

**Submission to the Digital Conversion of Self-help Television
Retransmission Sites
Discussion paper
July 2007**

Identified Regional area sites (151 sites)

	Licence Area	Area Served
77	Remote Western Australia (REMWA), Perth, Southwest and Great Southern (SW&GS)	Mandurah

The Mandurah area should be in the South West and Great Southern region.

Firstly, the 2006 census should be consulted to determine the size of these sites!

The Mandurah WA site is regarded in your list as remote, because, when TV first started there it was paid for by the Shire of Murray. The programs carried come from the South West stations of GWN, ABC, SBS and later WIN. Since this time the population has grown to 67,784 (2006 Census) people. Mandurah is about 70 km from Perth with a new suburban electric railway to it opening this year, the population growth will explode. Surely it should be treated as any other medium sized city and provided with TV in the same way. There may be other cases of increase or decreases in population.

Comment is sought on the following issues:

Whether the use of individual digital transmitters for each service or the use of multiplexers, would be the most effective option for converting existing analogue self-help retransmission sites to digital in relation to:

- technical viability;
- costs of conversion, operation and maintenance; and
- any other options for the digital conversion of self-help television retransmission sites.

The most cost effective way of conversion is to swap from analog to digital on one nominated day.

The broadcasters could make a mobile transmitter van containing 4 UHF analog transmitters and a VHF transmitter with a pump up antenna mast. It would be parked near the existing transmission site.

This temporary transmitter van would transmit analog signals whilst the digital transmitters are being installed. The digital transmitters can be tested in the very early morning and left running until midday, when satisfactory. During this time there are no analog transmissions. In the afternoon and evening analog transmissions the situation is reversed. This allows for testing digital receivers in the mornings.

- The local retailers and installers for the area should be notified along with the audience, say 6 months ahead with reminders, so that all the receivers can be installed prior to the conversion day.

Local retailers can travel to these sites and bring their receivers for sale.

- After conversion is complete the mobile transmitter van should be fitted with digital transmitters so that it can be used as a backup for failures and emergencies.
- Minimising the number of transmitters per site will be covered in a separate section below.

Advantages of this approach

- Having the local retailer/installers come to the site will minimise the cost of purchase and freight costs. It also means that any reception problems can be sorted out without lots of travel for individual problems. This must be cheaper than individual mail order.
- In a lot of cases, the original transmitting antennas, receiver antennas, feeder and cables can be used because the channel numbers are virtually unchanged. No new 19 inch rack is required for extra equipment. This is provided the existing equipment is in good condition.
- All digital channel allocations should be in the range channel 56 – 67. This has the effect of equipment standardisation thus reducing costs. All transmitting antennas will be the same except for 2 types of polarisation. There are some ABC transmitters on channels 6-12 which requires separate transmitter antennas and much larger receiving antennas. These digital repeaters should join their commercial counterparts in the channel 56 - 67 range.
- The channel range of 56-67 makes the receiving antennas, when they have to be replaced, more sensitive and smaller and less expensive to transport.
- The use of horizontal and vertical polarisation should be continued, to reduce the chances of interference where the coverage areas may overlap.
- Channels 68 & 69 should be left for transmission to hand held equipment nationally, because the antenna used in handheld devices is the right size for NextG phones and channels 68 & 69.
- The cost of transmitter maintenance and power/fuel costs will not increase because the analog transmitters will not be on air.
- **It should be remembered that the viewers at these remote sites are paying not only for reception equipment, but also transmission equipment. So a cutover will be less costly than leaving analog and digital running for a number of years.**

Comment is sought on the following issue:

Whether the DTH option for viewers residing in remote areas of Australia where the population is less than 500 should be adopted, rather than converting existing self-help retransmission sites from analogue to digital.

Radio

Before the television implications are considered there is an effect on radio coverage.

There are around 230 sites with transmitters of a tiny 50 Watts power and under. Most of these are fed with satellite signals. If the towns of less than 500 converted to satellite transmissions, Each house could either listen to a single radio station or a single TV program at one time unless they bought multiple satellite receivers.

In many remote sites these transmitters are the only source of broadcast radio signals. There is only two real options to solve this problem.

- National or state wide coverage from high powered high frequency Digital Radio Mondiale. (DRM)
- Foot print wide DAB+ satellite coverage in L band.

Both of these digital radio options allow for independent listening to radio any where including moving vehicles. That is something the existing system cannot do. Removing radio from the satellite TV signals will give more data available to make the TV signals more reliable.

Television

Currently satellite transmissions are digital because it is cheaper in satellite air time. This satellite time is subsidised by governments.

To enable all Australians to receive HD TV of 6 networks an alternative has to be found to the MPEG2 data compression system used now.

Fortunately, it is now available. It is called MPEG4 and is able to reduce the amount of data per picture by 30 - 50 %. This will enable High Definition programs to be substituted for Standard definition channels, with no increase in transmission costs. It will be used through satellite and terrestrial systems. MPEG4 decoders in receivers can also decode MPEG2 signals.

So comparative costs should be sought to compare the options, remembering that New Zealand starts MPEG4 transmissions next year in both satellite and terrestrial formats from all its networks. It is already in use in the UK and from HBO satellite TV in the USA.

Minimising the number of transmitters on an individual site

This number could be reduced from 4 to 3 with the provision of high definition programs. This is how it could be achieved.

- Since these coverage areas have a small population, the commercial broadcasters for a coverage area should be allowed to form a joint company. This has been done in Hobart, Darwin and hopefully WA regional/remote. This company would have the roll of purchasing from the remaining network and channel A programs.

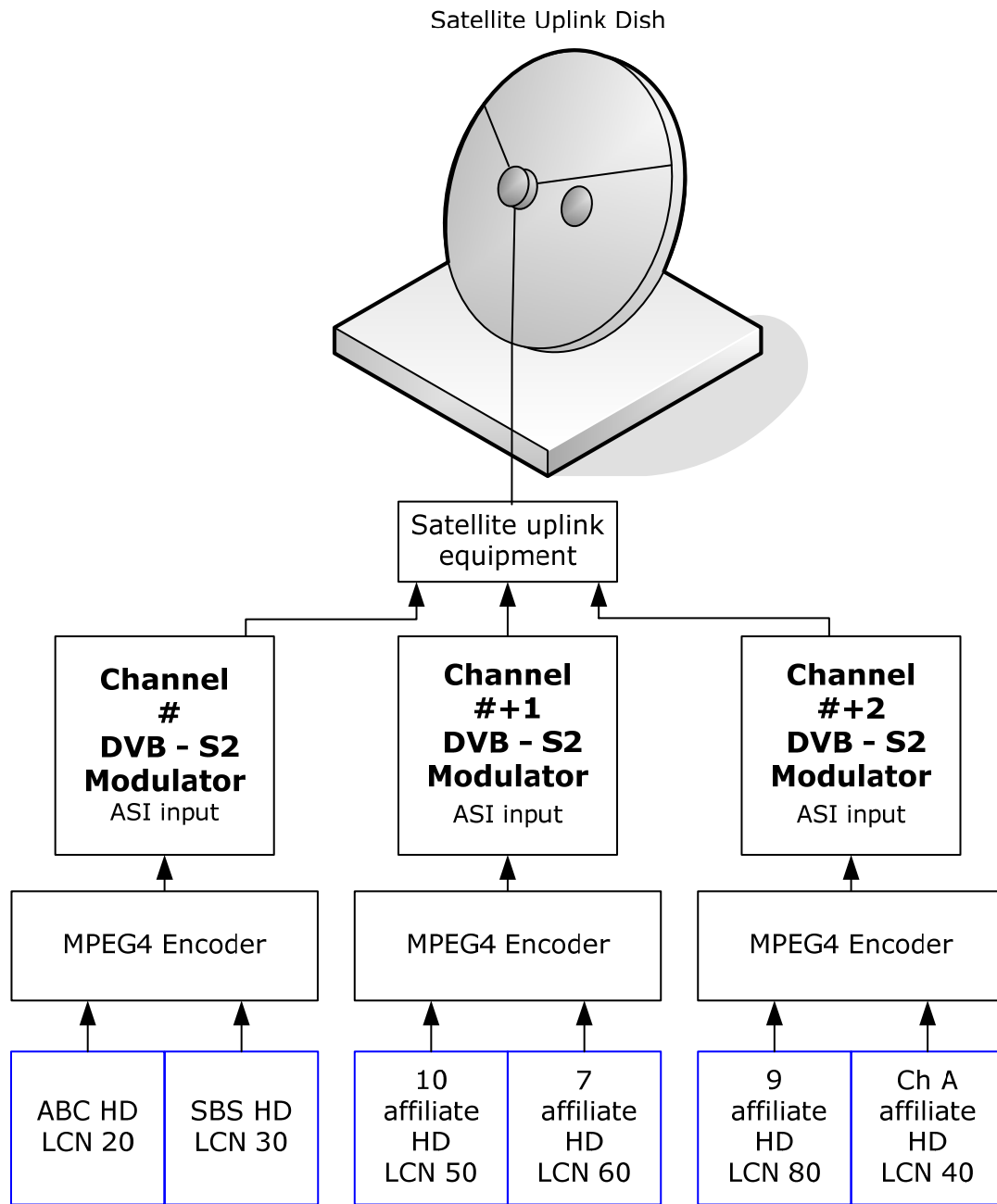


Figure 1 Satellite uplink for one footprint

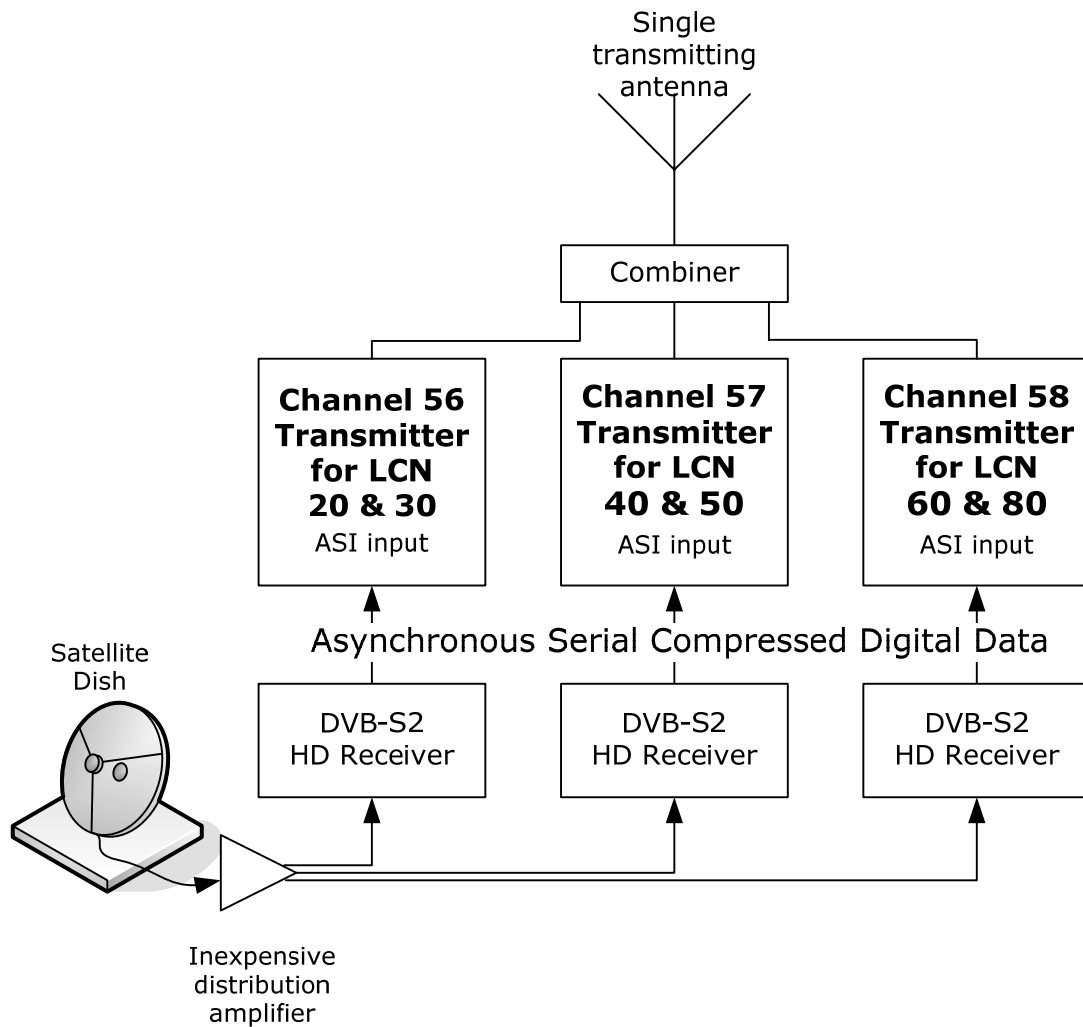


Figure 2 Remote Transmission site
Channels 56 – 58 are only used as an example.

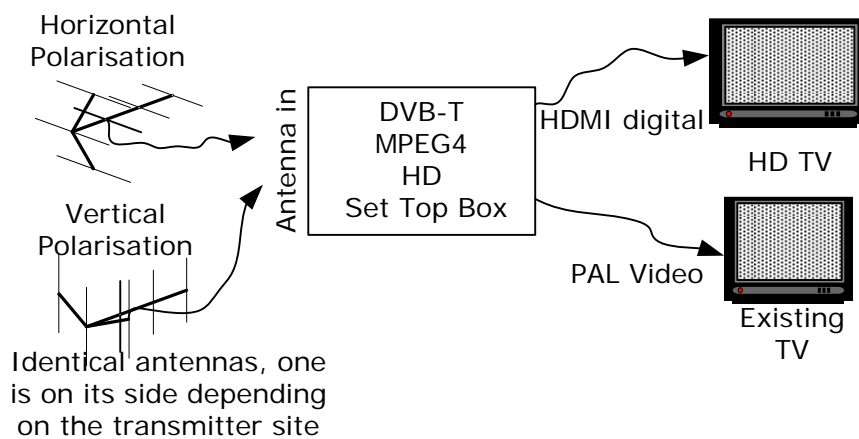


Figure 3 Remote receiver site being fed by the above transmitters

Conclusion

Transmit all remote and low powered sites in MPEG 4 high definition from all networks available to the rest of Australia in that satellite zone.

Through both satellite and terrestrial transmitters. These receivers will be able to be used elsewhere in Australia. MPEG4 compression could be used to give multichannel HD programs within existing digital transmissions which is what is happening in the UK.

All of these transmitters should be within the range channel 56-67 using either horizontal or vertical polarisation depending on the site.

References: <http://digital.tvnz.co.nz/> Please go to the media releases as well along with their links.

[BBC HD TV Trial which used MPEG 4](#)

[Pace brand Satellite HD receiver](#)

[Humax brand HD Satellite receiver](#)

[Digital Terrestrial HDTV Broadcasting in Europe](#)

[MPEG Industry Forum](#) Please download the white paper.

[Technical standard for MPEG4](#)

Mr Alan Hughes