule 2 to the Access Agreement to reflect this principle.

3.3 *Allocation of costs to the community sector*

Clause 4 in Schedule 2 to the Access Agreement sets out a formula for determining the annual fixed recurring charge under which:

- AFRC** = Annual Fixed Recurring Charge
- AC** = Annualised Costs
- BMC** = Amount of multiplex capacity allocated to the relevant access seeker
- TMC** = Total amount of multiplex capacity allocated to all access seekers

Under the Access Agreement, the community sector is effectively limited to 2/9ths of the Multiplex Capacity. By contrast, the formula as proposed seeks to impose an additional cost burden on the community sector for capacity it can never, in practical terms, access.

This would be the case whenever the commercial standard access entitlements are less than 7. This is currently the case for every multiplex. Take the example of Brisbane, where the 8 commercial entitlements might be split equally across two multiplexes. That would mean there are 4 commercial access entitlements on each multiplex. Adding the 2 entitlements on each multiplex for the community broadcasters means there are six entitlements in total. So, under the formula as it stands the ratio of costs borne by the community sector would be 2/6ths rather than 2/9ths.

A more appropriate approach would be to redefine TMC as follows:

- TMC** = Total amount of multiplex capacity available.

That would account for all capacity used by Access Seekers in an equitable and fair manner.

The CBAA accepts that the cost of unused capacity would need to be re-allocated. This could take the form of:

- (a) a levy on JVC shareholders on the basis of their shareholding votes; or
- (b) a surcharge on Access Seekers exercising commercial standard access entitlements.

3.4 Allocation of costs to the Representative Company

The effect of the Access Agreement is that a community broadcaster who seeks access may be required to pay for up to 2/9ths of the Multiplex Capacity whether or not it requires or utilises that capacity.

Clause 1 of Schedule 1 (Definitions) to the Access Agreement inappropriately defines an 'Access Seeker' as including '*the Representative Company*'.

Clause 4.1 of Schedule 2 to the Access Agreement provides that:

*'Fixed recurring charges will be levied based on the Multiplex Capacity allocated to an **Access Seeker**, irrespective of whether that capacity is used or not and irrespective of the type of use.'* (emphasis added)

Since the Representative Company will need to recover these costs from community stations using the multiplex, this means that a single community broadcaster could be liable for entire cost of the capacity reserved for the community broadcast sector, whether it uses that capacity or only a small proportion of it. This will unfairly prejudice community broadcasters.

In addition to the other changes to the pricing methodology discussed above, it should be made clear in the definitions that an 'Access Seeker' does *not* include the Representative Company. Costs should be apportioned to each community broadcaster based on that broadcaster's use of the multiplex.

3.5 Reporting to ACCC

One of the CBAA's chief concerns relating to pricing is the lack of oversight of the implementation of the Multiplex Licensee's pricing methodology. While a price determination can be the subject of dispute resolution, this will not be a practical option if Access Seekers are not armed with information about the basis on which costs and prices have been determined or the actual performance of Multiplex Licensee on an annual basis.

The CBAA submits that the undertaking should be amended to require the Multiplex Licensee to report to the ACCC each year on the costs incurred in each of the categories identified in Schedule 2 to the Access Agreement. Failing this, the ACCC should insert such a requirement into the procedural rules. This information should be made available to all Access Seekers.

3.6 Review of charges

Clause 5 in Schedule 2 to the Access Agreement entitles the Multiplex Licensee to review fixed recurring charges 'regularly', based on several factors, including cost increases (but not, it must be emphasized, cost decreases).

This provision creates an asymmetry in terms of price reviews, under which they can be triggered where the Multiplex Licensee wishes to increase charges, but not where there is a case for charges to come down.

The CBAA submits that fixed recurring charges, should be based on forecast costs, which should be fixed until the next review. Failing this, there should be scope for Access Seekers to trigger a price review at least once a year.

Community Broadcasting Association of Australia

Attachment A sets out the consequences of the current limitations on the capacity allocated to the community broadcast sector and the case for giving priority to the community sector with respect to the allocation of excess capacity

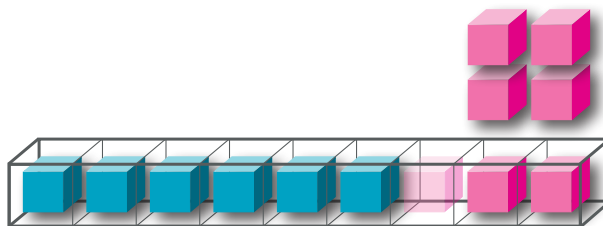
Attachment A

The digital radio legislation provides a standard access entitlement for each commercial broadcaster to use one-ninth of the transmission capacity of a Category 1 digital radio multiplex. Each entitlement equates to a net bit rate for usable data of approximately 128 kbps. By contrast, all eligible community broadcasters in each licence area are to share two-ninths of multiplex capacity. This structural inequity limits the ability of community broadcasters to provide an equivalent digital radio service.

Adelaide

In Adelaide the number of commercial broadcasters is 6, and the number of eligible community broadcasters is also 6. Using the same bit rate as accorded to commercial broadcasters only 2 community broadcasters can be accommodated;

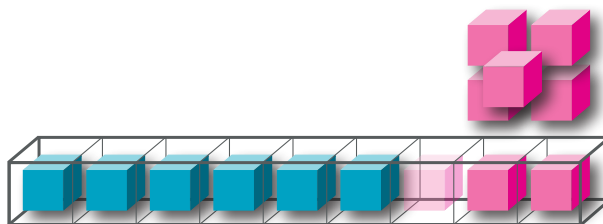
4 would have to stand aside.



Perth

In Perth the number of commercial broadcasters is 6, and the number of eligible community broadcasters is 7. Using the same bit rate as accorded to commercial broadcasters only 2 community broadcasters can be accommodated;

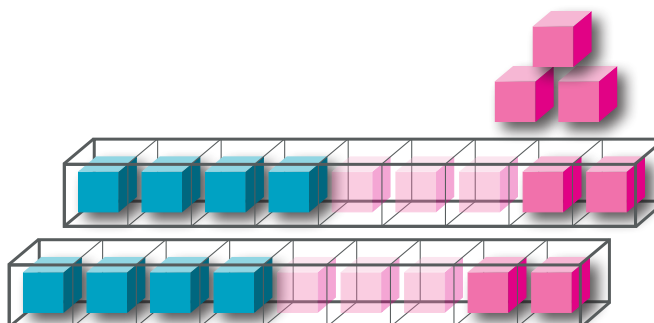
5 would have to stand aside.



Brisbane

In Brisbane the number of commercial broadcasters is 8. This means two Category 1 multiplexes are required. The number of eligible community broadcasters is 7. Using the same bit rate as accorded to commercial broadcasters only 4 community broadcasters can be accommodated;

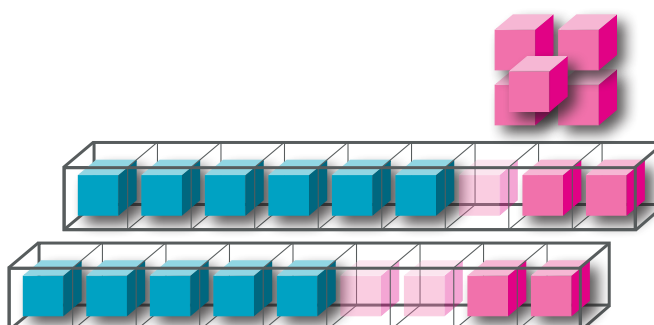
3 would have to stand aside.



Melbourne

In Melbourne the number of commercial broadcasters is 11. This means two Category 1 multiplexes are required. The number of eligible community broadcasters is 9. Using the same bit rate as accorded to commercial broadcasters only 4 community broadcasters can be accommodated;

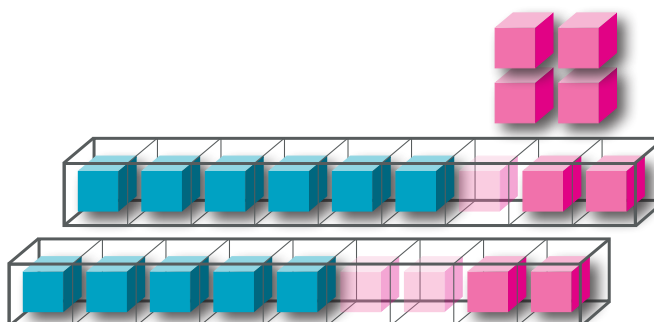
5 would have to stand aside.



Sydney

In Sydney the number of commercial broadcasters is 11. This means two Category 1 multiplexes are required. The number of eligible community broadcasters is 8. Using the same bit rate as accorded to commercial broadcasters only 4 community broadcasters can be accommodated;

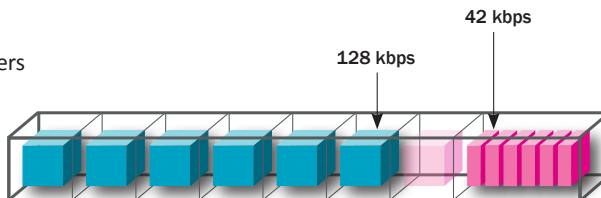
4 would have to stand aside.



Rather than hold out for equity with the commercial entitlement of 128 kbps, if all the eligible community broadcasters were to equally divide the two-ninths of multiplex capacity then only a low bit rate would be available to each. In some cases so low that it may not be possible to provide an adequate quality audio service.

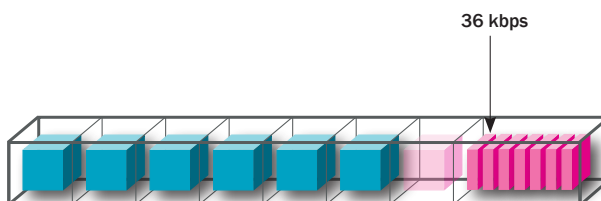
Adelaide

Dividing the two-ninths capacity by six community broadcasters means that each would have a nominal bit rate of 42 kbps. In effect, this limits the audio bit rate to 32 kbps.



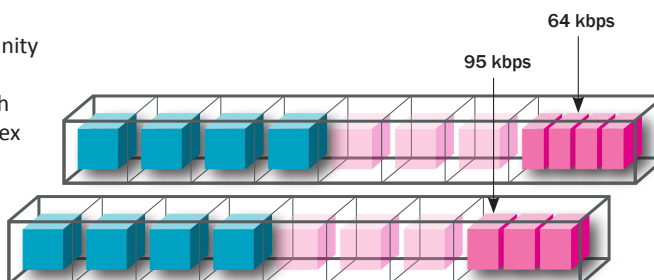
Perth

Dividing the two-ninths capacity by seven community broadcasters means that each would have a nominal bit rate of 36 kbps. In effect, this limits the audio bit rate to 32 kbps.



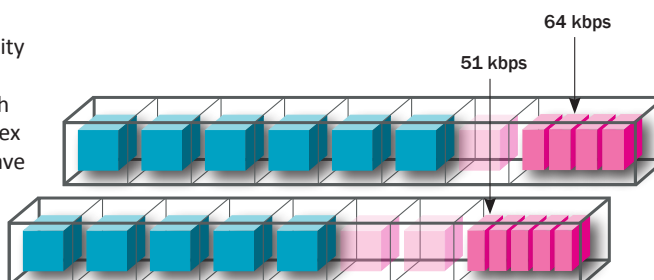
Brisbane

Dividing the two sets of two-ninths capacity by seven community broadcasters means an equal division is not possible. One multiplex would carry four community broadcasters, and each would have a nominal bit rate of 64 kbps. The second multiplex would carry three community broadcasters, and each would have a nominal bit rate of 95 kbps.



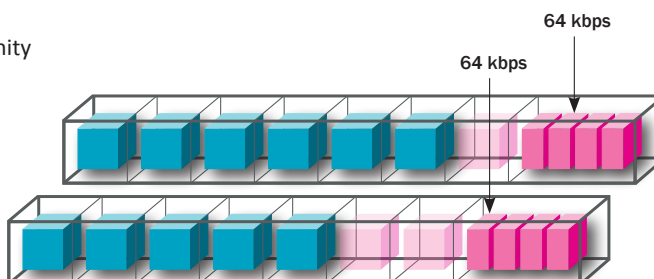
Melbourne

Dividing the two sets of two-ninths capacity by nine community broadcasters means an equal division is not possible. One multiplex would carry four community broadcasters, and each would have a nominal bit rate of 64 kbps. The second multiplex would carry five community broadcasters, and each would have a nominal bit rate of 51 kbps.



Sydney

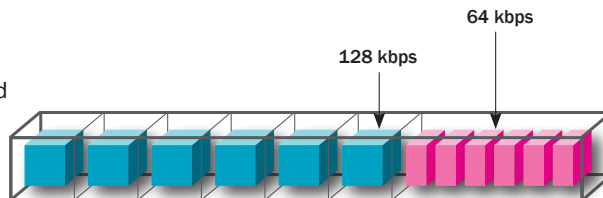
Dividing the two sets of two-ninths capacity by eight community broadcasters means an equal division is possible across two multiplexes. One multiplex would carry four community broadcasters, and each would have a nominal bit rate of 64 kbps. The second multiplex would also carry four community broadcasters, and each would have a nominal bit rate of 64 kbps.



The ACCC could impose a condition that, prior to auction or any other consideration of alternative use, that first option on use of excess capacity on each multiplex be offered to community broadcasters unless and until such time as each eligible community broadcaster has an equivalent amount of capacity as is the standard entitlement to commercial broadcasters—that is one ninth of total capacity (128 kbps) on per broadcaster basis.

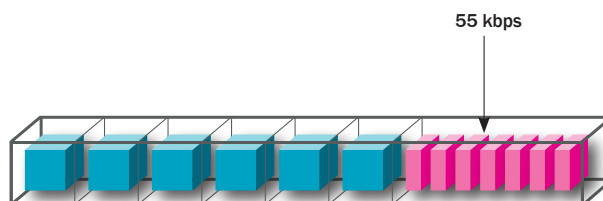
Adelaide

If the entire amount of excess capacity were divided equally between the six eligible community broadcasters, each would then have a nominal bit rate of 64 kbps.



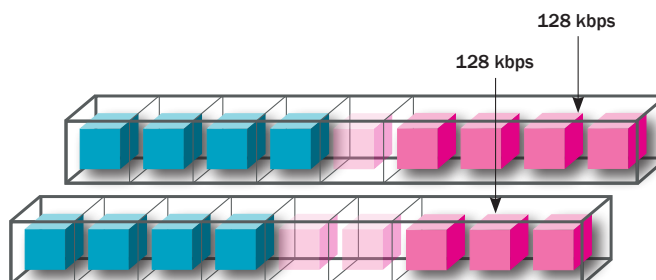
Perth

If the entire amount of excess capacity were divided equally between the seven eligible community broadcasters, each would then have a nominal bit rate of 55 kbps.



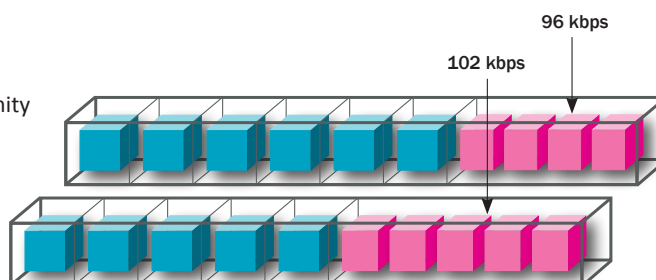
Brisbane

There is more than a sufficient amount of excess capacity to enable each of the seven eligible community broadcasters to have use of a full 128 kbps.



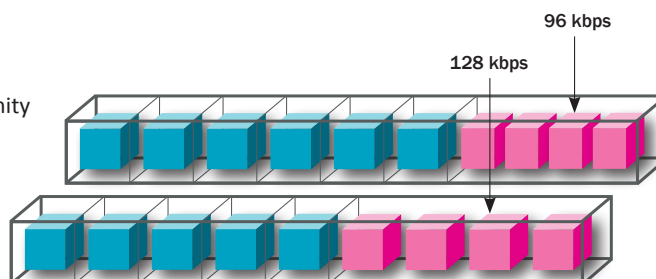
Melbourne

If the entire amount of excess capacity on each of the two multiplexes were divided between the eligible community broadcasters then on one multiplex each of the four community broadcasters would have a nominal bit rate of 96 kbps. The second multiplex would carry five community broadcasters, and each would have a nominal bit rate of 102 kbps.



Sydney

If the entire amount of excess capacity on each of the two multiplexes were divided between the eligible community broadcasters then on one multiplex each of the four community broadcasters would have a nominal bit rate of 96 kbps. The second multiplex would carry four community broadcasters, and each would have a nominal bit rate of 128 kbps.



The community sector is a vibrant and diverse sector. Stations have a long history of producing innovative and specialist programming and content. There are entire stations with enthusiastic and well respected program makers devoted to the generation and delivery of specialist content of the type that digital systems promise to end users.

This programming and content must have a secure and adequate amount of multiplex capacity to ensure successful delivery in the digital radio environment.

Successful delivery of a diverse range of innovative, fresh and specialist programming with value added content is key to the successful uptake of digital radio and also to meeting broadcast policy objectives of Government as described in the Broadcast Services Act.

The benchmark for a standard entitlement per commercial broadcaster has been set at one ninth of a multiplex, which equates to a nominal net bit rate 128 kbps. Within that amount of digital capacity it is possible to deliver several audio programs together with data and content.

Digital radio in Australia is using the audio coding system MPEG 4 HE AAC v2 DAB+ and it is generally agreed that this coding system is capable of good stereo fidelity at a nominal bit rate of 64 kbps. Lower bit rates such as 48 kbps will result in acceptable audio quality for some program material.

Other points to note are that:

- The use of AAC+ requires an overhead above the capacity that would be required in a file or two way connection to ensure error free reception in a radio environment by end users.
- Capacity must be set aside within the capacity allocated for each broadcaster to deliver non-audio data. Delivery of non-audio data is fundamental to the purpose of digital radio.
- Broadcasters will deliver basic text information on a dynamic basis, such as program, artist or other now/next information. This has a minimal data requirement.
- Delivery of basic slide-show or multi-media adds a typical 10 kbps minimum load to each audio program.
- Electronic Program Guide (EPG) data will add typically 8 kbps load to each audio program, unless it is agreed that the EPG data is carried separately and 'ensemble wide'.

Audio Programs		
Sweet Spot AAC+ audio when carried on DAB+		64 kbps
Some program material acceptable	48 kbps	
Reduced frequency response, using 32 kHz sampling	32 kbps	
Data Services		
PAD/DLS data: First level add on Artist, Program Now/Next Information		0 kbps
Multi-media: Slide-show, or multi-media aligned with artist, program		10 kbps
Other data, not aligned		
News, weather, scores, stocks, movie times, on carousel	10kbps	
Movie clips & video, not allowed	20–64 kbps	
Real time traffic to car navigation systems	1–8 kbps	
Conditional access to enable opt in content	1 kbps	
Unrelated data updates to pdas, signs, etc	1 kbps	
Electronic Program Guide: Program lists, set reminders, user record, time shifting		
If implemented on each audio program		8 kbps
If implemented ensemble wide	24–32 kbps	
Store and Replay: Receiver implementation, relies on EPG data		
Enables user to record favourites, rewind to hear again, non-real time listening		0 kbps