

**SBS SUBMISSION TO THE AUSTRALIAN COMMUNICATIONS AND MEDIA AUTHORITY
PROPOSED DIGITAL RADIO CHANNEL PLAN FOR THE GOLD COAST
CONSULTATION 29/2020
OCTOBER 2020**

Key points

- SBS supports the ACMA proposal to vary the technical specification for the three digital radio multiplex transmitter (**DRMT**) licences in the Brisbane area to permit operation with a maximum ERP of 50kW and with relaxation of the antenna template to materially improve coverage.
- The relaxation of the Brisbane antenna template enables the Mt Mee on-channel retransmission facility to be operated at its full licenced power, enabling improved coverage in Caboolture and across the southern part of the Nambour RA1 area.
- Of the eight ('standard allocation') blocks available within the DAB sub-band, category 3 multiplex DAB licence allocations are restricted to two frequency blocks (8B and 9C) under the *ACMA planning principles for the expansion of digital radio to regional Australia*¹; category 1 multiplex licensees (commercial/community broadcasters) have access to six frequency blocks. This arrangement severely limits national broadcasters' ability to provide localised programming and to manage trans-state boundary coverage in the case of time-delayed programming during daylight savings.
- As embodied in planning 'Principle 3', SBS recommends the ACMA engage with industry to explore bespoke planning solutions in consultation with affected parties to develop practical 'non-standard' DAB block allocations in congested DAB regions.
- SBS supports the allocation of block 8B for use in the Gold Coast, with a revised maximum ERP of 25 kW and the revised antenna template as proposed for the Mount Tambourine transmission site.
- SBS suggests that the Gold Coast technical specification be expanded to include Lower Beechmont as an 'alternate' site for potential use by both the category 1 and category 3 DAB multiplex licensees.
- SBS notes further infill (on-channel) retransmission facilities will be required to provide reliable coverage across a major part of the RA1 licence area, including

¹ <https://www.acma.gov.au/publications/2016-12/guide/planning-principles-expansion-digital-radio-regional-australia>

Currumbin, 'downtown' areas and Darlington Range; on current analysis the suggested Springbrook facility appears to be of marginal value.

- Re-use of block 8B in 'next adjacent' (i.e. adjacent and adjacent-plus-one) markets to the Gold Coast will warrant further analysis and antenna design optimisation.

1. Introduction

The Special Broadcasting Service Corporation (**SBS**) welcomes the opportunity to submit to the Australian Communications and Media Authority's (**ACMA**) *Proposed digital radio channel plan for the Gold Coast – consultation 29/2020* (the Consultation).

SBS is unique in the Australian media environment, providing multilingual, multicultural and Indigenous radio, television and digital media services that inform, educate and entertain all Australians and, in doing so, reflect Australia's multicultural society.

SBS reaches almost 100 per cent of the population through its five free-to-air television channels (SBS, SBS VICELAND, SBS World Movies, SBS Food and National Indigenous Television (**NITV**)) and seven radio stations.

Servicing 63 languages, including via SBS Arabic24, SBS Radio 1, 2 and 3 are dedicated to the approximately five million Australians who speak a language other than English at home, while the three music channels (SBS PopAsia, SBS PopDesi and SBS Chill) engage all Australians through music and pop culture from around the world. All of SBS's Radio stations are available through the Digital Radio (**DAB**) service.

SBS's reach is also being significantly extended through its online services, including SBS On Demand, the SBS Radio App and portals which make online audio programming and information available to audiences at a time and place of their choosing.

SBS's terrestrial linear broadcasting, including through its eight high-power Digital Radio transmission sites, and infill repeaters, is an essential part of SBS Radio's offering, particularly for those who do not have access to online services. Digital Radio is also an increasingly prevalent technology provided by vehicle and audio-visual appliance manufacturers.

In October 2009, SBS formed with the Australian Broadcasting Corporation (the **ABC**), the National DAB Licence Company Ltd. The company was formed in order to obtain a category 3 digital radio multiplex transmitter licence as provided for by section 102E of the *Radiocommunications Act 1992*. SBS and the ABC are the only shareholders of the company.

2. Brisbane

SBS supports the ACMA proposal to vary the technical specification for the three DRMT licences in the Brisbane area to improve coverage to allow operation with a maximum ERP of 50 kW, whilst having minimal impact on the adjacent licence areas, so addressing the concerns of adjacent market licensees who expressed objections to the 2016 ACMA consultation.² A moderate level of overspill into adjacent markets is important to SBS as this will enable SBS to deploy 'service following' so allowing mobile listeners to enjoy

² Proposed digital radio channel plan for Northern Territory and proposal to vary the digital radio channel plans for NSW/ACT, Queensland and Tasmania - Consultation paper, dated December 2016.

contiguous coverage across the boundary between transmission sites operating in different ensembles (i.e. not co-channel repeaters or SFNs).³

SBS supports the revised antenna pattern and corresponding mask as presented in the Consultation at Appendices B and C respectively. The revised Brisbane pattern and ERP will also enable the Mt Mee on-channel repeater (Brisbane retransmission) to be increased in power from its current operating level of 50 W to its fully licenced power of 500 W materially extending infill coverage in the Brisbane / Nambour overlap area.

SBS notes the *Radiocommunications (Digital Radio Channels – Queensland) Plan* cites the maximum antenna height for the Brisbane multiplexes as 161 m a.g.l. SBS utilises the TXA-provided antenna system at the Mount Coot-tha site and understands that the DAB antenna (electrical centre) is already positioned at a nominal height of 192m a.g.l., unchanged since the commencement of DAB services in 2009.⁴

3. Gold Coast

3.1 Overview

The Gold Coast market is a priority opportunity for DAB market expansion for SBS.

SBS supports the allocation of frequency block 8B to the category 3 DAB multiplex licence (national broadcasters), although we have concern about the feasibility of its re-use in next-adjacent markets in congested areas such as south east QLD and northern NSW.

3.2 Coverage planning

Coverage of the densely populated areas and major arterial routes is core to expanding SBS DAB services into the Gold Coast RA1 market. From SBS's analysis, due to topography and near-seafront concrete high-rise buildings, the main transmission site will require a number of infill repeaters to augment coverage to a satisfactory level from the outset.

SBS supports the increase in the proposed ERP from 5 kW to 25 kW and the proposed technical specifications for Mount Tambourine as set out at Appendix A of the Consultation Paper, which should also cite inclusion of the national broadcaster category 3 multiplex, on block 8B. The ACMA's tailoring of the HRP and power levels compared to the December 2016 consultation, should yield a beneficial improvement—broadly retaining the level of overspill protection to the north, whilst improving coverage more generally across the RA1 licence area, through an increased ERP across the easterly to southerly arc.

SBS recommends that the Lower Beechmont site is also included as an 'alternate' main transmission site to Mount Tambourine. The market overspill requirements placed on Mount Tambourine should equally apply to Lower Beechmont and the technical specification (at Appendix A of the Consultation Paper) equally apply to the category 1 multiplex – block 9D. There are operational merits to the co-location of DAB services

³ Service following fact sheet:

https://www.worlddab.org/public_document/file/1214/Service_following_factsheet_07.09.15_%28branding_updated_2019%29.pdf?1570615129

⁴ Physical antenna aperture 184.1m to 201.9m above ground reference.

and commercial benefits that accrue from shared infrastructure given the technical requirements apply equally to all licensees.

3.2.1 Mount Tambourine and Lower Beechmont

SBS's proposed baseline coverage for the Gold Coast is predicated on the ACMA technical specification, operating at 25 kW ERP and has been modelled on the use of Mount Tambourine.

The Lower Beechmont facility appears to provide materially similar audience reach in the Gold Coast RA1 market and may afford better overspill protection (i.e. co-channel interference protection from the re-use of block 8B) into the Nambour RA1 licence area.

For reasons of consistency, all incremental coverage assessments are based on the Mount Tambourine facility – 'baseline'. SBS's estimate of population reach in this area is:

BASELINE: Mount Tambourine @ 25 kW ERP max.		
Mobile grade	Suburban grade	Urban grade
489,000	460,000	394,000

3.2.2 Springbrook

SBS notes the proposed technical specification for the Springbrook infill facility does not currently include the category 3 multiplex – block 8B and suggests the specification is extended to include the category 3 licence.

An infill facility at Springbrook appears to provide only a very marginal improvement to the Gold Coast RA1 population reach, mostly in the hinterland—an area of low population density and relatively low traffic volumes. The incremental benefit of Springbrook, predicated on the technical specifications in the Consultation, provides an additional population reach of:

Springbrook @ 500 W ERP max. – Incremental improvement		
Mobile grade	Suburban grade	Urban grade
1,900	3,300	300

3.2.3 'Downtown' infill

SBS analysis indicates material areas of low-grade coverage (particularly in-building) in areas one or two streets in from the sea-front, shielded by concrete high rise, with no overall improvement regardless of the choice of main transmission site. Areas of coverage deficiency include parts of Main Beach, Surfers Paradise and Broadbeach.

These 'downtown' areas of high population density and tourist traffic are important to the overall viability and success of DAB in the Gold Coast. Some preliminary studies have been commissioned by SBS to determine suitable potential sites, although usage would be subject to site access due diligence, available roof-space and other radiofrequency user considerations. Potential incremental population coverage improvement is estimated to be:

Downtown Infills @ 300-500 W ERP max. – Incremental improvement		
Mobile grade	Suburban grade	Urban grade
24,000	33,000	47,000

Dependent on access to a suitable building, this downtown infill may be realised by more than one infill facility (which could be further augmented, as necessary subject to cost viability).

3.2.4 Currumbin

DAB signal reach from Mount Tambourine (and Lower Beechmont) is shielded by a ridge close to the southern boundary of the RA1 area. The inclusion of an infill repeater at Currumbin (Farrell Lookout) provides material coverage improvements along the Pacific Highway at the entrance to the Gold Coast, and airport. SBS estimates of the incremental population improvement are:

Currumbin (Farrell Lookout) @ 300-500 W ERP max. – Incremental improvement		
Mobile grade	Suburban grade	Urban grade
9,000	12,700	25,000

3.2.5 Darlington Range

SBS has considered the inclusion of an infill repeater to improve coverage in the area in the North-West sector of the Gold Coast RA1, which is inadequately served by Mount Tambourine (and Lower Beechmont). This area includes also the main arterial routes into Brisbane. There is value in being able to provide contiguous coverage for commuters moving between the Brisbane and Gold Coast markets, with the 'service following' feature of DAB enabling suitably equipped in-car receivers to seamlessly switch at the market boundaries, as determined by signal quality. Estimated incremental population coverage improvement is:

Darlington Range @ 300-500 W ERP max. – Incremental improvement		
Mobile grade	Suburban grade	Urban grade
19,000	20,000	18,000

3.3 Gold Coast infill conclusion

Suitable technical specifications (including antenna templates) will need to be developed for the infill sites incorporated under Section 6 of the Gold Coast Digital Radio Plan.

Given the complexity of the RA1 licence contour, overlapping and adjacent markets and the limited spectrum available to the national broadcasters under the 'standard allocation', further detailed modelling and planning will be necessary to optimise coverage across the Gold Coast licence area whilst taking into consideration future planning and implementation aspects in adjacent, and near adjacent markets.

On the basis of SBS's initial analysis, the Springbrook infill facility appears to be of limited value in the context of overall coverage enhancement across the Gold Coast RA1 market.

4. Interference management

4.1 Holistic overview

'Principle 2' of the *AMCA planning principles for the expansion of digital radio to regional Australia* allocates only two spectrum blocks (namely 8B and 9C) to the national broadcasters of the eight blocks available (8A, 8B, 8C, 8D, 9A, 9B, 9C and 9D) within the DAB sub-band.⁵ This restrictive arrangement severely limits national broadcasters' ability to manage trans-state boundary coverage in the case of time-delayed programming during daylight savings (and, in the case of the ABC, ability to provide localised programming).

Planning 'Principle 3' recognises "that the ACMA would pursue bespoke planning solutions in consultation with affected parties" in cases of extreme spectrum congestion.

Although further analysis will be required, given the cross-polarisation protection ratio benefits between the vertically polarised DAB signals, and horizontally polarised DTV allocations in the majority of cases (~85%), some additional 'non-standard' DAB block allocations should prove viable in a number of markets.⁶

The non-standard allocation would be particularly useful to provide infill coverage close to a market boundary; adoption of DAB 'service following' will make this a seamless experience for mobile listeners with a suitably equipped receiver.⁷

4.2 Sunshine Coast

For SE Queensland, with block 9C already allocated and in use in the Brisbane market, block 8B as allocated to the Gold Coast will also need to be re-used to serve the Sunshine Coast (and other relatively nearby markets). There is the potential for some interference into the Nambour market, which would be served in part from a DAB transmitter at Bald Knob. The impact of this interference may be mitigated by the use of the Lower Beechmont site or through optimisation of the antenna system design for deployment at Mount Tambourine.

The removal of the Brisbane notch (refer section 2 above) will enable the Mt Mee retransmission facility (block 9C) to be operated at its full licensed power of 500W ERP, resulting in greatly improved DAB coverage in the Brisbane / Nambour area. Furthermore, its operation on block 9C means the Mt Mee audience would not be impacted by any potential overspill from Mount Tambourine (block 8D).

5. Conclusion

SBS appreciates the opportunity to submit to the ACMA's *Proposed digital radio channel plan for the Gold Coast – consultation 29/2020*.

⁵ <https://www.acma.gov.au/publications/2016-12/guide/planning-principles-expansion-digital-radio-regional-australia>

⁶ From analysis of the ACMA BroadcastTransmitterExcel file, excluding remote islands, in Band III there are 40 V-pol and 271 H-pol DTV services

⁷ Refer footnote 3

Further analytical work is required to develop optimised DAB coverage plans for the Gold Coast taking account of holistic impacts on adjacent and near adjacent markets in northern NSW and SE Queensland.