



DIGITAL FUTURES

Planning for Digital Television and New Uses

A Discussion Paper

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1. Purpose

This discussion document outlines the issues relating to achieving a fully digital television broadcasting environment and the allocation of the digital dividend spectrum resulting from the upcoming Digital Switch-Over (DSO) process.

The document seeks the opinions of interested parties on the analysis and options presented.

Further consultation on specific proposals may be initiated after reviewing submissions to this document.

The first four sections of this document cover process issues, background information and overall objectives. The next two sections contain the substantive issues:

- Section 5 covers matters relating to spectrum planning for digital television and allocation of the “digital dividend” which are the responsibility of the Ministry of Economic Development;
- Section 6 covers matters relating to regional television services which are the responsibility of the Ministry for Culture and Heritage;

Submitters may respond to either or both of these sections as they wish.

1.1 Making a Submission

Comments should be submitted in writing, no later than 30 September 2009, as follows:

Email (preferred option)	radiospectrum@med.govt.nz (Subject line: “Digital Futures Discussion Document”)
Post	Digital Futures Discussion Document Radio Spectrum Policy and Planning Ministry of Economic Development PO Box 1473 WELLINGTON

Any party wishing to discuss the proposals with Ministry officials should contact either Ian Hutchings in the Ministry of Economic Development Ian.Hutchings@med.govt.nz, or Sarah Tebbs in the Ministry for Culture and Heritage Sarah.Tebbs@mch.govt.nz.

1.2 Publication and Public Release of Submissions

It is intended to publish all submissions on Ministry websites www.rsm.govt.nz and www.mch.govt.nz as appropriate. Submitters will be considered to have consented to publication unless clearly specified otherwise in the submission.

The content of submissions provided may become subject to public release under the Official Information Act 1982. Please advise if you have any objection to the release of any information contained in a submission, and in particular, which part(s) you consider should be withheld, together with the reason(s) for withholding the information. Confidential information should be clearly marked. The Ministries will take into account all such objections when responding to requests for information on submissions to this document under the Official Information Act 1982.

The Privacy Act 1993 establishes certain principles with respect to the collection, use, and disclosure of information about individuals by various agencies including the Ministries. It also governs access by individuals to information about themselves held by agencies. Any personal information you supply to the Ministries in the course of making a submission will be used by the Ministries only in conjunction with consideration of matters covered by this document. Please clearly indicate in your submission if you do not wish your name to be included in any summary of submissions that the Ministries may publish.

2. Scope

This paper discusses the issues, and potential options for changes to radio frequency allocations following the switch-over to fully digital television services. The date for the Digital Switch-Over (DSO) in New Zealand is not yet finalised but government's expectation is that it will occur by 2015 at the latest.

The "digital dividend" (in spectrum terms) is the spectrum that is freed up through the implementation of digital television broadcasting using a technically efficient band plan, and ceasing all analogue television broadcasting. The frequency planning parameters for digital technology and greater efficiency of individual digital licences allows an increased number of programmes using less radio frequency spectrum.

This paper identifies the issues relating to the allocation of the digital dividend spectrum and provides proposed options for frequency use post-DSO. It also provides an opportunity for stakeholders to comment on the paper in order to inform the government of the viability of the proposed options and any potential alternatives.

A necessary part of dimensioning the digital dividend is to understand the future plans of existing broadcasters who have not yet commenced the transition to digital broadcasting. These include a number of broadcasters who operate only in a particular region of New Zealand, and the discussion document therefore includes a section which explores the options that might be adopted by such regional broadcasters. This may have implications for spectrum allocation and other government policies.

3. Introduction

3.1 Background

Government policies to facilitate the DSO process were decided in 2006-2008, with digital terrestrial television commencing in 2008. A joint industry-government steering group has been established to coordinate and manage the DSO process.

The DSO process envisages all television services using the more efficient digital technology, and existing analogue licences being cancelled or returned to the Crown in due course. Digital television coding is more efficient, as it allows only the pixels that alter from frame to frame to be broadcast, reducing the capacity that is required for actual broadcast. A radio frequency channel can transmit around 24 Mbps which can accommodate a number of television programmes, typically 8-10 using standard definition (SD). Radio frequency planning is also more efficient since the co-channel and adjacent channel protection ratios¹ are lower (effectively allowing closer geographic or frequency separation between licences), allowing for the possibility of adjacent channel use, with less infill coverage² being needed. Implementation of a fully digital frequency plan therefore effectively releases spectrum for allocation to new services. The overall process will result in both VHF and UHF spectrum being available for allocation to new services.

3.2 Current Position

3.2.1 Management Rights and Analogue licences

The VHF Television bands

VHF Band I is from 44 – 68 MHz, although a section from 51 – 54 MHz is not used for television services.

VHF Band III is from 174 – 230 MHz and is fully used by television services.

There are analogue television licences in the VHF bands³ which are largely used for the TVONE, TV2, TV3 and C4 programmes. All licences in these bands expire in August 2015, however the Ministry of Economic Development (MED) has agreements with the licence-holders that the licences will be transferred back to the Ministry, or cancelled at the DSO date. The relevant Crown-held management rights will expire in August 2015. Decisions about the recording and allocation of future management rights would normally be made in 2010, being five years before expiry. Such decisions would need to take into account outcomes and decisions relating to the digital dividend.

¹ The protection ratio is a ratio between the wanted and unwanted signals. A lower protection ratio effectively allows a greater unwanted signal without any degradation to the wanted signal.

² Infill coverage in an urban analogue service is often required because of signal reflections (ghosting), rather than low signal strength. Digital transmissions have an inbuilt capability to discriminate against ghosting, which effectively means that a number of current analogue infill licences need not be replicated with digital licences.

³ The frequencies used by television are recorded as Management Rights and therefore Spectrum licences (rather than Radio licences) are used.

The UHF Television bands

The UHF band presently allocated for television use is from 518 to 806 MHz. The frequency range is managed as follows:

- 518-582 MHz – Management Right No 1, combination of analogue and digital licences, expiry March 2010.
- 582-614 MHz – Management Right No 195, owned by Māori Television Service, expiry November 2013.
- 614-646 MHz – Radio licences⁴ for non-commercial allocation, as well as some digital television licences and amateur TV repeater licences in channel TV39.
- 646-806 MHz – Management Right No 2, combination of analogue and digital television licences, expiry March 2010.

Management Rights 1 and 2 are also used extensively by low power radio microphones under a General User Licence.

The spectrum between 502 and 518 MHz, adjoining Management Right No 1, is unallocated and is adjacent to the planned usage by mobile services in the 494 to 502 MHz band.

MED has renewal contracts with existing UHF analogue television licence holders which are due for settlement on or before September 2009. The corresponding current licence must be in use before settlement can occur. The renewal licences expire in 2020, after DSO is expected to occur. MED has therefore agreed that instead of renewal until 2020, licence holders may opt to extend the present analogue licence on a year-by-year basis until DSO at a preset price, but without the option of a future conversion to digital use.

MED has also published policies⁵ to allow holders of current UHF analogue licences to effectively convert the licences to allow digital technology to be deployed. The policies place implementation requirements on the new digital licences and require that the analogue licences held by the particular licensee be cancelled at DSO. MED will retain the ability to effect future changes of frequency of any digital licences issued, to enable implementation of an efficient digital frequency plan in the UHF bands.

Management rights for the period from 2010 to 2020 for the frequency ranges 518-582 MHz (MR No 212) and 614-806 MHz (MR No 213), along with various licences, have been created in the name of the Crown to facilitate the various commitments that exist. These are:

⁴ A Radio Licence is the technical term for a licence using spectrum where a Management Right is not recorded. Where a Management Right does exist a Spectrum Licence is necessary.

⁵ The policies can be found at www.rsm.govt.nz.

- Providing transition licences (3 sets) for digital use until DSO and, if required and technically feasible, engineering further licences for further geographic expansion beyond the present 75 per cent coverage of the population.
- Continuing the “transition” licences after DSO (at the then current level of population coverage) on a long term commercial basis;
- Providing new analogue licences (that can be converted to digital) for the period 2010 to 2020 for current commercially acquired licences, subject to terms of settlement;
- Providing, subject to prescribed terms, replacement digital licences for commercially acquired analogue licences;
- Providing, on a non-commercial basis and on prescribed terms, new analogue licences until DSO to parties holding non-commercially allocated licences for regional television services.

3.2.2 Current Digital Licences

Three sets of digital licences⁶ containing 18 licences each and covering approximately 75 per cent of the population have been created and allocated for the transition of existing television services having near national coverage. The licences were allocated primarily to allow for the transition of existing programmes through simulcasting, however they are also able to, and in some cases required to, accommodate new programmes. The technology also facilitates high definition (HD) transmissions, but these use significantly more capacity (i.e. bandwidth) and are neither possible nor expected for all programmes.

Licences have been planned to enable geographic expansion of digital terrestrial television to up to 80 per cent population coverage, but the commercial viability of further expansion is a matter for the present licence holders to decide. The current digital licences, and any further geographic expansion, are subject to contractual arrangements with the licence holders. Further licences to increase digital programme capacity have also been planned in most geographic areas. Government will need to develop policies on whether and how these might be allocated.

⁶ A licence set allows for comprehensive coverage in the area concerned. The specific licences will typically be on different frequencies in each area.

4. Outcomes Sought

4.1 Post-DSO Spectrum Allocation

The government's objectives relating to realising the digital dividend are:

- To facilitate conversion of present commercial television services to digital technology using a technically efficient band plan;
- To plan and allocate the spectrum released for a variety of new services to maximise the benefit to New Zealand; and
- To ensure the spectrum released by DSO is allocated as soon as possible to maximise the benefits of the digital dividend to industry and consumers alike.

These objectives require at least three logical stages:

- Conversion of analogue services to digital, and/or ceasing any unconverted analogue transmissions;
- Modification of digital television licences to achieve a technically efficient frequency plan; and
- Allocation of released spectrum for new uses according to government decisions prior to DSO.

In practice these stages will overlap to some extent and therefore an overall plan, along with appropriate policies, will be necessary at an early date.

4.2 Regional Broadcasters

The Ministry for Culture and Heritage (MCH) is to provide advice to the Minister of Broadcasting on options for the transition of regional broadcasters to digital transmission to enable him to report back to Cabinet by December 2009.

5. Post-DSO Spectrum Allocation

This section is in four main parts considering basic decisions on the VHF and UHF bands, additional UHF band issues, and allocation of the released spectrum.

5.1 VHF Spectrum

The VHF spectrum which will be released is subject to a Management Right which expires in August 2015. There is no requirement to accommodate either transitional or ongoing digital television licences in these bands. The set top box technology being deployed for digital terrestrial use in New Zealand generally only receives the UHF frequency bands and the future utility of the VHF bands for television purposes is therefore quite limited. This is also consistent with overseas developments.

5.1.1 International Allocations and Use: 44-54 MHz⁷

The current television use has historically been recognised internationally by special Footnotes in the ITU Radio Regulations (5.162 covering 44-47 MHz and 5.166 covering 50-51 MHz). Further Footnote provisions provide for Fixed and Mobile services in the 51-53 MHz band (Footnote 5.166) and 53-54 MHz (Footnote 5.170). The television use has effectively displaced or limited Fixed and Mobile services in the range 44-47 MHz, which have in turn displaced or limited Amateur use in the range 51-54 MHz.

In the absence of television use after DSO, these Footnotes are no longer required in their present form and the government should therefore consider seeking their removal or modification at the next Treaty negotiation in 2012.

The preferred modification would be to delete Footnote 5.162 and 5.166, and expanding the range allocated to Fixed and Mobile services in Footnote 5.170 from 51-53 MHz to 51-54 MHz. These changes remove the Broadcasting allocation, restore Amateur to 50-54 MHz and continue shared use of Fixed and Mobile services in the 51-54 MHz range. On the assumption that these changes can be achieved, there would be scope for national licensing changes to allow enhanced Amateur use in the 50-51 MHz band on a sole Primary basis. Such a change would make this New Zealand use compatible with the ITU-Radio Regulations Table of Allocations.

Question 1

Do you agree with licensing Amateur radio use in the 50-51 MHz band on a sole Primary basis?

⁷ This frequency range is slightly wider than currently used for television, but it is necessary to consider the wider range because of the structure of the international Radio Regulations Footnotes.

Question 2

Do you agree with licensing Amateur radio use in the 51-54 MHz band on a shared basis with Fixed and Mobile services?

5.1.2 Potential New Uses: 54-68 and 174-320 MHz

The 54-68 MHz band and the 174-230 MHz band will both be available for new uses after DSO. The International Radio Regulations provide for Fixed, Mobile, and Broadcasting uses. While the Broadcasting allocation was originally intended to provide for television broadcasting, a future possibility may be for sound broadcasting using digital techniques. Some countries are deploying the Europe-sourced DAB technology and Land Mobile services in the 174-230 MHz band.

There is no current evidence of strong demand for new services using the released VHF spectrum bands, although there may be unforeseen demands which occur in the next few years.

Without clear indications of potential end use it is considered inappropriate to develop either allocation policies or technical planning for a future allocation process. It is therefore proposed to defer consideration of potential new uses, with a review in five years or when clear demand becomes evident. A five year review would be one year prior to expiry of the current management rights. The spectrum would effectively be embargoed for any new use, but any residual secondary use such as radio microphones and the like would be authorised to continue.

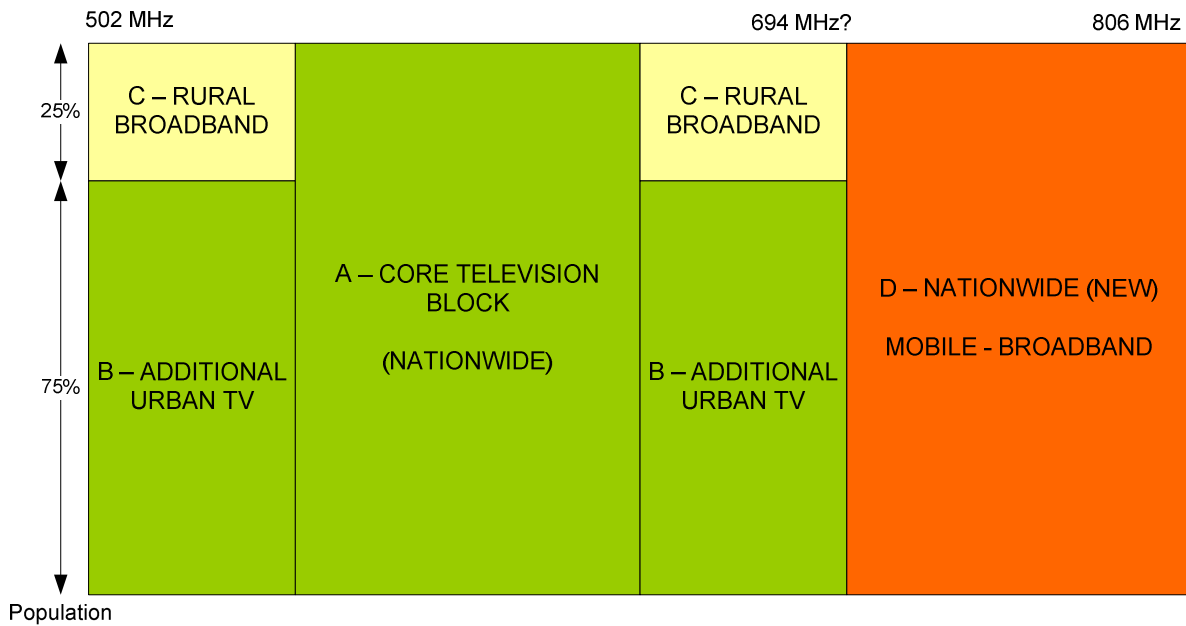
Question 3

Do you consider any new spectrum allocation policies and planning should be developed to utilise the bands 54-68 and 174-230 MHz bands prior to the expiry of the current Management Rights in 2015? If so what services and at what time?

5.2 A Basic UHF Frequency Plan

This section examines the spectrum requirements for television, assuming a technically efficient plan for fully digital television use, and therefore dimensioning the amount of spectrum that could be considered for other uses. It assumes that all analogue licences have been either cancelled and/or replaced with a digital licence. The outcome allows decisions to be made on how much spectrum is available for further allocation.

A representation of the proposed UHF band plan is depicted below and discussed in the following paragraphs.



- **A** Core digital television (approximately 1/3rd of the frequency band) – potential for six main licences in any areas (including six infill) – 54 SD programmes
- **B** Additional capacity for digital television in urban areas – total 10 licences, placed in two groups
- **C** New uses in rural areas such as fast rural broadband (approximately 40 MHz paired)
- **D** Proposed nationwide allocation (approximately 1/3rd of the band) for new uses such as mobile broadband using Long Term Evolution (LTE) technology

NOTE: The potential rural usage in block C covers approximately 25 per cent of the population, but equates to a much greater percentage of geographic coverage.

5.2.1 Dimensioning a Nationwide Block for Mobile Broadband and other New Uses – Block D

The requirements for digital television licences will vary throughout the country. In some geographic areas⁸ there are no known requirements for transition licences and no contractual obligations to provide for further analogue licences, and therefore no potential digital conversion licences are required in the period after 2010. Theoretically therefore the entire band from 502 – 806 MHz could conceptually be available for allocation to new uses in these geographic areas. Digital television services in these areas are available through a nationwide satellite service.

⁸ These areas are generally outside of the main cities and include both provincial centres and surrounding areas of low population density in Northland, Eastland, Westland, Southland, Central North Island and Nelson/Marlborough.

However in other areas there are commitments to provide for a maximum of 22 digital licences⁹ (including a mix of main and infill use) for both digital transition and analogue conversion licences. The band planning is based on the government meeting its obligation to provide 22 channels which comprise:

- 3 Main coverage licences (Freeview usage).
- 3 Infill coverage licences (Freeview usage).
- 6 Main commercial renewal licences (5 SKY, including PRIME and MTS, plus NZRB).
- 6 Infill commercial renewal licences (5 SKY, including PRIME and MTS, plus NZRB).
- 2 Main coverage commercial renewal licences (Kordia, no infill).
- 2 Unallocated (1 main, 1 Infill).

Each licence requires 8 MHz of spectrum and therefore 22 licences could occupy 176 MHz of spectrum, which is around 60 per cent of the available UHF frequency band. In addition to these spectrum commitments it will be necessary to consider whether additional spectrum should be included for technical compatibility purposes between services (i.e. guard bands) or whether this can be designed into the specific licence allocation process.

Later sections of this report outline further policy issues that government needs to consider that may affect the assumed spectrum requirements for digital television licences; as a consequence, it is inappropriate to finalise an exact number of licences (and consequently spectrum subdivision) at this time.

Even where there are licence commitments, these are not uniform¹⁰. In some areas it could be as low as 12, or up to the 22 identified above. Some flexibility in future utilisation should therefore be considered.

In broad terms, the current band has just over 300 MHz of available spectrum. It seems clear that there may be commitments for digital television licence requiring a maximum of 2/3^{rds} of this band in some geographic areas.

It is therefore proposed that approximately 1/3rd of the current band be treated as being available for nationwide allocation for new uses, with the exact spectrum limits being determined as a result of other proposals in this paper.

⁹ The Government has contractual obligations in Auckland to provide the current three transition licence sets on a long-term basis (using up to six RF channels in any area). There are also commitments for up to six analogue licence sets being converted to digital use (using a further 12 RF channels), and a further four RF channels for potential commercial main site conversions and other government needs. This makes a total of 22 RF channels. A further potential requirement is for a licence at Whangaparaoa, but it has been assumed at this stage that this would be technically compatible with a Pine Hill licence (in all necessary parts of the service area) and that it would not require a further RF channel.

¹⁰ The Auckland requirement is for 22 channels, with Waikato/Tauranga requiring 20, Manawatu/Hawkes Bay 21, Wellington 20, Christchurch 18, and Dunedin 15. The variation relates to the number of main area coverage stations and whether infill capacity is required.

Question 4

Do you agree with approximately 1/3rd of band being considered for allocation to new uses on a nationwide basis? If not, what would you prefer and why?

Dimensioning a Core Nationwide Television Block – Block A

The allocation or reservation of a single uniform block of spectrum for solely television use in all geographic areas of New Zealand is considered both unnecessary and inefficient over the long term. However it is also considered prudent to make provision of some spectrum for potential geographic expansion of digital television¹¹ services beyond the current 75 per cent population coverage.

In all probability the future geographic coverage of terrestrial digital “footprints” will be determined by a combination of commercial and perhaps policy factors. There may well be a situation where a core free-to-air coverage is provided, but not all programme owners wish to extend their terrestrial coverage for commercial reasons. Commercial licence owners will also need to make decisions on the extent of their investments in lightly populated areas.

It is therefore proposed that a core reservation of 1/3rd of the frequency band be treated as being available for nationwide use for digital television licences, with the exact spectrum limits being determined after technical band planning.

For comparative purposes, the current Freeview service is provided using three licence sets which, when allowing for both main and infill coverage in an area, require six licences or 48 MHz of spectrum. The proposed core television reservation of 1/3rd of the band would be approximately 100 MHz (six licence sets with main and infill coverage) or double that used by the current Freeview platform. Each licence is capable of approximately nine SD programmes meaning that the core reservation could accommodate over 50 SD programmes nationwide.

Question 5

Do you agree with a core reservation for digital television of approximately 1/3rd of the UHF band on a nationwide basis? If not, what would you prefer and why?

5.2.2 Geographic Mixed-Use Potential – Blocks B and C

In addition to the proposed core reservation for digital television (up to 12 RF channels), there are commitments to provide new analogue licences after 2010 and to allow for potential conversion of such licences to digital technology which require a total of 22 RF channels (approximately another 1/3rd of the band) in some geographic areas. These areas typically include the main urban areas covered by the present Freeview terrestrial 75 per cent population coverage, but do extend significantly beyond this to all the provincial centres. Whether or not, and in what time frame,

¹¹ The further extension of digital terrestrial services will need to recognise normal commercial factors, as well as the increasing adoption of satellite services where there is currently no terrestrial digital footprint.

these contractual commitments will actually result in digital service implementation is a commercial issue for those concerned, but they do need to be provided for at this stage.

However in areas beyond these commitments there is potential for the spectrum to be used for other alternative types of service. The areas¹² are typically lightly populated, but do include some provincial centres. In these areas there may be needs for services such as broadband which might be more economically provided if radio technology was incorporated into such networks. It would be expected that any rural area television use would be readily accommodated within Block A and this would also be preferable for technical compatibility reasons. There may also be geographic areas where Iwi have a specific interest in using the radio spectrum. The extent and benefit that radio spectrum might be desirable for these or other uses in these less populous areas is not clearly understood by the Ministry. Neither is the availability of suitable equipment, but it is expected that such equipment would be available for at least the relevant DVB technology standards for data and IP-based services. However at this time it is considered important to better understand the interest that may exist for such use and the parties, including Iwi in such areas, that might wish to use the spectrum.

Question 6

Do you agree with approximately 1/3rd of band being allocated on a geographic basis to meet television licence commitments in urban areas, and to allow new uses in other areas? If not, what would you prefer and why?

Question 7

What specific types of service do you think are desirable as new uses in areas outside of areas where there are digital television licence commitments? Do you have any views on how access to the licences necessary for such usage should be managed?

5.2.3 A Television Frequency Plan

A potential frequency plan for digital television services and associated discussion which accommodates the above proposals has been developed for the Ministry by external consultants. This is available on request from the Ministry.

The main feature of this plan is the use of a regular separation between any two main digital licences at the same transmission site (or near sites) on a so-called “n + 2” basis. This means that if one licence is on say RF channel DTV45, the other licences at that site would be on DTV47, DTV 49 etc, with a “spare” channel in-between. This separation is desirable to avoid imposing the high costs of special transmitting channel combiners at the transmit site (although higher cost combiners

¹² These areas are generally outside of the main cities and include both provincial centres and surrounding areas of low population density in Northland, Eastland, Westland, Southland, Central North Island and Nelson/Marlborough.

are available if required). The “spare” channel is not necessarily wasted because it can be licensed on an “n + 1” basis at sites providing local “infill” coverage if required (in the example above the infill would use channel DTV46, DTV48, DTV50 etc). If more than one infill site is required they can be licensed for use on the same set of channels using the single frequency network technology (SFN), thus using only one set of frequencies for infill from any particular main station licences. Wider use of the SFN technology may be feasible and, although this would be expected to incur additional implementation costs, may be necessary in the future.

As a comparison, analogue licences are generally provided on an n + 4 basis, allowing for 4 channels separation at any site with infill use being licensed on the n + 2 channel, still allowing a “spare” channel between a main station licence and an infill licence in the same area.

Question 8

Do you agree with the n + 2 basis for licensing of digital television? If not, what would you prefer and why?

5.2.4 Placement of the Nationwide Spectrum Block – Block D

The various contractual arrangements allow for digital licences to be modified or replaced so as to operate on different frequencies. This allows the spectrum released, both nationwide and in geographic areas, to be placed in the most effective portion of the overall frequency band. While international band planning is not yet completed, particularly by European countries, it seems clear the potential new technologies for re-use of spectrum are likely to emerge first in the upper portion of the band. The United States, for example, has allocated the band from 704 to 806 MHz for new typically mobile/cellular uses.

It is therefore proposed to place the nationwide released spectrum at the upper end of the frequency range, i.e. from around 700 MHz to 806 MHz. Exact limits will depend on other decisions in this paper.

Question 9

Do you agree with placement at the upper end of the frequency range, from approximately 700 MHz upwards? If not, what would you prefer and why?

5.2.5 Structure of the Mixed-Use Block: Blocks B and C

The spectrum proposed to be released on a geographic basis has several potential uses but the availability of equipment will be a significant factor. If two-way services are to be implemented, these may require two spectrum sub-bands, one for each direction of transmission. In general terms, for frequency division duplex services (FDD) the narrower the frequency separation the greater the level of cost, and eventually impracticability, occurs. It is normal practice to allow for a reasonable frequency separation, for example cellular technology at 800 and 900 MHz uses a 45 MHz separation. However use of a similar separation within a contiguous

100 MHz band may limit the amount of useful spectrum that can be used. Use of two separate sub-bands would be more efficient if FDD type services are to be used. However it is acknowledged that technologies such as time division duplex (TDD) can avoid the need for two sub-bands but at the expense of greater radio frequency coordination and potential time synchronisation and common up-link-down link ratios for different services. While the types of technology are not yet known there appears to be some advantages, and few disadvantages, in planning for two sub-bands for potential FDD type usage.

Question 10

Do you agree with the placement of the spectrum released in geographic areas in two portions, i.e. from approximately 500 to 550 MHz and from approximately 650 to 700 MHz? If not, what would you prefer and why?

5.3 Other UHF Band Issues

This section examines current allocations and use of the UHF band to determine whether, to what extent, and how they should be provided for in planning for future use. Decisions in these areas are required to finalise the exact limits of the basic UHF band plan outlined above, or other arrangements.

5.3.1 Māori Television Service

The Māori Television Service Act 2003 provided for the allocation of a 10-year management right over 32 MHz, or four analogue channels, in the UHF band for the Māori Television Service (MTS) for the purpose of protecting and promoting te reo Māori me ngā tikanga Māori. In addition, the Act established a mechanism for safeguarding the UHF right for this purpose if it was not required by the MTS. This was intended to reflect the Crown's commitment to the protection and promotion of te reo Māori me ngā tikanga Māori through broadcasting. Pursuant to this provision, the Crown transferred spectrum Management Right 195 to MTS in December 2003. The current statutory entitlement, and therefore the management right, expires in 2013.

The Crown provided this management right to ensure that te reo Māori me ngā tikanga Māori could effectively be protected through television broadcasting. The bandwidth is capable of supporting licences for both an analogue network and a digital network throughout New Zealand. MTS currently broadcast on both analogue and digital terrestrial technologies (including satellite). However MTS has negotiated transmission arrangements with other parties, namely SKY for analogue terrestrial services and Kordia for digital terrestrial and satellite services. This arrangement enabled MTS to go on air quickly using SKY licences and avoided SKY adjusting their subscriber equipment.

The operation and effectiveness of the Māori Television Service Act 2003 has recently been reviewed by an independent panel, which has put forward several recommendations relating to the management right held by MTS.¹³ A government response to the review is currently being developed, and this will include consideration of spectrum access issues. This aspect of the government's response is therefore closely related to decisions the government may make on realising the digital dividend.

Any additional spectrum, after expiry of the current Management right, required for the promotion of te reo Māori me ngā tikanga Māori by MTS, over and above its present access to capacity on licences owned by other parties is not yet determined. Whatever final decisions are made, it is considered appropriate to incorporate any spectrum provision in the overall band plan outlined above. This may necessitate fine tuning of the exact frequency limits between the band segments.

Question 11

What opportunities do you envisage for the promotion of te reo Māori me ngā tikanga Māori which need consideration in a revised frequency plan?

5.3.2 Amateur Radio Service

There are a number of licences on channel TV39 throughout New Zealand which are used for Amateur Radio television repeaters. In this use, television signals are transmitted from, say, an Amateur's residence in other frequency bands, and are re-broadcast by a repeater installation on a nearby hilltop using TV39. The repeater can also broadcast informational material when not otherwise in use.

The current installations use analogue technology and operate under a radio licence. From 2010 they will need to use a spectrum licence and, because they use analogue technology, will be licensed with conditions requiring switch-off at the DSO date. The number of existing TV39 transmitters that might, given suitable licences, be converted to digital is not known. Likewise the number of Amateurs that would wish to operate individual digital transmissions to access a digital repeater is not known.

Amateur radio interests have indicated they would like the ability to operate digital technology, using transmission parameters (within the DVB framework) that provide a single programme, non-multiplexed, type of service using either TV39 or a suitable alternative channel. They have a preference for UHF frequencies because of the availability of receivers and their existing UHF transmission systems.

Provision of the desired UHF spectrum to a small interest group may be satisfactory when there is ample spectrum available, but is difficult to support when there is strong demand from other services with significantly larger numbers of users. It is likely that the Amateur interest could be accommodated in the spectrum available in the basic band plan in certain geographic areas, but not in the main population areas where spectrum for television and other purposes is likely to be in strong demand. The true level of demand may only be known when DSO is completed, as it is not

¹³ The review report is available online at <http://www.tpk.govt.nz/en/consultation/mtsa/report>.

clear how many of the contractual analogue licence obligations being provided will eventually be converted to digital use. Spectrum could potentially be available in the VHF bands, but this may not be preferred by Amateurs because of technology availability and the existing UHF stations.

The current analogue UHF television use by Amateurs is relatively unique internationally, and at this stage it is not proposed to make any specific reservation in the basic frequency plan for Amateur use. The lack of capacity to meet the demand for spectrum from broadcasters providing wide area services to the general public is considered to be such as to not warrant such a reservation for Amateur purposes.

Question 12

Do you agree with the proposal not to provide for Amateur television services in the UHF band?

Please give reasons for your view.

5.3.3 Additional Transition Licences

There are currently three transition digital licence sets which are owned by TVNZ, MediaWorks, and Kordia. These are used to support the Freeview terrestrial platform. The licensees are required to accommodate additional programmes provided by other parties if capacity is available, and the Kordia licence is to be used in the first instance. There are currently five programmes using (or contracted to use) the Kordia licence set and there may be some residual capacity on the MediaWorks licence. The TVNZ licence is planned for two HD programmes and three SD programmes.

In the initial digital planning a fourth licence set was considered and, where practicable without additional cost, was allowed for. In some areas the fourth set was not available without added costs, and therefore was not provided. It can be, however, provided with modest cost if required after 2010.

Assuming that Kordia has contracts for five programmes, a further four programmes could be accommodated on their licence set (assuming an eventual capacity of nine SD programmes). There does not therefore appear to be a requirement for additional licences to be allocated in the foreseeable future. There is one near nationwide analogue programme, NZRB's Trackside, which is not yet contracted to operate on a digital terrestrial platform, but the NZRB has the potential to operate its own set of digital licences if they so choose, and appropriate licences for NZRB are included in the basic plan of up to 22 licences. There are also a further five licence sets in the plan that SKY can convert to digital use, and although the timing of any such conversion is not known. If the NZRB and/or SKY do operate digital licences in the future, there may be capacity available within such licences for other parties to use on a commercial basis.

In the longer term there appears to be adequate capacity for new services after DSO across a range of digital licences. In the more immediate future there is a risk that the existing transition digital transition capacity could be exhausted if a significant

number of new programmes decide to use a high definition format. This seems unlikely, if only because of the significant transmission cost involved.

The basic frequency plan has also allowed for one unallocated licence pair in the overall total of 22 RF channels. This could be allocated if required, either on a purely commercial basis, or with underlying obligations to ensure capacity is available for particular services (for example MTS and/or a regional programme). Any such obligation would relate to spectrum capacity, but would not extend to the actual cost of providing transmission infrastructure which would remain a commercial matter between the parties. In addition, the basic plan allows for commercial digital licences to be operated by SKY and Trackside who may wish to accommodate other programming on their licences, even if only to defray the initial costs of operating a set of licences.

The Ministry is seeking feedback about the potential programme requirements and preferred timing of any further allocation of digital licences during the transition period.

Question 13

What additional services might require further digital licences to be allocated in the transition to full digital broadcasting?

The normal method of allocating licences would be through a contestable auction. However the demand for a further digital licence is likely to be generated by the sum of the needs of several individual programme owners, none of whom are likely to wish to acquire a licence themselves. There may also be needs that government has to ensure that particular programmes are not excluded from transmission by a lack of spectrum, but each of which individually would not warrant provision of dedicated licences. In such circumstances it may be attractive for the Crown to exert a greater influence over the end use of a further licence, irrespective of how it might be allocated.

Question 14

Is it desirable for the Crown to retain influence in the end use of any further digital licence set, and should this in turn influence the method of allocation. What method of allocation is preferred? Why?

5.3.4 Radio Microphones

There are existing radio microphone services operating in the UHF bands and provision for these types of short range systems will be required in the future. The licence for these services allows them to be operated on a non-interference basis in the frequency ranges **518-582 MHz and 614-806 MHz**. These ranges were authorised in May 2009, but it is likely that most equipment is operating within a narrower frequency range, 646-806 MHz which was previously authorised.

The Ministry received many responses to its *Digital Dividend in New Zealand* Scoping Paper of May 2009 from providers and users of radio microphone services.

The two main requests have been for:

- adequate continuity of use of the current 698-806 MHz band for existing equipment, and
- a clear space of 100 MHz to be provided in the 519-698 MHz band in the future for orderly transition.

Radio microphone service providers advise that many microphone channels are required, for instance up to 50 channels might be required for a major sporting event.

There is some recognition that internationally that use of the “white space” between the television channels is generally satisfactory. However this may become more difficult in the future as the greater technical efficiency of digital television use allows $n + 2$ main station channelling, and $n+1$ for main and infill services. Each microphone channel must be spaced 1 MHz apart from others in the same location to avoid overloading and inter-modulation. The Ministry does not consider the request by some radio microphone users for 100 MHz of clear spectrum to ensure the continuance of this service in New Zealand is a viable outcome. This may be a perceived ideal outcome for a radio microphone user, but is impractical in the face of realistic demands for spectrum. Radio microphone users clearly place a high value on their use, although there is currently no fee involved in such use and the extent of economically sustainable demand under a contestable allocation process is unable to be evaluated.

Options to facilitate use of radio microphones should desirably allow as many as possible of those existing today to continue. However it is a recognised condition of licence that radio microphone use must not cause interference. Inherently this requires changes by the unprotected users as other licensed and protected services develop.

Options for ongoing radio microphone are considered to be:

- to provide for an exclusive, although relatively narrow, part of the UHF band for exclusive use; and/or
- to provide a general licence for “white space” use in all or part of the “television” parts of the revised band; as well as
- a transition provision to provide a general licence for “white space” use in the “dividend” part of the revised bands, to recognise that most existing users were likely to have equipment operating in this spectrum and may have limited frequency agility.

It is however considered neither necessary, nor efficient to allocate a clear 100 MHz block of spectrum for radio microphone services and the use of a single exclusive sub-band for such use is also seen as unsatisfactory because of interactions between radio microphones that are close in both frequency separation and

geographic proximity. The Ministry aims to allocate the UHF digital dividend spectrum in such a way that provides the maximum benefit to society. The Ministry therefore believes that a more efficient allocation of spectrum for these services may be achievable without substantially increasing the risk loss of utility for such uses.

This option would involve the use of “white space” for short range devices such as radio microphones, but over a wider frequency range than has hitherto been authorised. “White space” is the unused spectrum that is interleaved between television broadcasting channels (or other uses). High power services are not possible in these parts of the spectrum due to the risk of interference, but the use of low power applications is feasible. This is the approach taken by Ofcom in the UK.

The Ministry has recently (June 2009) created licences to allow radio microphones to operate over the whole existing UHF television frequency range (excepting the Management Right owned by MTS). This allows much greater flexibility of frequency usage and effectively implements one of the options considered above. The new licences can be viewed in the Ministry SMART online system, www.rsm.med.govt.nz under Licence ID No. 130244 and No. 130245.

Over time it should be expected that all radio microphone users migrate from the spectrum that is proposed to be allocated on an un-encumbered basis for nationwide use. The Ministry is aware that a frequency change would require, in some cases, new capital expenditure for these users and therefore aims to allow radio microphone users or service providers an adequate period to make any frequency change that might be required of them.

Question 15

Are the current new licences for radio microphone use in the band 518-582, with potential future extension up to 698 MHz, adequate for ongoing use after DSO? If not, what other provision should be considered?

It may still be necessary to consider providing for existing usage of the former 646-806 MHz range, for a period after DSO. Even if part of this spectrum is reallocated, existing uses can be provided for by creation of spectrum licences prior to the sale of the management rights.

The Ministry considers it appropriate to limit new equipment from being used in the spectrum to be sold on a nationwide basis, with effect from the time of decisions being made about the relevant frequency limits. This could be from late 2009, but would probably practically be best applied from the March 2010 expiry of the present licences.

Assuming that DSO were to occur in 2015, there would be a five year period to allow for transition of existing uses from the released spectrum. Even if DSO was to occur earlier, a five year period is considered necessary.

Question 16

Do you agree that new radio microphone use should be restricted in the nationwide released spectrum with effect from 2010, and existing use discontinued after five years, as transitional measures? If not, what other provision should be considered?

5.4 Allocation of the Released Spectrum

This section considers the potential new uses, technical band planning, and allocation of the released spectrum. Such uses could include additional television licences, new mobile cellular services, broadband use, or a mix of such uses. Where spectrum is allocated as management rights the eventual end use is primarily a matter for the relevant manager. Where the Crown retains the management right the necessary spectrum licences would probably be more specifically tailored to a particular service, and could be allocated commercially or non-commercially according to government policy decisions.

5.4.1 Planning for Use of the “Nationwide” Spectrum – Block D

The spectrum released nationwide is seen as most suitable for new cellular mobile types of usage, although precise technical subdivision needs to consider allocations in other countries which will dictate the equipment available internationally. These issues are not fully resolved but it appears that:

The United States has allocated spectrum in two segments, with each segment containing provision for FDD¹⁴ type and a small band for unpaired use:

- 698-746 MHz, 2 x 18 MHz paired plus 12 MHz non paired;
- 746-806 MHz, 2 x 27 MHz paired plus 2 x 2 MHz guard bands.

European countries have generally recognised a core digital dividend above 800 MHz, although there may still opportunities for use of country by country allocations in the 750-906 MHz range. Planning is necessarily done in light of the ITU GE-06 agreement for digital television use across Europe, and a consultation has recently been released which focus their “Europe wide” dividend in the range 790-862 MHz.

There are various initiatives to promote specific frequency allocations within both the APT and ITU-R¹⁵, and ideally, the final technical planning in New Zealand should only be confirmed when this work is completed and major European and Asian countries have confirmed their positions. It is also desirable to complete any allocation shortly

¹⁴ FDD - Frequency Division Duplex is a technique using separate frequency bands for each direction of transmission, for example to and from a cellular user.

¹⁵ The Asia-Pacific Telecommunity (APT) have a “Wireless Forum” that is considering frequency planning issues later in 2009, for possible input to The International Telecommunication Union Radio Study Groups (ITU-R, WG 5D)

after a DSO date has been confirmed to give early certainty of future use. With possible DSO dates as early as 2013, a spectrum allocation process could be in 2012, with planning completed in 2011. However both the DSO date and the timing of any allocation are government decisions and would need to take into account all relevant factors at the time.

However the dates suggested above do not preclude establishing preferred band limits now (compatible with the New Zealand 8 MHz channelling), with confirmation of this frequency limit and a full technical subdivision at a later date.

It is proposed that a preferred band edge of 694 MHz¹⁶ be established, with the possibility of this being amended following confirmation of both the television requirement as identified in this paper and the overseas band plans and therefore potential equipment supply. The 694 MHz frequency would allow the United States band plan to be adopted if appropriate along with a 4 MHz guard band. The United States band plan has two segments, each giving a paired spectrum usage capability. Full details are given in Appendix 1.

Given that significant portions of spectrum above 806 MHz proposed by Europe is already subject to long term private Management Rights and has significant investment in mobile radio infrastructure in New Zealand, and is beyond the scope of this paper, it is proposed that New Zealand technical planning be based around the plan adopted in the United States.

There may be requirements for some of the nationwide spectrum to be planned and reserved for public purposes, specifically for future mobile data use by public safety agencies. It is noted that spectrum is specifically allocated for such purposes in the United States, although the extent of demand in New Zealand is not known.

From a technical perspective, the public safety organisations in the United States have adopted use of the so-called LTE¹⁷ standard which would be compatible with any New Zealand planning based on this standard. However it is considered premature to either undertake technical planning for potential New Zealand implementation of LTE based services, for either commercial or public safety purposes at this stage.

Question 17

Do you agree with the proposal to establish a preferred band limit at 694 MHz, subject to finalisation as outlined below? If not, what alternative lower limit would you prefer, and why?

¹⁶ A band edge of 694 MHz allows for 24 RF channels to be available below this frequency for television if required.

¹⁷ LTE stands for Long Term Evolution and is a term for advanced cellular mobile and data services.

Question 18

Do you agree with the proposal to base New Zealand technical planning on the spectrum allocations used in the United States? If not, what alternative allocations would you prefer, and why?

Question 19

Do you agree with the concept of deferring detailed technical subdivision of the released nationwide spectrum, for completion in 2011 (when international trends are anticipated as being resolved), and allocation later in 2011 or 2012? If not what dates would you prefer for completion of planning and allocation?

5.4.2 Planning and Allocation of the “Geographic” Spectrum – Blocks B and C

The planning of the geographically released spectrum needs to recognise the type of services to be deployed. While this is not yet evident, it will be necessary to use a spectrum licence to accommodate such use because a management right will apply to the relevant frequencies.

A form of area licence could be created, in a similar way to those used in the 3.5 GHz band, to allow various uses in the respective areas. However the potential band subdivision would need to be confirmed closer to the time of allocation. It is possible that geographic management rights may be considered in the next review of the Radiocommunications Act 1989.

Earlier questions in this paper sought views on the basis potential separation into the FDD segments identified. The Ministry is also interested in views on the use of area licences, the potential subdivision of the spectrum and the allocation method. It is expected that these issues will be the subject of future decisions closer to the potential allocation, but the earlier identification of views and issues would be useful at this time.

Question 20

Do you agree with the use of area licences for licensing use of the mixed-use spectrum outside areas of television use?

Do you have any views on the technical subdivision of spectrum or the preferred allocation method?

5.4.3 Māori Interests

The government recognises that Information Communication Technology (ICT) is important because it drives productivity and innovation. Advances in technology such as broadband are opening up new markets, new opportunities, and new ways of doing things faster, better and more cheaply. There are significant economic development opportunities for Māori in the ICT sector. Government has previously agreed, on a case by case basis, to reserved spectrum for purchase by Māori

organisations to facilitate their investment and participation in the knowledge economy.

There may be interest from Iwi in obtaining access to the geographic mixed-use spectrum in their rohe for broadband or other uses. In addition there may be interest from national Māori groups in use of nationwide spectrum commercial mobile services. Both of these opportunities are facilitated by the overall band plan proposed in this paper.

While final decisions about the planning and allocation of both the proposed new nationwide spectrum and the geographic mixed-use spectrum will not be decided as a result of this paper, it is important to understand any Māori interest in use of these spectrum tranches to facilitate future planning.

Question 21

Do you envisage any requests by Māori interests for use of either the nationwide or geographic mixed-use tranches of spectrum?
Please identify potential uses and any specific technical issues associated with planning for such uses.

Question 22

Are there any other issues not fully covered in Section 5 that you consider should be taken into account?
Please indicate these as specifically as possible with your response.

6. Regional Television Services

6.1 Introduction

With the world-wide move to digital-only transmission of television, and the New Zealand national television broadcasters, both pay and free-to-air, having established themselves as digital broadcasters, it is critical now for regional television broadcasters to plan ahead to DSO.

This section of the discussion paper considers the implications of a fully digital environment on regional television, and asks questions about how regional television and its audiences will be best served post-DSO.

The wider context for these questions is the changing nature of broadcasting which allows broadcasters and others to provide a range of ways for audiences to access programmes. Broadcasting-like content is available on multiple platforms from live streaming or on-demand to computers, or via mobile phones.

For now, however, satellite transmission and terrestrial transmission are the two main digital transmission options for regional television broadcasting. This section seeks your feedback on a number of questions about how these options might best apply to regional television – how feasible are they, how would they work best for all parties concerned, how should the move to digital transmission be best phased-in? In short, how can regional broadcasters and their audiences connect with and utilise digital technology post-DSO?

6.1.1 Context – The World Is Moving To Digital Television

New Zealand is a tiny corner of a global broadcasting and telecommunications environment where consumers can increasingly access overseas and national content in a variety of ways. Inevitably we are affected by the world-wide trend towards an all digital television environment. Several countries have achieved DSO – the United States (with the exception of some low powered services) parts of Germany, Sweden, and South Korea. Others such as the United Kingdom, Australia and Canada are moving towards DSO. Each country has developed its own timetable and approach that suits its needs.

Digital pay television has been available for some years in New Zealand with pay television broadcasters currently providing digital services: SKY on satellite, and TelstraClear (wholesaling SKY) on cable in the Wellington and Christchurch areas. Remaining analogue pay TV services are being turned down over time.

In 2006, government decided to take a planned approach toward supporting the move of free-to-air television to digital transmission. In 2006, it supported the establishment of Freeview¹⁸, a consortium delivering a package of free-to-air digital television services on terrestrial and satellite platforms. The launch of digital services

¹⁸ Freeview is a consortium of free-to-air broadcasters, established on a not-for-profit basis to market their digital programmes and manage the electronic programme guide (EPG). It does not provide transmission services, or its own programming.

recognised the need for New Zealand to keep pace with technology developments internationally and was designed to ensure funded public broadcasting and local content would continue to be provided to New Zealand audiences in a digital environment. The national free-to-air broadcasters are broadcasting their services on the Freeview platforms, and simulcasting in analogue until DSO.

The number of households in New Zealand with digital television has now reached approximately 60 per cent. The government will set a firm date for DSO when household take-up reaches 75 per cent or by 2012, whichever occurs first. Government's expectation is that DSO will happen by 2015 at the latest.

Most regional broadcasters broadcast only in analogue. Regional television broadcasters now need to develop plans for the transition to digital transmission.

6.2 Current position

There are approximately 20 regional television stations spread from the Far North to Invercargill on a mix of licences allocated commercially, non-commercially, or leased from other parties; and they either own and operate their own analogue transmission sites or purchase transmission services from others (generally Kordia). In any one area there is only one service using a non-commercially provided licence, but there may be some other commercially allocated licences in use.

There are five analogue regional broadcasters already using digital transmission:

- Chinese TV8 (Auckland) uses the Freeview terrestrial platform nationwide;
- TV Central (Waikato) uses the Freeview terrestrial platform regionally;
- CUE TV (Invercargill) uses the Freeview and SKY satellite platforms;
- Shine TV (Christchurch) uses the SKY satellite platform; and
- Juice TV (Auckland) uses the SKY satellite platform.

In addition Stratos, which carries some regional content from around the country, is broadcast on the Freeview satellite platform nationwide.

Many regional services, particularly the non-commercial ones, rely heavily on volunteer support and are relatively low cost operations by television broadcasting standards.

While nearly all broadcast some regional or local content, there is a wide range of content provided including community, Māori, ethnic, educational, tourism, and religious content. Some also have a large component of re-broadcast international programming.

Government support for regional television as outlined in Appendix 2 recognises the distinctive contribution of regional television to community and minority audiences in promoting local broadcasting, and supporting diversity and accessibility. Regional television is a vehicle for providing relevant content for New Zealand's different

localities and for minority audiences; programmes and content with a local flavour, such as regional news, complement the content provided by national broadcasters.

6.3 Adopting Digital

There are three broad digital transmission options for regional television: digital: terrestrial transmission, satellite transmission (or both), or to cease broadcasting and potentially become a content provider to either a national content aggregator or the Internet. In addition there may be value in considering approaches used in other countries.

6.3.1 International Approaches

In Australia, government initiated a Regional Equalisation Programme (REP) in 2000 to assist with the roll-out of digital television. The REP is available to regional commercial broadcasters. It provides a tax rebate on regional television networks' licence fees to help them pay for their digital television infrastructure. Under the REP, up to A\$250 million would be provided to regional commercial broadcasters as rebates (and in some cases by way of supplementary grants). No assistance is currently provided for community broadcasters.

In the United States, prior to DSO, regional broadcasters were able to apply for funding to assist with the transition to digital television through the US Department of Agriculture Rural Public Television Digital Transition Grants Programs. The grants were available to non-commercial broadcasters serving rural populations. Only a very limited number of awards were provisioned for under these programmes. Eligible broadcasters could receive up to US\$750,000.

In Canada, there is no government assistance for regional television providers. However, DTH licensees are required to carry at least one independently-owned local station from each province. Terrestrial broadcasting distribution undertakings also have "must-carry" obligations applying to local television stations.

Across Europe there appears to be very little in terms of direct support for regional/community television transition. However, other broadcasting policies may assist such broadcasters more generally. For example "must-carry" rules which oblige cable and satellite platform operators to carry free to air and public service broadcasting channels, including regional/community providers. These rules vary country by country. Since 1992, the US has had must-carry obligations on cable operators which include local channels (except for low-power broadcasts). The US also has must-carry rules for satellite services whereby they must carry all of an area's local stations if they carry any at all (although they are not required to carry local stations in every metro area). Sometimes these are placed on spotbeams (narrowly directed satellite signals) in order to allow the transponder frequencies to be re-used in other markets).

Other ways of supporting regional television include quota obligations and (indirectly) media ownership rules.

The UK Communications Act 2003 provides for the possibility of a licensing regime to enable digital local television services to be extended once spectrum becomes available. The Department of Culture Media and Sport, jointly with Ofcom, has been researching and consulting on the wider issues and economic models for local television generally.

In New Zealand, the regional broadcasters face many of the same DSO challenges as their counterparts overseas.

Question 23

Are any international approaches applicable to New Zealand? If so, how might they work?

6.3.2 Terrestrial Transmission

The current digital terrestrial network covers 75 per cent of the New Zealand population in nine main centres (Auckland, Waikato, Tauranga, Hawkes Bay, Manawatu, Kapiti, Wellington, Christchurch and Dunedin). See Appendix 3 Digital Terrestrial Transmission Coverage.

A number of regional broadcasters are presently using this network, (or a satellite facility) to broadcast a digital service. There are several other regional broadcasters who, while within the current terrestrial footprint, remain broadcasting using solely analogue technology. These broadcasters have a technical option to acquire capacity on an existing licence, or if operating on a commercial licence to seek to operate using their own digital licence.

There remain approximately 10 regional stations which operate in areas not included within the present 75 per cent population coverage. Even if coverage was extended as far as 87 per cent, some regionals would still be outside such coverage.

If the present terrestrial footprint was extended it may offer further opportunities for regional broadcasters who are currently outside the current footprint. Any extension would need to be supported by a business case assessing the related costs and benefits. Areas of future extension would be to less heavily populated areas with smaller potential audiences for broadcasters and higher costs per viewer.

The extension of the present terrestrial footprint by the present licensees seems unlikely to be commercially viable in the present economic circumstances. Any Government support would therefore need to be weighed against other government priorities and the benefits to be gained from any extension; and the availability of funding cannot be assumed.

Extension of the footprint also becomes increasingly unlikely as the country moves closer to a DSO date. At present there are around 60 per cent of viewers who are watching a digital service, and as DSO nears the other 40 per cent will gradually adopt digital reception. Viewers in areas outside the terrestrial footprint will only have the option of satellite reception, so as digital take-up increases, this would further weaken the case for extension of the terrestrial service. That is, households outside

the existing coverage will already have purchased satellite television equipment and are unlikely to make a second purchase of terrestrial equipment. The Ministry is nevertheless interested in views on terrestrial expansion in relation to regional services.

The cost of transmission is also a consideration for regional broadcasters. While terrestrial digital transmission costs are considerably less than satellite transmission, they are still higher than the costs of analogue transmission currently used by regional broadcasters. Additional costs would also be incurred through being included on the electronic programme guide on the Freeview platform. Section 6.3.5 below discusses these requirements more fully.

Question 24

Would geographic expansion of the terrestrial coverage provide a solution to you as a broadcaster or other interested party? Please state reasons why, or why not.

What level of expansion do you see as desirable and economically viable?

UHF spectrum allocation

A number of regional broadcasters hold commercially allocated analogue licenses which could conceivably be converted to digital use. However separate spectrum licenses for each regional broadcaster have not been envisaged. Digital technology is very efficient in its use of spectrum, enabling about 8-10 digital television services¹⁹ to be combined (or 'multiplexed') on one UHF digital licence. This is fundamentally different from the analogue system where one licence is required for each television service, whereas digital licences are designed so several services can be carried on one licence. Where workable, regional broadcasters will therefore need to access transmission capacity on available licences in their local area rather than acquire a full licence.

The licences currently operated by TVNZ and MediaWorks are currently used for their own services while the licence held by Kordia provides carriage for non-licence holding broadcasters (including some regionals). There is capacity for some additional services to be carried provided that regional broadcasters only seek to transmit in their current areas. Some further "regionalisation" of the Kordia network may be necessary.

If there is inadequate capacity available, it may be necessary to consider a further licence allocation process. This is considered in Section 5 of this paper.

Question 25

What difficulties or opportunities do you perceive for your regional service in gaining access to transmission capacity on digital licences held by another party?

¹⁹ In the digital system, it is technically more correct to refer to a television service or "programme" rather than a channel, as several services will occupy the one frequency or channel. Under the analogue system, one service uses one frequency or channel.

Question 26

Could you envisage co-operating with other regional broadcasters to share a digital licence?

If so, how would this work?

Question 27

What other options are there for providing licence capacity for regional broadcasting?

How would you envisage these working?

6.3.3 Satellite Transmission

Satellite transmission is provided via the Optus D1 satellite on which New Zealand broadcasters lease transponder space. Seven of the eight dedicated New Zealand transponders are leased to SKY Television, and one to Kordia. Kordia subleases transponder space to TVNZ (half the capacity), MediaWorks (a quarter) and the remaining capacity to other free-to-air broadcasters.

Satellite transmission has the advantage of being technically available to all of New Zealand, as its transmission is nationwide. The satellite signal cannot be regionalised, however.

Satellite transponder capacity is also an issue. Kordia has limited available capacity on its transponder. While additional capacity could be secured, it would be likely to require transponders which operate on a different polarisation²⁰ of transmission. Kordia might consider leasing a second transponder, but it would need to do so on the basis of commercial viability and provide viewer and installation information on use of the different polarisation.

SKY has long term commitments to a significant proportion of the available satellite transponder space and already transmits some “non-SKY” programming for free to air reception. Regional broadcasters wishing to include their services on this platform would need to negotiate terms and conditions with SKY.

Finally, the costs of satellite transmission giving national coverage are two to three times higher than regional terrestrial transmission, but satellite transmission is the only current option for those outside the existing terrestrial coverage. Satellite costs include the annual uplink costs to the transponder and backhaul costs to link the regional broadcast to the uplink location. As with terrestrial transmission additional costs may also be incurred in relation to inclusion on a digital platform and related electronic programme guide.

²⁰ The different polarisation allows added capacity in the same frequency band. Reception is achieved by electronically switching dish receive polarisation (existing dishes include this facility), but if two set top boxes are required on a single dish a more complex installation (or a separate dish) is required.

Question 28

Is satellite transmission a feasible option for regional broadcasting?
Why or why not?

6.3.4 Content Aggregation

An alternative to digital transmission of a full regional service might be to provide locally produced programmes to a content aggregator; either a national provider or through collaboration by a group of regional broadcasters.

While this approach means a regional station would cease broadcasting independently, and the community benefit of a regionally based station wholly targeting viewers in the locality could be reduced, it does maintain the provision of localised content to audiences.

The content aggregator model requires a cooperative approach in allocating slots on the schedule; and sharing content and costs. Content providers would need to assess whether a viable business model exists for content aggregation in this way.

In a current example of content sharing, a number of regional channels upload some of their locally-made programmes to Stratos (owned by Triangle Television in Auckland), which can be received on both Freeview and SKY set-top boxes. This arrangement also allows regional broadcasters to download Stratos programming to supplement their local schedules.

Such a national content aggregator could operate on the terrestrial platform, a satellite platform, or even on both. Transmission capacity would need to be purchased to meet the model chosen.

Question 29

Would content aggregation be a feasible option for you as a regional broadcaster?
Why or why not?

Would you consider either a terrestrial, satellite or hybrid platform as being feasible and economically viable?

6.3.5 Stand-Alone Terrestrial Transmission

There are two potential situations that have been considered for “stand-alone” digital transmission arrangements.

In the analogue world, stand-alone transmission arrangements independent of the national analogue transmission network have been feasible. These arrangements have typically involved the use of the broadcaster’s own transmission equipment on an available transmission site (such as a telecommunications tower). With digital technology there are a number of new issues to be considered.

Operation outside the established terrestrial coverage area

In such areas, the viewer would be reliant upon a satellite based service for access to the main national broadcasters. They would have either purchased a dish and satellite set-top box, or have opted to subscribe to the SKY service. These viewers would need to purchase a terrestrial capable set-top box in order to receive a stand-alone regional service.

While a number of viewers outside current terrestrial coverage will have purchased a television receiver with a built-in digital capability (IDTV), the majority would not have done so, at least until well after the DSO date.

These factors suggest that even if a separate terrestrial capability was provided in such areas it would not effectively be accessible by a significant number of viewers. Those viewers that did have a terrestrial reception capability would need to arrange their installations to receive the separate terrestrial service, with two (or three) remote controls. A single terrestrial service is not expected to give viewers strong incentive to either purchase the necessary technology, or persevere with the more complex reception arrangements.

The operation of a separate terrestrial service outside the current terrestrial footprint is therefore not considered viable.

Operation inside the established terrestrial coverage area

In such areas there can be expected to be a large number of viewers using purchased set-top boxes or IDTV capable receivers. It is therefore technically possible to transmit a separate digital service (i.e. one that is not part of the existing licences, and not necessarily from the same transmission site).

To achieve effective reception the transmission site should have comparable transmission power to the main services, and use a site that results in the same “antenna pointing” direction for most viewers’ aerials. This is not expected to be difficult, although the coverage achieved from a separate site will generally be somewhat less than achieved by the main site, which would have a more prominent location and higher antenna height.

The main issue is to ensure that any separate transmission can be tuned in by the viewer and can be easily accessed in the domestic environment. Tuning of a set-top box or IDTV should be possible, although it may need manual tuning to locate the separate service. In practice, the majority of viewers to the national broadcasters are likely to use the Freeview Electronic Programme Guide (EPG) to assess the available programmes and make their selections. All the terrestrial set-top boxes include such an EPG facility and it is recognised that this is the most convenient method of assessing and switching between programmes.

To be “findable”, a stand-alone service must therefore be listed on the Freeview EPG. This is technically possible, subject to meeting Freeview’s charges for using their services. It is also necessary to make arrangements to update the data files as required by Freeview.

As noted earlier in this paper, a digital licence can accommodate perhaps 8-10 separate services. Providing a single stand-alone service, therefore, is not a cost-effective use of a licence. While this is not a fatal flaw, it needs to be recognised by parties proposing to operate stand-alone transmission services. As some regional broadcasters have indicated an interest in converting their current stand-alone analogue arrangements to digital transmission, the following question seeks views on how these might work.

Question 30

Given the difficulties associated with stand-alone transmission in a digital environment, how could such an option work for regional broadcasters?

6.3.6 Other Possibilities

Platform Access

In some countries governments apply “must-carry” rules to ensure that public broadcasting content is accessible to all viewers. These require nominated platforms (usually ‘pay’ or ‘conditional-access’) to carry specified channels e.g. in the Netherlands, must-carry rules specify that at least two local public broadcasting channels must be carried by cable operators (one channel at provincial level and one at municipal level).

Terrestrial services

In New Zealand, government has not imposed, and would be unlikely to contemplate the introduction of “must-carry” rules. In 2006, however, when government granted the three digital terrestrial licences to TVNZ, MediaWorks and Kordia, it reserved the right to trigger “must-carry” provisions included in the agreements with the licence holders. The “must-carry” conditions would require them – Kordia in the first instance – to provide unused capacity to carry one regional service in each region. The Kordia network has been engineered with this potential in mind.

It needs to be recognised that the current provisions relate only to terrestrial spectrum capacity and do not extend to the overall costs of providing transmitters, site services and programme reticulation. These costs are a commercial matter between the parties.

Satellite Platforms

SKY’s services are generally encrypted, but because it has the capacity to encrypt free-to-air satellite transmissions from other broadcasters a second uplink to the SKY platform would not then be required. Any unencrypted SKY service could be received by free-to-air satellite set-top boxes providing the EPG data was available.

SKY operates on a commercial basis without any particular controls or regulatory frameworks which facilitate intervention – for example SKY cannot be required to transmit certain services unencrypted. A broadcaster would need to negotiate directly with SKY to have access to its platform.

Freeview is a 'not-for-profit' and 'open' platform, meaning the terms of access to its platform are published and applied consistently to any broadcaster who wishes to join. The broadcaster would still need to lease or have access to transmission capacity, however.

The platforms are technically compatible although different EPG systems are used and, as noted, the SKY platform is generally encrypted. Provided there is agreement from the service provider and the transmission is not encrypted, it is possible to include EPG data in the relevant platforms to allow access from viewers on the other platform.

<p>Question 31</p> <p>Should the "must-carry" obligation on the current licences be re-negotiated to either expand the provision, or ensure it continues beyond DSO?</p> <p>What features do you consider important and why?</p>
<p>Question 32</p> <p>Are the current arrangements for access to either the Freeview or SKY satellite platforms satisfactory?</p> <p>If not, what other provisions do you see as appropriate?</p>
<p>Question 33</p> <p>Are there any other measures in relation to transmission or to broadcasting platforms (including EPG arrangements) that should be considered?</p>

6.3.7 Broadband Opportunities

Live Streaming and On-demand Programmes via Broadband

A current broadband option is to view digital television on the internet using the cable that already connects the telephone to the exchange network. Programming includes live streaming such as the Parliament TV programme, and on-demand programmes. This is currently a limited option for viewers because of the variable quality (dependent on the connection speed and traffic on the overall connection to the programme source), limited range of material offered, and cost of broadband. It is anticipated; however, that options for internet transmission of 'broadcast content' will be considerably enhanced as access to high speed broadband is rolled out across the country.

Internet Protocol Television

One possibility not yet available in New Zealand is Internet protocol television (IPTV) which is delivered to a television set via a broadband connection. The government's broadband investment plan will assist the technical possibility of introducing IPTV by bringing an ultra-fast network via fibre-to-the-home. This is planned to reach 75 per cent of homes and will be rolled out over ten years. Wireless technology is being

explored as an option to extend ultra-fast broadband to communities outside this 75 percent.

IPTV will be more feasible as high speed broadband coverage is improved.

Question 34

Is broadband a feasible delivery option for regional services?

Why or why not?

Question 35

How would you manage the potential time gap between DSO and full roll-out of ultra-fast broadband and/or regional broadband infrastructure?

6.3.8 Other Issues

Timing of Transition

It is clear that the move to an all-digital environment will mean a radical shift for regional broadcasters. Regional broadcasters cannot expect that their current business models will translate automatically to a digital world.

Not all transmission options are open to all regional broadcasters: Terrestrial transmission is available to some; others will need to assess the viability of satellite use. The option of collaborating with a national content aggregator may also be available. Even if regional stations were able to continue analogue broadcasts after DSO, their viewing audiences would dissipate as viewers move to digital services.

Regional broadcasters will need to examine their business models in the light of digital transmission costs and likely sources of income generation. Regional broadcasters will each need to determine the optimum time to move to digital transmission. This will require an assessment of the value of the remaining analogue audience as viewers transition to digital, versus the costs of analogue/digital simulcast until DSO. Leaving the move to digital too late risks losing audience; moving too early means bearing the costs of simulcast for longer than necessary.

Question 36

How will you make an assessment of the optimal time to commence digital simulcast of you analogue service?

Licence Renewal

All analogue licences for regional television expire in March 2010. The Ministry for Culture and Heritage will make offers for renewal on a transitional basis to non-commercial licence holders, who meet specified criteria, until DSO. Commercial licences have varied terms for termination or renewal contracts at DSO. The Ministry of Economic Development has made offers to commercial licence holders which require settlement in September 2009.

The criteria for the renewal of non-commercial licenses will be guided by the government’s Regional and Community Broadcasting Policy Framework (see Appendix 2). This reflects government’s expectation that regional broadcasters will promote local content, support diversity and accessibility, and future-proof their services.

Government policies do not contemplate any extension of regional broadcasting using analogue technology after the DSO date has passed. Even if this was considered, the viewing audience necessary would likely not be significant, and would dissipate further over time. The Ministry therefore does not support such an outcome.

Government Assistance

Government financial support will be limited particularly in the current economic environment. The establishment and ongoing costs of digital transmission may be higher than current analogue costs and regional broadcasters will need to ensure the business model they choose is sustainable.

Any new government support would be taken in response to an over-arching policy rationale rather than case-by-case, and in all probability would be time limited. Any government support would also need to be commensurate with the value regional broadcasters provide to New Zealand audiences. Regional television reaches a niche (and often comparatively small) audience and its impact relates to its regional identity and community input.

Regional broadcasters provide regional and local content which is a distinctive contribution to national identity and complements the programming of national broadcasters.

Regional broadcasters need to meet the challenge of how best to deliver this content in a digital environment. In a digital world, more so than in the analogue environment, there are opportunities and an increasing need for regional broadcasters and other content providers to co-operate to achieve the most effective delivery of regional content. Your views are sought on how the broadcasters can achieve workable solutions to continue to reach audiences.

<p>Question 37</p> <p>How does the regional television service contribute to the communities in your area?</p> <p>How might this contribution or role of the broadcaster change post-DSO?</p>
<p>Question 38</p> <p>How do regional broadcasters currently generate income or other support for their operations?</p> <p>In your view, which business models are likely to be successful post-DSO?</p>

Question 39

If limited government support were available to assist regional broadcasters with the transition to digital transmission, what would be the priority?

Why?

7. Summary of Questions

This section summarises the questions from sections 5 and 6.

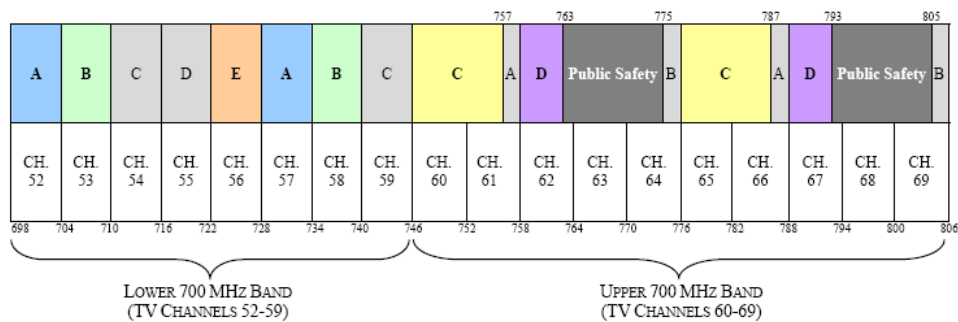
1. Do you agree with licensing Amateur radio use in the 50 – 51 MHz band on a sole Primary basis?
2. Do you agree with licensing Amateur radio use in the 51 – 54 MHz band on a shared basis with Fixed and Mobile services?
3. Do you consider any new spectrum allocation policies and planning should be developed to utilise the bands 54 – 68 and 174 – 230 MHz bands prior to the expiry of the current Management Rights in 2015? If so what services and at what time?
4. Do you agree with approximately 100MHz of the band being considered for allocation to new uses on a nationwide basis? If not, what would you prefer and why?
5. Do you agree with a core reservation for digital television of approximately 1/3rd of the UHF band on a nationwide basis? If not, what would you prefer and why?
6. Do you agree with approximately 1/3rd of band being allocated on a geographic basis to meet television licence commitments in urban areas, and to allow new uses in other areas? If not, what would you prefer and why?
7. What specific types of service do you think are desirable as new uses in areas outside of areas where there are digital television licence commitments? Do you have any views on how access to the licences necessary for such usage should be managed?
8. Do you agree with the n + 2 basis for licensing of digital television? If not, what would you prefer and why?
9. Do you agree with placement at the upper end of the frequency range, from approximately 700 MHz upwards? If not, what would you prefer and why?
10. Do you agree with the placement of the spectrum released in geographic areas in two portions, i.e. from approximately 500 to 550 MHz and from approximately 650 to 700 MHz? If not, what would you prefer and why?
11. What opportunities do you envisage for the promotion of te reo Māori me ngā tikanga Māori which need consideration in a revised frequency plan?
12. Do you agree with the proposal not to provide for Amateur television services in the UHF band? Please give reasons for your view.
13. What additional services might require further digital licences to be allocated in the transition to full digital broadcasting?

14. Is it desirable for the Crown to retain influence in the end use of any further digital licence set, and should this in turn influence the method of allocation. What method of allocation is preferred? Why?
15. Are the current new licences for radio microphone use in the band 518 – 582, with potential future extension up to 698 MHz, adequate for ongoing use after DSO? If not, what other provision should be considered?
16. Do you agree that new radio microphone use should be restricted in the nationwide released spectrum with effect from 2010, and existing use discontinued after 5 years, as transitional measures? If not, what other provision should be considered?
17. Do you agree with the proposal to establish a preferred band limit at 694 MHz, subject to finalisation as outlined below? If not, what alternative lower limit would you prefer, and why?
18. Do you agree with the proposal to base New Zealand technical planning on the spectrum allocations used in the United States? If not, what alternative allocations would you prefer, and why?
19. Do you agree with the concept of deferring detailed technical subdivision of the released nationwide spectrum, for completion in 2011 (when international trends are anticipated as being resolved), and allocation later in 2011 or 2012? If not what dates would you prefer for completion of planning and allocation?
20. Do you agree with the use of area licences for licensing use of the mixed-use spectrum outside areas of television use? Do you have any views on the technical subdivision of spectrum or the preferred allocation method?
21. Do you envisage any requirements by Māori interests for use of either the nationwide or geographic mixed-use tranches of spectrum? Please identify potential uses and any specific technical issues associated with planning for such uses.
22. Are there any other issues not fully covered in Section 5 that you consider should be taken into account? Please indicate these as specifically as possible with your response.
23. Are any international approaches applicable to New Zealand? If so, how might they work?
24. Would geographic expansion of terrestrial coverage provide a solution to you as a broadcaster or other interested party? Please state reasons why, or why not. What level of expansion do you see as desirable and economically viable?
25. What difficulties or opportunities do you perceive for your regional service in gaining access to transmission capacity on digital licences held by another party? Please state reasons for your answer.

26. Could you envisage co-operating with other regional broadcasters to share a digital licence? If so, how would this work?
27. What other options are there for providing licence capacity for regional broadcasting? How would you envisage these working?
28. Is satellite transmission a feasible option for regional broadcasting? Why or why not?
29. Would content aggregation be a feasible option for you as a regional broadcaster? Why or why not? Would you consider either a terrestrial, satellite or hybrid platform as being feasible and economically viable?
30. Given the difficulties associated with stand-alone transmission in a digital environment, how could such an option work for regional broadcasters?
31. Should the “must-carry” obligation on the current licences be re-negotiated to either expand the provision, or ensure it continues beyond DSO? What features do you consider important and why?
32. Are the current arrangements for access to either the Freeview or SKY satellite platforms satisfactory? If not, what other provisions do you see as appropriate?
33. Are there any other measures in relation to transmission or to broadcasting platforms (including EPG arrangements) that should be considered?
34. Is broadband a feasible delivery option for regional services? Why or why not?
35. How would you manage the potential time gap between DSO and full roll-out of ultra-fast broadband and/or regional broadband infrastructure?
36. How will you make an assessment of the optimal time to commence digital simulcast of your analogue service?
37. How does the regional television service contribute to the communities in your area? How might this contribution or role of the broadcaster change post-DSO?
38. How do regional broadcasters currently generate income or other support for their operations? In your view, which business models are likely to be successful post-DSO?
39. If limited government support were available to assist regional broadcasters with the transition to digital transmission, what would be the priority? Why?

Appendix 1: United States Band Plan

Revised 700 MHz Band Plan for Commercial Services



Block	Frequencies (MHz)	Bandwidth	Pairing	Area Type	Licenses
A	698-704, 728-734	12 MHz	2 x 6 MHz	EA	176
B	704-710, 734-740	12 MHz	2 x 6 MHz	CMA	734
C	710-716, 740-746	12 MHz	2 x 6 MHz	CMA	734
D	716-722	6 MHz	unpaired	EAG	6
E	722-728	6 MHz	unpaired	EA	176
C	746-757, 776-787	22 MHz	2 x 11 MHz	REAG	12
A	757-758, 787-788	2 MHz	2 x 1 MHz	MEA	52
D	758-763, 788-793	10 MHz	2 x 5 MHz	Nationwide	1 *
B	775-776, 805-806	2 MHz	2 x 1 MHz	MEA	52

* Subject to conditions respecting a public/private partnership.

The blocks shaded above in gray (Lower 700 MHz Band C and D Blocks and Upper 700 MHz Band A and B Blocks) were auctioned prior to Auction 73.

Last reviewed/updated 9/5/2007.

Appendix 2: Regional Television Policies

A Regional and Community Broadcasting Policy Framework

The Regional and Community Broadcasting Policy Framework (2006) outlines broad policy goals and objectives for community and regional radio and television broadcasting. The goals and objectives, as outlined below, inform policy development. They are not intended to be criteria for funding or other government support.

Goal: *To enable a range of broadcasting services, content and formats for regional, local and community and minority audiences including ethnic minorities, communities of interest and students.*

The goal covers services and programmes, geographic spread and communities of interest, and it complements the nationwide and international focus of network broadcasting.

Objectives: *These objectives relate to the broadcasting environment for regional, local, community and minority audiences:*

- Promote local broadcasting services (local broadcasting);
- Promote innovation and a diverse range of content and formats for different audience identities and interests (diversity);
- Facilitate wide technical, cultural and social access to broadcasting (accessibility); and
- Provide for long term developments affecting broadcasting (future-proofing).

Further information on these objectives is provided on the Ministry for Culture and Heritage's website at: <http://www.mch.govt.nz/publications/community-broadcasting/framework.html>

B Non-Commercial Licence Allocation for Regional Television

Non-commercial licences are provided without charge to a number of regional broadcasters. These are granted by MED, on the advice of MCH which monitors compliance with licence conditions.

General criteria for a non-commercial licence are that broadcasters:

- are locally-based, non-network services which demonstrate a strong geographic, social or cultural affinity with the target audience;
- focus on the needs and interests of the audiences they serve;

- broadcasts fulfil a priority community need (as defined in the above framework);
- do not duplicate existing services;
- provide access for local and regional programme makers;
- operate on a charitable or 'not-for-profit' basis;
- have the technical and financial capacity to fulfil the broadcasting outcomes sought;
- have a fundraising mechanism allowing them to function with no more than six minutes of commercials per clock hour and no more than 50 per cent of revenue derived from advertising. (Sponsorship is permitted);
- include a level of locally generated programming with a focus on previously unmet needs and interests of viewers and include some or all of the following content from within the coverage area:
 - local news, information, stories and history;
 - discussion of community issues, including political processes;
 - programming aimed to inform, entertain and involve a specified or under-served local community or communities of interest.

All non-commercial licences expire in March 2010. MCH will make offers for renewal on a transitional basis to non-commercial licence holders, who meet specified criteria, until DSO.

C NZ On Air's Regional Television Programme Fund

NZ On Air funds regional broadcasters for regional programmes intended for screening on a regional free-to-air channel, reflecting the special character of the region and its people and telling stories that are rarely seen on the schedules of national broadcasters. The programmes must meet specific criteria on a contestable basis.

Current programme priorities for the Fund are:

- a. regional news;
- b. coverage of important regional events and cultural activities, and local sporting events;
- c. programmes particular to a region for community special interest audiences such as significant ethnic, linguistic and other minorities.

Criteria for the Fund are:

- a. How well the proposed programmes serve the interests of the regional audiences?
- b. The applicant's production track record.
- c. Whether similar programmes are already being broadcast.
- d. Population size within the transmission area.
- e. Likely audience size for the programme.
- f. Proposed time-slot (peak or off-peak).
- g. Level of funding sought? Does the proposal offer value for money? Is the broadcaster contributing?

In 2009/2010, NZ On Air allocated \$1.5million to the Fund. The level of future funding is dependent on NZ On Air having sufficient funds available, as with all its funding categories.

Appendix 3: Digital Terrestrial Television Coverage

The digital terrestrial network covers 75 per cent of the New Zealand population in nine main areas: Auckland, Waikato, Tauranga, Hawkes Bay, Manawatu, Kapiti, Wellington, Christchurch and Dunedin.

Nine of the twenty regional television stations are within the current coverage footprint²¹: Triangle TV, Auckland; Chinese TV, Auckland; TV Hawkes Bay, tvCentral (Waikato and Bay of Plenty); Tararua TV, Pahiatua; Voice TV, Christchurch; Shine TV, Christchurch; CTV, Christchurch; Channel 9, Dunedin.

The Ministry of Economic Development has undertaken frequency planning for licences at a number of potential new transmission sites which could extend the current footprint to around 87 per cent of the population. The Ministry can provide licences during the transition period until DSO to the three existing licence holders, namely TVNZ, MediaWorks, and Kordia, but it is a matter for these parties to determine whether, when, and to what extent they wish to extend their current services. There are no indications that any geographic extensions are currently contemplated.

However, on the basis of population density and potential transmitter sites, extending the network beyond 75 per cent coverage up to 80 per cent coverage might add say three of the following four areas (all listed alphabetically): Nelson, Rotorua, Southland or Taranaki. Additional sites that could increase terrestrial coverage to 87 per cent include the above areas, Gisborne; some areas within Northland, Taupo, Wanganui; plus additional infill potential in Christchurch, Dunedin and Wellington.

A small number of regional stations would still, however, be outside the terrestrial coverage footprint even if it was extended to cover 87 per cent of the population.

²¹ A regional station within a terrestrial coverage area would still have to either lease digital capacity or establish "Freeview compatible" but separate transmission facilities.