



FreeTV
Australia

**Submission by
Free TV Australia Limited**

Department of Communications,
Information Technology and the Arts

Digital conversion of self-help television
retransmission sites

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	2
1 ASSESSING POOR COVERAGE AREAS	3
2 DIGITAL CONVERSION OF TERRESTRIAL SELF-HELP TELEVISION RETRANSMISSION FACILITIES	4
2.1 TECHNICAL ISSUES.....	4
2.2 COST ISSUES.....	6
2.3 INDIVIDUAL DIGITAL TRANSMITTERS V MULTIPLEXING EQUIPMENT	6
3 DIRECT-TO-HOME RECEPTION OF SATELLITE TELEVISION SERVICES.....	7
4 TIMETABLE	8
4.1 METROPOLITAN AND REGIONAL SELF-HELP RETRANSMISSION SITES	8
4.2 REMOTE AREAS	8



EXECUTIVE SUMMARY

- Broadcasters welcome the Government's commitment to ensuring that all Australians, wherever they live, will be able to enjoy the benefits of free-to-air digital terrestrial television.
- Broadcasters will work with the Department and ACMA to identify areas of poor reception and investigate appropriate solutions for the conversion of affected households to digital terrestrial television.
- Free TV is strongly of the view that conversion of self-help retransmission sites should not be dealt with in isolation
- Areas of poor reception should be considered on a licence area by licence area basis, to ensure that solutions are spectrum efficient and cater for population growth.
- It will be important to minimise the cost and technical complexity required to convert existing analogue retransmission sites.
- Viewers should be assisted to access their local area television services rather than out-of-area services via DTH satellite transmission, wherever possible.
- The timing for conversion of self-help re-transmission sites must be planned and co-ordinated with gap filler and other solutions necessary to ensure that all Australians have access to digital terrestrial television after analogue switch-off.
- Work on planning needs to occur over the 2007–2010 timeframe indicated in the Discussion Paper. However, implementation of conversion will need to be coordinated with the switch-over date in each licence area.
- Decisions regarding the digital conversion of satellite-fed self-help television re-transmission sites is not possible until future satellite transmission arrangements for digital television are finalised.



Introduction

Free TV represents all of Australia's commercial free-to-air television broadcasters. We appreciate the opportunity to comment on the policy and regulatory arrangements for digital conversion of self-help re-transmission sites before analogue switch-off.

Free TV's members continue to support the Government's initiatives toward assisting Australian households located in poor reception areas across Australia to access television reception. We welcome confirmation of the Government's commitment to ensuring that all Australians, wherever they live, will be able to enjoy the benefits of free-to-air digital terrestrial television.

We are strongly of the view that conversion of self-help retransmission sites should not be dealt with in isolation. Rather ACMA should undertake a holistic assessment of areas of poor reception in each licence area, following completion of digital roll out in that licence area. A whole of licence area approach will ensure that solutions are spectrum efficient, and cater for future population growth.

Broadcasters will work with the Department and ACMA to identify areas of poor reception and investigate appropriate solutions for the conversion of affected households to digital terrestrial television.

There are a number of possible solutions available to improve reception in poor reception areas. Once the poor reception locations in each licence area have been identified, ACMA should draw on the local knowledge and expertise of broadcasters and self-help operators to determine the most appropriate digital solution, taking into account the relevant characteristics of the particular location.

Wherever reasonably possible in metropolitan and regional licence areas, viewers should be assisted to access their local licence area television services, rather than direct-to-home (DTH) satellite transmission of out-of-area services.

The "identified Remote Area sites" listed in Appendix A of the Discussion Paper are located in areas of central, eastern and western remote Australia which do not fall within any licence area. These areas receive remote area television signals delivered by satellite. Viewers in these areas will not be affected by analogue switch-off and arrangements have not yet been made for the satellite delivery of digital television services to these areas. As such, it is not yet possible to make decisions regarding the digital conversion of these sites.

The remainder of this submission therefore comments on the issues relevant to the conversion of the "identified Metropolitan Area sites" and "Regional Area sites" listed in Appendix A. The issues are addressed under the following sections.

Section 1: Assessing poor coverage areas

Section 2: Digital conversion of terrestrial self-help television retransmission facilities

Section 3: DTH reception of satellite television services

Section 4: Timing of implementation.

1 Assessing Poor Coverage Areas

As the Discussion Paper acknowledges, the precise coverage of digital television services in individual licence areas will not be known until the roll-out of digital services is complete and all broadcasters are operating at full power.

It may not be necessary to convert all current self-help retransmission sites if the coverage of broadcasters' digital signals extends into the areas not previously served by analogue signals. This is likely at many sites where the analogue retransmission facility is currently fed with a signal from a digital set-top-box (indicating that digital terrestrial television reception is likely at these transmission sites and in the near vicinity).

There will be other locations within each licence area where digital signals may not achieve the same coverage as analogue for a range of reasons. For example, in the Hunter Valley, input signals from Mt Sugarloaf for digital translators in the Newcastle area have been found to suffer interference (weather related) from co-channels at Knights Hill in the Illawarra. Co-channel problems have also been experienced at Dungog, Vacy and Port Stephens. Coverage issues, including the impact of the digital "cliff-effect", are still emerging and will need to be the subject of a comprehensive audit.

Once all areas of poor television reception are identified, ACMA and broadcasters can work together to assess the most appropriate solution.

This will involve consideration of a number of planning issues including:

- whether a current self-help transmitter site is adequate to provide a long term digital solution. Relevant factors to consider include:
 - changes in population distribution;
 - man made and environmental/natural impediments to digital terrestrial reception;
- the availability of alternative transmission sites where an existing analogue site may not cater long term for population growth. For example, Elizabeth, South Australia; the Gold Coast hinterland, Queensland; Healesville Victoria; and Patonga, New South Wales;
- the cost benefit analysis of re-pointing householder antennas to a new site;
- the location of new areas of poor reception, and numbers of households affected/population growth associated with the area;
- the availability of appropriate spectrum:
 - whether digital channels are available for conversion of existing analogue facilities;
 - whether existing analogue channels can be made available for digital "gap fillers" following analogue switch off; and
 - the need to plan additional frequencies to minimise adjacent and co-channel interference issues; and

- the availability of additional frequencies which can be reserved to allow for future coverage to areas of high population growth. For example, areas on the fringe of current Digital Channel Plans such as north western Melbourne, north eastern Adelaide, the central Coast of NSW and the south eastern area of Queensland.

An assessment will be required as to the most appropriate solution for each licence area. For example, areas of population growth may be better served by high power translators, rather than a low-power self-help retransmission solution. Where a gap filler is not possible, coverage may be improved by variations to the characteristics of the existing digital services.

2 Digital conversion of terrestrial self-help television retransmission facilities

2.1 Technical issues

Free TV agrees with the Department that a threshold question for the current review is whether it will be technically viable for local communities, Indigenous communities and local councils to operate and maintain digital retransmission facilities under self-help arrangements.

Experience gained from Alternative Technical Solution (**ATS**) projects at Springbrook in south east Queensland and at Port Stephens on the NSW central coast highlight that a high level of expertise is required to implement and manage the ongoing operation of a digital retransmission facility.

The first issues that need to be addressed when considering conversion of existing self-help retransmission facilities are:

- whether the location of the site is suitable for planning a replacement digital service in the area;
- whether the planning of a long term digital retransmission service is within an existing licence area plan (LAP);
- how far the proposed digital retransmission service will be from the nearest adjacent or co-channel digital terrestrial television service(s); and as a result,
- the complexity of planning required to ensure any long term DVB-T network planning is complimentary to the digital conversion of the retransmission service(s).

Some facilities will be more suitable for conversion than others depending on a range of factors including:

- whether the existing organisation is committed to the long term investment required to run a digital retransmission facility;
- whether the existing organisation has the expertise to run a digital retransmission facility;

- whether the existing analogue transmission site facility including the power, equipment housing, air-conditioning, transmission tower and antenna masts are adequate for installing a digital retransmission facility;
- the capacity of the existing facility to house additional equipment for a simulcast period. Alternatively, overnight cut over from analogue to digital using existing channels will conserve spectrum in areas where spectrum availability is scarce and ensure that the existing transmit antenna and combiner at the retransmission facility can be re-used;
- whether digital channels can be planned to minimise the cost and complexity of converting to and maintaining a digital facility. This will include:
 - whether channel allocations can be planned to fall within the existing transmit antenna bandwidth (thus reducing the need for infrastructure upgrades at the retransmission facility);
 - whether digital channels can be planned to avoid adjacent analogue channels (to reduce cost and complexity of combiners at the retransmission facility);
 - whether channels above Channel 60 can be avoided due to the high power consumption and inefficiencies of terrestrial transmitters at these frequencies; and
 - whether channels in Band IV can be made available particularly in rural areas (given the propagation characteristics and impulse noise immunity).

Free TV recommends that the Department consider whether a review of existing planning requirements can allow for the identification of a low power translator category (e.g. on channel repeaters) that is not as steeply filtered as is the case with higher powered services. This could be a significantly lower cost and provide a simpler solution for minor gap fillers like many self-help retransmission sites.

Free TV also recommends that the use of single frequency networks (SFNs) in the design of digital black spot solutions be avoided wherever possible. Experience gained from establishment of the Springbrook ATS services is that designs incorporating SFNs, in particular link fed 1+0 SFNs, are costly and complex.

Where channel congestion is an issue in channel planning for the conversion of analogue black spot sites to digital, strong consideration should be given to an overnight cutover to digital using some or all of the existing analogue channels. If an SFN is the only viable solution at a particular site, the use of on channel repeaters should be considered where practicable. These are fast becoming a mature cost effective technology that does not require the received signal to be demodulated and then remodulated to the new channel. All of the processing and echo cancellation is done at the intermediate frequency thus greatly reducing cost.

2.2 Cost issues

It is important that the costs of implementing and maintaining a digital retransmission facility is well understood by the self-help organisation, so that viewers do not suffer from any breakdowns in service.

Free TV suggests that some of the cost estimates provided in the Discussion Paper may require further review. In particular, there have been significant changes in translator costs over the last few years. The experience of Free TV members is that translator costs will be much higher if adjacent channels are required to be used for conversion of the self-help facility.

Free TV members, Southern Cross Broadcasting and NBN Ltd, who managed the ATS installations at Springbrook in south east Queensland and at Port Stephens on the NSW central coast advise the following in relation to the costs of conversion, operation and maintenance.

- **Port Stephens:** establishment costs were approximately \$750,000. Ongoing running costs to Port Stephens Council include power from Energy Australia and tower rental from Telstra. Maintenance of the site (common transmission equipment, building, air conditioning, gantry, fence etc) is covered by NBN Ltd. Individual transmitter maintenance is undertaken by the individual broadcaster.
- **Mt Springbrook:** the eight channel link fed SFN cost was in excess of \$1,500,000. Ongoing running costs include microwave link licence fees (4X8GHz in high density areas), site rental to landlord, electricity costs and generator fuel costs, private access road maintenance costs, general site maintenance costs, routine and emergency equipment and plant maintenance costs including travel and remote equipment monitoring costs at both Mt. Tamborine (link send end) and Mt Springbrook (link receive).

2.3 Individual digital transmitters v multiplexing equipment

Digital conversion of self-help retransmission facilities will be possible where technical complexity can be minimised and the community organisation has the technical expertise and commitment to install and maintain a digital retransmission facility for the long term.

As far as possible, the least complex solution, particularly for ongoing operation and management, will be preferable. Free TV is of the view that the cost and complexity of multiplexing equipment may be beyond the capacity of most self-help groups to operate and maintain.

At some re-transmission site locations where the existing self help site receives its input from an already multiplexed feed it follows that a multiplexed solution would be appropriate.

Factors which limit the scope for use of digital multiplexers at self-help retransmission sites include:

- the cost of delivery of individual broadcaster's signals to a site using multiplexing equipment; and

- the cost and complexity of accommodating HDTV signals in the design of multiplex equipment.

3 Direct-to-Home Reception of Satellite Television Services

Wherever reasonably possible, viewers should be assisted to access their local licence area television services, rather than out-of-area services via DTH satellite transmission.

Free TV's experience is that viewers strongly prefer to receive local news and programming and often go to considerable effort to overcome environmental impediments to access local programming. For example, by installing very high antenna masts and elevated antennas.

The Discussion Paper states that the number of DTH installations is understood to be increasing at the rate of about 220 per week. This is an extremely high number. Free TV requests that the Department investigate the source of this information to ensure that installations are not occurring without appropriate approval. Households wishing to use a DTH satellite solution to receive OOA signals are required to seek approval from ACMA. The approval process requires the householder to submit a statutory declaration from a licensed installer verifying that he or she has made an assessment of the digital terrestrial television coverage at the householder's location, and that coverage is not adequate.

Free TV submits that an audit of DTH applications made to date should be undertaken at completion of roll-out to identify:

- whether *increases in power* of some digital terrestrial television services may provide a local solution for the householder; or
- whether digital coverage of local area signals can be enhanced using a gap filler or digital self-help solutions, particularly in areas of population growth.

DTH satellite reception of out-of-area services should only be considered a preferred option where:

- household populations are small and / or geographically dispersed (less than 500 people);
- a broadcaster provided gap filler is not possible or economically viable; and
- the cost of establishing or converting to digital existing analogue terrestrial retransmission facilities far outweighs the cost of a DTH solution.

Free TV submits that the Department should undertake further analysis of the cost breakpoint between a local digital retransmission facility, and the number of households that would require a satellite dish, satellite decoder and conditional access maintenance.

Other factors make DTH satellite reception a less preferred long-term option, including that:

- long term arrangements for satellite delivery of digital television services in remote areas are still being considered. Any changes to the current DTH platform would require replacement of decoders at ATS re-transmission sites and DTH set-top boxes;
- remote area commercial satellite broadcasters' program supply arrangements restrict the use of these programs to the satellite licence area. Reliance on satellite fed out-of-area retransmission is therefore subject to a decision by the program provider to provide or deny such out-of-area operation;
- while regional and metropolitan broadcasters may introduce multi-channel services in the future it is unlikely remote area commercial satellite broadcasters' will provide multi-channel services resulting in further differentiation of out-of-area services from local terrestrial services.

4 Timetable

4.1 Metropolitan and regional self-help retransmission sites

Free TV is strongly of the view that digital conversion of self-help retransmission sites needs to be part of a comprehensive plan for "digital switch over" of all households in each licence area.

The planning issues for conversion of self-help facilities must be coordinated with the channel planning which will be necessary to:

- accommodate gap filler requirements necessary to achieve same coverage;
- address interference resulting from the increase in power levels of the digital services at the completion of the simulcast;
- plan for future coverage to areas of high population growth; and
- address any variations to frequencies for datacasting Channels A and B.

Work on planning for these issues needs to occur over the 2007–2010 timeframe indicated in the Discussion Paper. However, planning will not be able to be finalised until completion of roll-out in each licence area, and after power levels of digital services have been increased. This means that conversion of self-help retransmission sites will not be able to occur until close to the digital switch-over date for each licence area.

4.2 Remote areas

Free TV agrees with the view expressed in the Discussion Paper that decisions regarding the digital conversion of satellite-fed self-help television retransmission sites are not possible until future satellite transmission arrangements for digital television are finalised.