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**Department of Broadband,
Communications and the Digital Economy**

Digital Dividend Green Paper

Consultation

Submission by: Australian Mobile Telecommunications Association

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1. Introduction and background

- 1.1 AMTA is the peak industry body representing Australia's mobile telecommunications industry. AMTA's mission is to promote an environmentally, socially and economically responsible and successful mobile telecommunications industry in Australia. AMTA members include mobile Carriage Service Providers (CSPs), handset manufacturers, retail outlets, network equipment suppliers and other suppliers to the industry. For more details about AMTA, see <http://www.amta.org.au>.
- 1.2 The Australian Mobile Telecommunications Association (AMTA) welcomes this opportunity to comment on the Department of Broadband, Communications and the Digital Economy's (DBCDE) *Digital Dividend Green Paper* (the Green Paper).
- 1.3 This submission is structured around the questions raised in the Green Paper, with a focus on issues of particular interest to AMTA members. As such, it does not provide detailed comments on every issue raised, but does comment on the wider spectrum issues of concern to the mobile telecommunications industry, as this context is important when considering the specific issues posed in the Green Paper.
- 1.4 AMTA would be happy to provide further information on these or any other relevant issues, or to meet with the Department or other agencies to discuss issues raised.

2. Overview of AMTA's position

- 2.1 AMTA strongly supports the Government's target digital dividend of 126 MHz of contiguous Ultra High Frequency (UHF) spectrum in the range 694-820 MHz.
- 2.2 AMTA contends that the maximum value of the digital dividend will be achieved when the full 126 MHz is used to deliver mobile telephony and broadband services in Australia.
- 2.3 The mobile industry in Australia is ready to further invest in advanced mobile broadband technologies. AMTA asks that the Government announces a clear timetable for clearance, auction and restacking to achieve the target digital dividend of 126 MHz. This is essential to ensure that digital dividend spectrum is commercially available to mobile operators as soon as analog switch-off is complete (by 1 January 2014).
- 2.4 This submission outlines the justification for AMTA's positions as stated above. Key points include:
- (a) Mobile telephony and broadband services can deliver significant economic, environmental and social benefits to Australia:
- A soon-to-be-released report estimates that the mobile telecommunications industry contributed \$17.4 billion to the Australian economy in 2008-09¹, and that over the next ten years Australia's economy will be boosted by over \$80 billion and generate an additional 70,000 jobs².
 - A study by Concept Economics³ concluded that real GDP is 1.4 percent greater with mobile telecommunications and broadband services than it would be if no such services existed.
 - Various studies illustrate the productivity gains that mobile telephony and broadband can offer. For example, Concept Economics describes an

¹ Soon-to-be-released report: Access Economics, *Economic Contribution of Mobile Telecommunications in Australia*, March 2010

² IBID

³ Concept Economics, *Next G Productivity Impacts Study*, February 2009

Australian business enjoying productivity gains of 25 per cent with 3G services⁴.

- The unprecedented connectivity afforded by mobile telecommunication and broadband services also provides medical, educational, social and environmental benefits.
- (b) New devices, new applications, much improved user experiences and an increasing number of M2M⁵ communication applications have already seen the consumer demand for mobile broadband services increase dramatically over recent years. The evidence is that demand is set to explode as a new category of mobile devices hits the market. For example, Cisco is predicting a 39-fold increase in data traffic between 2009 and 2014⁶.

Australian mobile operators' current spectrum holdings will provide adequate capacity to meet demand in the short term. However, to ensure future consumer demand for new mobile broadband services can be met in an efficient and affordable manner, the retention of existing spectrum holdings and access to spectrum in the UHF band, together with access to new spectrum in the 2.5 GHz band, is critical.

Businesses need to be able to plan to meet this demand immediately. Overseas experience suggests that the opportunity costs of delayed spectrum release can be significant.

- (c) An efficient, fair and well-balanced allocation of the UHF band between the mobile telecommunications and broadcasting industries will ensure Australia enjoys the full economic and social benefits from the digital dividend⁷.
- Nationally, the optimal net economic benefit to Australia will be realised if at least 120 MHz of usable UHF spectrum is allocated to mobile broadband services. In rural areas, the maximum benefit would be realised with an allocation of 140 MHz of usable spectrum⁸.

⁴ IBID

⁵ M2M can refer to machine-to-machine, man-to-machine and machine-to-man

⁶ <http://www.fiercewireless.com/press-releases/cisco-visual-networking-index-forecast-predicts-continued-mobile-data-traffic-surge>

⁷ Spectrum Value Partners 2009 *Getting the most of the Digital Dividend in Australia*

⁸ IBID

- Australia's economy will be boosted by up to \$10 billion if at least 120 MHz of usable spectrum is unlocked from the digital dividend⁹.

2.5 AMTA concurs with the following broad principles as outlined in chapter two of the Green Paper:

- (a) Larger contiguous blocks of spectrum are more economically optimal than smaller or interleaved blocks;
- (b) As a technology taker, Australia needs to align spectrum allocations with major developed countries. Harmonisation with major economies is important to ensure that Australia can benefit from economies of scale when accessing technologies and equipment. It is also necessary to facilitate global roaming; and
- (c) Allowing the market to determine an outcome, after the Government has taken public interest issues into account, is likely to result in spectrum being made available for optimal use.

2.6 In terms of the tradeoffs between efficiency and disruption, it is AMTA's view that the cost and minimal inconvenience for television viewers and broadcasters is significantly outweighed by the productivity, economic and social benefits mobile broadband will deliver.

2.7 The principle that 'the digital dividend should be thought of as an economic gain¹⁰, must be considered from a holistic and long-term perspective. That is, the benefit for Australia from the release and re-allocation of the digital dividend must not be considered just in terms of the revenue derived from its sale. Other Government considerations should include: stimulating innovation and investment; promoting competition; improving consumer experience; and, more broadly, considering the social and environmental benefits from alternate uses.

2.8 AMTA notes that these 'wider' considerations are described in the *Radiocommunications Act 1992* (the Act) and the associated *ACMA Spectrum Management Principles*:

- (a) the Act requires the ACMA to 'maximise the **overall public benefit** derived from using radiofrequency spectrum by ensuring the efficient allocation and use of spectrum'; and

⁹ IBID

¹⁰ P12, the Green Paper

- (b) the associated *ACMA Spectrum Management Principles* aim to increase the transparency, predictability and consistency of the ACMA's decision-making process by describing in more detail the matters that the ACMA will take into account when considering how the Act's objects will be met. These include allocating spectrum to the highest value use or uses (Principle One) and enabling and encouraging spectrum to move to its highest value use or uses (Principle Two).

3. Mobile telecommunications and broadband

Section summary

- 3.1 AMTA agrees with the Government's stated primary objective of maximising the digital dividend in order to increase the benefits that use of the spectrum will bring to the Australian economy over time¹¹ and strongly supports the Government's target digital dividend of 126 MHz of contiguous UHF spectrum in the range 694-820 MHz.
- 3.2 AMTA contends that the optimal use of the entire target digital dividend spectrum (126 MHz) is for mobile telephony and broadband services.
- 3.3 There is clear demand for mobile broadband services and copious evidence of the economic, social and environmental benefits that the services present for Australia. There is equally convincing evidence that timely access to 126 MHz in the 700 MHz band, plus access to spectrum in the 2.5 GHz band, and retention of existing spectrum are all required if mobile operators are to come close to meeting future mobile broadband demand. In short: access to this spectrum is essential if Australia is to enjoy the substantial economic, social and environmental benefits that full participation in the digital economy can deliver.
- 3.4 This section of AMTA's submission looks at the consumer demand for mobile telecommunication and broadband services and considers its spectrum implications. It considers questions 3.1-3.4 in the Green Paper and explores:
- (a) the economic, social and environmental benefits provided by mobile telephony and broadband services;
 - (b) forecast demand for mobile broadband services; and
 - (c) the spectrum requirements to meet that demand.

Questions considered in this section:

- 3.1 Should digital dividend spectrum be used to provide mobile telephony and broadband services?
- 3.2 How much spectrum would be required to provide these services?
- 3.3 When would this spectrum be required?

¹¹ P13, Green Paper

3.4 What would be the benefits of this use? Arguments should focus on the value this use of spectrum presents for the Australian community and economy.

Mobile broadband – critical for economic, environmental and social prosperity

3.5 Mobile telephony and broadband services are an essential component of the modern digital economy, delivering flexibility and convenience to users with ‘anywhere, anytime’ affordable, rich communication capabilities. Ensuring that these services can be delivered is critical to Australia’s digital future.

3.6 This point was clearly articulated in *Digital Britain, The Interim Report, January 2009*, which stated that:

Broadband digital communications are today what electricity was a century ago to our Edwardian forebears. And they are at about the same stage of development. The far sighted Edwardians knew that electricity in the home would soon go beyond domestic lighting to be a major power source for new devices, applications and services.

Even so, the extent to which electricity would be ubiquitous today and the revolutionary impact it has had on all aspects of our lives was unimagined.

But even within a few years, those countries that had adopted early and built national core and access networks led in innovation. They pioneered the new growth sectors that became the motors of economic prosperity.

In order for the innovation and service development to happen we must have in place the right elements, invisible to the user.

*The essential element for any wireless service...is the ability of the network operator to **access and use radio spectrum.** (emphasis added)*

The prize is significant. The industry is approaching an unprecedented technology transition. ... We are about to begin a transition to a 4th generation of mobile radio technology, the so-called Long-Term Evolution (LTE) technology, beginning in earnest as early as 2011.

This change will be hugely important for digital Britain because:

- *Mobility is now vital to consumers and business alike. This much prized flexibility will apply equally to mobile broadband.*

- *Mobile broadband has an important role to play in stretching the universal coverage of broadband to the extremities of the UK.*

It is vital for the UK to be at the leading edge of this change so that people in this country enjoy cutting edge services on the move. ... The long term goal is any content...over any network...on any handset...anywhere.¹²

- 3.7 Clearly, the situation in Australia is no different, as the Minister for Broadband, Communications and the Digital Economy, the Hon Senator Conroy has noted on a number of occasions¹³. Indeed, geographic and demographic conditions suggest that mobile broadband is even more important for Australia.
- 3.8 Radiofrequency spectrum is the most fundamental infrastructure for the provision of mobile telecommunication services. Without it, mobile service is not possible. Further, the type and amount of radiofrequency spectrum made available for mobile telecommunications will markedly influence performance and service levels.
- 3.9 As the *Digital Britain* Report notes, there is a clear wireless technology and services roadmap to deliver the next 4th Generation (4G) Long Term Evolution (LTE) 100+Mbit/s services. This work is very well advanced with global standardisation having been finalised, substantial Research and Development investment and deployment programs fully committed to LTE roll-outs¹⁴. The outcomes of these programs are already being applied by the global equipment manufacturing industry and the first LTE services have already been launched¹⁵. Carriers' service introduction plans are already well advanced in Australia.

Importance of the digital dividend spectrum

- 3.10 The International Telecommunications Union (ITU) considered the appropriate spectrum bands to provide good coverage and capacity for LTE and other broadband networks. It concluded that the spectrum to be released from the digital dividend was ideal for meeting future broadband needs, offering an excellent combination of transmission capacity and distance coverage. These good signal propagation characteristics mean significantly fewer base stations and less infrastructure is required to provide wider mobile coverage.

¹² P25-27, *Digital Britain, The Interim Report*, Department for Culture, Media and Sport and Department for Business, Enterprise and Regulatory Reform. January 2009.

¹³ For example, Senator Conroy's speech to Radcoms09

¹⁴ At least 51 operators have committed to LTE. *Technology Update*, GSA, 12 February 2010

¹⁵ TeliaSonera launched LTE services in Oslo, Norway and Stockholm, Sweden on December 2009

- 3.11 The restacking to release the digital dividend is progressing worldwide¹⁶. It is critically important that the process to release and auction the digital dividend in Australia is progressed in a timely manner to provide sufficient spectrum to meet forecast consumer demand¹⁷ and to enable Australia to maintain its position as a leading nation in the provision of mobile broadband services and a key player in the global digital economy.
- 3.12 In conclusion, the spectrum to be freed as part of the digital dividend represents a once-in-a-generation opportunity for a significant reallocation of spectrum to allow the introduction of new and enhanced mobile broadband services post-analog TV switch-off.

International alignment

- 3.13 Another critical factor for Australia concerns the alignment of Australia's digital dividend spectrum with global trends in spectrum allocation. Australia has a relatively small but advanced mobile telecommunications market. As a technology taker, the local industry relies heavily on the importation of technology and equipment.
- 3.14 As such, AMTA agrees with the Government's assessment, as presented in the Green Paper, that aligning dividend spectrum with other countries is an important consideration in enhancing the potential for communications and equipment manufacturers to realise economies of scale and set lower prices for network and handset equipment and to facilitate global roaming through the use of harmonised frequencies for delivering communication services.
- 3.15 The band plan for Region 3 (comprising Asia and Australasia) is being discussed within the Asian Wireless Forum and ITU and is not yet finalised. All of the options under consideration require the full 126 MHz allocation and there does not appear to be a workable option that could use a reduced digital dividend allocation. As such, AMTA contends that a workable band plan for Australia will not be achieved if the amount of digital dividend spectrum allocated to mobile telephony and broadband is reduced from the target 126 MHz.
- 3.16 There are clear international alignment and technological reasons to justify the use of digital dividend spectrum to provide advanced mobile broadband services in Australia.

¹⁶ Global Supplier Association, *Digital Dividend Update*, February 2010

¹⁷ Discussed in detail later in this submission

- 3.17 When the mobile broadband sector's contribution to the Australian community and its economy, and the rocketing demand forecasts are also taken into account, it is indisputable that use of the digital dividend spectrum for mobile telecommunication and broadband services meets the Government's stated goal of allocating spectrum to its highest-value use.
- 3.18 The sector's economic, environmental and social contribution to the Australian community is explored in the next section, before returning to the question of how much spectrum is required for mobile telephony and broadband use, and when.

Economic contribution

- 3.19 The mobile telecommunications sector is a significant contributor to Australia's economic prosperity:
- (a) Output (revenue) in the sector was valued at \$17.8 billion for 2008-09, up 8.5 per cent on the 2007-08 total of \$16.4 billion. This represents an increase in output of 24.2% over five years¹⁸; and
 - (b) The direct contribution of mobile telecommunications to the Australian economy is estimated to be \$6.7 billion or 0.61 percent of total GDP for the year¹⁹.
- 3.20 The advancement of mobile telecommunication services and devices has led to significant indirect economic impacts, including productivity gains for businesses. Commenting on a recent survey on the 'intent' behind mobile internet use, the large independent public relations company Ruder Finn stated that mobile internet is an essential tool for competitive business:

"Mobile technology means that people no longer have to wait until they are in front of their computers to do their work. And people are taking advantage of that; using mobile devices to do their core work while using desktops to navigate longer format and higher bandwidth content and tools. This is resulting in huge changes – and opportunities – across industries, making mobile an essential channel in keeping business competitive."²⁰

¹⁸ Soon-to-be-released report: Access Economics, *Economic Contribution of Mobile Telecommunications in Australia*, March 2010

¹⁹ IBID

²⁰ Michael Schubert, Chief Innovation Officer, Ruder Finn. See: <http://www.itnewsonline.com/showprnstory.php?storyid=87594>

- 3.21 Ruder Finn's comments also illustrate the complementary nature of fixed and mobile broadband. Further comments on this are included in Section 4 of this submission.
- 3.22 The following case study illustrates the competitive edge that mobile broadband can provide, with the Australian business, the Plumbing Doctor, enjoying a massive 25 per cent productivity gain from using applications on 3G phones:

Newcastle based plumbing outfit, the Plumbing Doctor, is a small business with 11 plumbers on its books. Six months after investing in wireless technology, the company reports that its investment has helped it emerge from its toughest trading period in its five-and-a-half year history.

The Smart phones enable electronic ordering, invoicing and job dispatch, saving at least \$200 a day in paperwork and productivity for each of the company's 11 plumbers. By slashing the paperwork load, the company saves a further \$40,000 a year in labour costs²¹.

- 3.23 Such indirect or flow-on benefits of mobile telecommunications to the broader Australian economy are even more significant than the industry's direct contribution, with Access Economics reporting indirect benefits of \$10.7 billion in 2008-09²². This is up from \$7.7 billion in 2007²³;
- 3.24 Combining the direct and indirect contributions, the mobile telecommunications industry contributed \$17.4 billion the Australian economy in 2008-09²⁴, a 23 percent increase from the \$14.2 billion 2007 contribution. That is, without the mobiles telecommunications industry, Australia's total GDP in 2008-09 would have been \$17.4 billion lower.
- 3.25 Similarly, Concept Economics considered economic differences between Australia with mobile broadband services and an Australia without such services and concluded that, over the long term, real annual household consumption would be 1.4 percent greater

²¹ Concept Economics, *Next G Productivity Impacts Study*, February 2009

²² Soon-to-be-released report: Access Economics, *Economic Contribution of Mobile Telecommunications in Australia*, March 2010

²³ *Australian Mobile Telecommunications Industry: Economic significance and contribution*, Report by Access Economics for AMTA, June 2008

²⁴ Soon-to-be-released report: Access Economics, *Economic Contribution of Mobile Telecommunications in Australia*, March 2010

than it would be in a scenario without mobile broadband services; and real GDP increases by 0.9% more than it otherwise would without mobile broadband²⁵.

- 3.26 It is forecast that the sector's already substantial contribution to Australia's economic prosperity will substantially increase, with the sector continuing to drive productivity gains across all sectors of the global and Australian economy. For example, Access Economics estimates that the effective deployment and adoption of intelligent technologies will add an estimated 1.5 percent to Australia's GDP within a few years. Over ten years, Access Economics estimates a boost of \$80 billion and an additional 70,000 jobs²⁶.
- 3.27 Another report, by international economic consultants Spectrum Value Partners, considered the optimal split of the entire UHF band between mobile telecommunications and broadcasting use. The optimal split occurs when the net economic value generated from combined mobile and broadcasting services is at a maximum. It found that Australia's economy would be boosted by up to \$10 billion if at least 120 MHz of useable spectrum was unlocked from the digital dividend to support mobile broadband use²⁷.
- 3.28 In rural areas, where population density is lower, the propagation characteristics of the 700 MHz spectrum are more critical for mobile coverage. As a result, the maximum net economic benefit under the same scenario will be realised with an allocation to mobile of 140 MHz of usable spectrum²⁸.
- 3.29 Notably, the study was very conservative, with its authors asserting that:
"...when in doubt, the study deliberately favours broadcasters when defining assumptions and methodologies. As a result, we believe that the study results are conservative from the perspective of mobile operators."²⁹
- 3.30 This report and spectrum requirements in general are further discussed in Section 6 of this submission.

²⁵ Concept Economics, *NextG Productivity Impacts Study*, 13 February 2009

²⁶ Access Economics, *The economic benefits of intelligent technologies*, May 2009

²⁷ Spectrum Value Partners 2009 *Getting the most of the Digital Dividend in Australia*

²⁸ IBID

²⁹ P4, Spectrum Value Partners 2009 *Getting the most of the Digital Dividend in Australia*

Social contribution

- 3.31 In addition to delivering both directly and indirectly to Australia's economy, mobile telecommunication and broadband services are providing unprecedented connectivity with significant social benefits by:
- (a) helping to connect remote communities;
 - (b) enabling remote medical diagnosis;
 - (c) delivering educational benefits;
 - (d) facilitating logistics and personnel planning;
 - (e) assisting with criminal investigations;
 - (f) facilitating social networking and connecting families and friends; and
 - (g) enabling user-generated content. This is being used commercially, socially and also by Government.
- 3.32 To expand on just one of these examples, the following case study illustrates the real difference that mobile broadband can make in the health sector.
- The Royal District Nursing Service in Victoria has discovered a vast improvement in providing patient care at their homes and business.*
- With over one thousand nurses on the road, the nursing service is experiencing the benefit of being able to access and update client records remotely.*
- The use of mobile technology is allowing nurses to manage and spend more time with individual clients³⁰.*
- 3.33 The ACMA estimates that the increase in consumer surplus (the welfare gained by consumers) attributable to changes in the telecommunications sector in 2008-09 is \$957 million. The mobile phone sector contributed most to this figure, with a \$583 million contribution, with internet close behind at \$562 million and fixed-line phones at \$189 million³¹.

³⁰ Concept Economics, *Next G Productivity Impacts Study*, February 2009

³¹ P177, *ACMA Communications Report 2008-09*

- 3.34 A recent survey (February 2010) found that Americans are spending an average of 2.7 hours using mobile internet, using it to connect socially, manage personal finances and even as an advocacy tool, with “the mobile phone...becoming the most powerful online device”³².
- 3.35 The study also highlighted the growth in phone applications, showing that 61 percent of respondents download applications at least monthly, with 36 percent of users downloading applications from social networking sites at least once a month³³.

Environmental contribution

- 3.36 The recent study, Towards a High-Bandwidth, Low-Carbon Future: Telecommunications-based Opportunities to Reduce Greenhouse Gas Emissions³⁴, found that telecommunications networks can help reduce Australia's greenhouse gas emissions by almost five per cent by 2015 and deliver up to \$6.6 billion a year in financial savings for Australian businesses and households.
- 3.37 The study, commissioned by Telstra, prepared by climate change experts Climate Risk and peer-reviewed by independent experts Greg Bourne (CEO, World Wildlife Fund Australia) and leading Australian energy and environmental authority, Dr Hugh Saddler, identifies seven major opportunities for Australian consumers and businesses to reduce or avoid the release of carbon emissions into the atmosphere. If implemented by 2015, these opportunities could assist reduce Australia's greenhouse gas emissions by around 27 million carbon tonnes per year. Individually, each opportunity could deliver per annum carbon emission savings of:
- 1.8 million tonnes (Mt) by using broadband to remotely manage power for appliances not in use or on "stand-by";
 - 2.4 Mt by improving business productivity with "in-person" high-definition videoconferencing;
 - 2.9 Mt with broadband based, real-time freight allocation systems to fill empty freight vehicles;

³² <http://www.itnewsonline.com/showprnstory.php?storyid=87594>

³³ IBID

³⁴ https://www.telstra.com.au/abouttelstra/csr/docs/telecommunications_climate_change_blueprint_in_brief.pdf

- 3.0 Mt with presence-detecting services that turn off devices that are "on" but not being used;
- 3.1 Mt with teleworking and working in regional centres by reducing commuter car traffic;
- 3.9 Mt by bringing integrated personalised public transport to your door with a phone call; and
- 10.1 Mt by increasing renewable energy use with networked demand side management.
- The industry is also working to reduce its own carbon footprint, with new technology offering power saving benefits.

3.38 To expand on just one of these examples, the following case study illustrates the real difference that mobile broadband can make to the environment.

In the Great Barrier Reef, the Australian Institute of Marine Science is using mobile data buoys to conduct research on coral reefs, collecting real-time data up to 70kms offshore.

The speed and efficiency of the system enables faster and more proactive measures to protect the coral reef. And by not sending out boats to collect the data, cost savings of about \$150,000 per year are achieved whilst at the same time minimizing environmental impacts³⁵.

Demand

3.39 Mobile telecommunications technologies' significant and growing contribution to Australia's overall participation in the digital economy and the subsequent economic, environmental and social benefits, will only be maximised if sufficient and appropriate radiofrequency spectrum is made available to the industry.

3.40 Demand for mobile broadband services is substantial and is growing exponentially, including for M2M³⁶ communications. Globally, it is predicted that:

³⁵ Concept Economics, *Next G Productivity Impacts Study*, February 2009

³⁶ M2M can refer to machine to machine, man to machine and machine to man

- (a) Mobile broadband will comprise two-thirds of all broadband subscriptions by 2012³⁷; and
 - (b) Users of mobile broadband services will grow from 181 million in 2008 to over two billion in 2014, a growth of 1024 percent. At the same time, the M2M market will grow by 650 percent.
- 3.41 The rapid increase in demand will likely be driven by the rapid evolution of mobile devices and greatly improved consumer experience. Data modems used with laptop computers have already seen an increase in mobile broadband usage. The introduction of HTC's HD2 handset, RIM's Blackberry and other innovative handsets, have illustrated the power of handset design to encourage a rapid increase in data usage.
- 3.42 Looking ahead, consumers will be tempted with ever-more 'data-friendly devices'. There is a range of 'smart books' yet to hit the market, plus a growing number of mobile applications with content designed specifically for mobiles. Clearly, the easier the internet is to use – whether in a fixed or mobile environment - the more consumers will embrace it.
- 3.43 Cisco forecast a worldwide data explosion, with mobile data traffic to reach 3.6 exabytes per month, representing a 39-fold increase from 2009-2014. Per broadband connection, Cisco is predicting an increase in traffic from 1.3 GB per month today, to 7GB. The researchers believe that the amount of data traffic on mobile networks by 2014 will be 133 times *greater* than the *total* data transmitted across all mobile networks, from their launch in 1980 until today³⁸.
- 3.44 Locally, current demand and predictions for its growth are also impressive:
- (a) An overall indicator of Australia's increasing appetite for data is provided in recent Australian Bureau of Statistics figures, which show that the volume of data downloaded in the June 2009 quarter was almost double the volume downloaded in the June 2008 quarter: up to 99,993 terabytes from 55,434 terabytes³⁹.
 - (b) The total number of mobile subscribers increased by 7.9 percent during 2008-09 to 23.4 million. An increase in 3G subscriptions contributed heavily to this figure, with a 44 percent increase between 2007-8 and 2008-09 - from 8.6 million to 12.3

³⁷ Australian Mobile Telecommunications Industry: Economic significance and contribution, Report by Access Economics for AMTA, June 2008

³⁸ See: <http://www.fiercewireless.com/press-releases/cisco-visual-networking-index-forecast-predicts-continued-mobile-data-traffic-surge>

³⁹ ABS 8153.0 - Internet Activity, Australia, Jun 2009

million. This was from a base of just 4.6 million two years earlier (2006-07)⁴⁰. The ACMA further reports that 3G subscribers outnumber 2G subscribers for the first time, with use of wireless broadband services having increased 162 percent in 2008-09⁴¹.

- (c) The majority of Australian businesses plan to use mobile technologies to increase employee effectiveness and productivity, with 73 percent reporting that they plan to increase the number of smart phones used, and 67 percent planning to increase the number of mobile datacards⁴².
- (d) Ninety-seven percent of Australians already use their mobile for more than just voice⁴³. However, recent ACMA's figures suggest the use of mobile data is still in relative infancy, with only 18 percent of mobile users in the ACMA survey reporting that they actually used their phone for online activities in 2008-09, despite 3G accounts showing an annual increase of 44 percent and now accounting for more than half of all mobile subscriptions. Significantly, however, the 18 percent of users reportedly using their phone to access the internet in the ACMA's survey represents a huge increase, with only 5 percent stating they used it just 12 months previously. Read in combination with exponential increases in data volume demand, this suggests that Cisco's data predictions are realistic.
- (e) Similarly, Access Economics predict that the use of mobile data will increase substantially over the next five years, forecasting that adoption rates will pass 50 percent in 2012⁴⁴. Access Economics notes that this forecast technological adoption rate is similar to adoption rates observed for other recent technologies.

Spectrum requirements to meet the demand

- 3.45 What does this mean for spectrum demand and allocation? In short, to meet the consumer demand for mobile broadband services, mobile operators will need their existing spectrum, and access to new spectrum both in the 700 MHz band and the 2.5 GHz band.
- 3.46 The first priority for the Government must be the reissue existing licences for the mobile industry. Existing spectrum licences are essential to meet immediate and future

⁴⁰ ACMA Communications Report, 2007-08

⁴¹ P177, ACMA Communications Report, 2008-09

⁴² April 2009 research by Jones Donald Strategy Partners commissioned by Optus

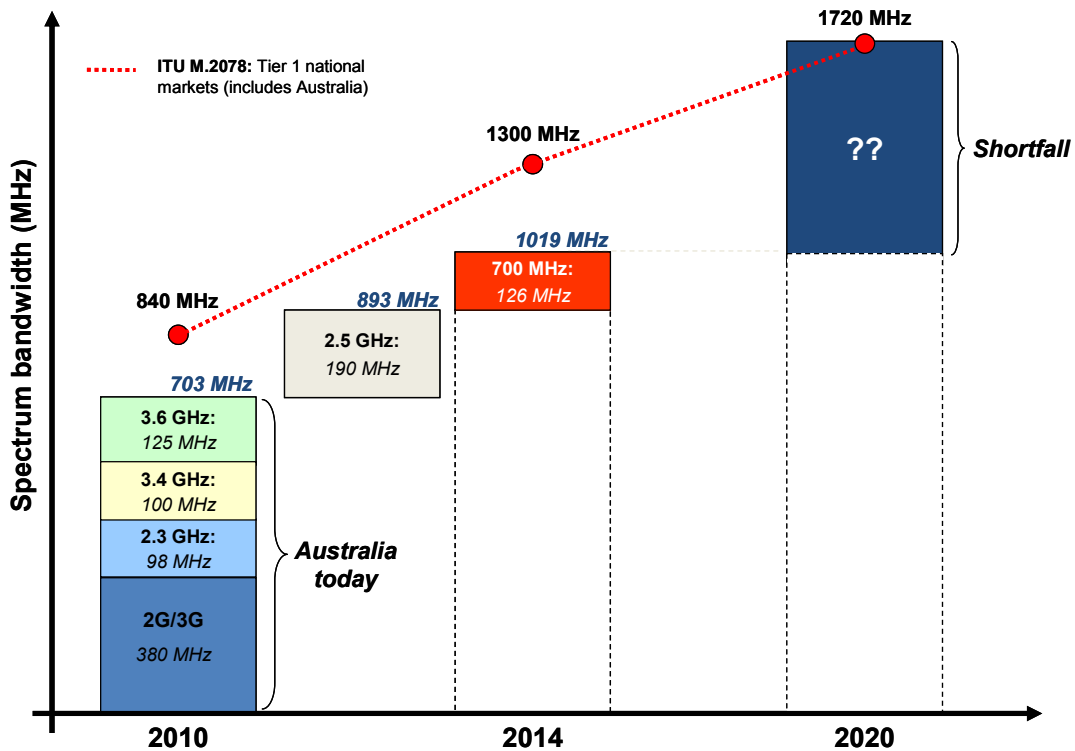
⁴³ Global Study Shows Aussies using More Mobile Data Services, mNet Corporation, 30 March 2009

⁴⁴ Soon-to-be-released report: Access Economics, *Economic Contribution of Mobile Telecommunications in Australia*, March 2010

demand for mobile data. Uncertainty over the prospect of licence renewal is impeding investment in mobile capacity by some network operators.

- 3.47 Over the longer term, forecast mobile data growth from smartphones and mobile broadband is expected to drive additional demand for spectrum by the mobile industry. For example, using conservative demand forecast estimates, the International Telecommunications Union (ITU) conducted a four-year peer-reviewed study of future mobile broadband spectrum requirements. The 2007 study considered a range of market densities and user traffic rates; used a detailed breakdown of 20 service categories; assumed low, medium and high growth scenarios; accommodated different domestic market parameters. The results are illustrated in the graph below.

Spectrum demand forecast for mobile broadband (2010 – 2020)



Source: ITU-R Report M.2078 (2007) Demand Forecast 2010-2020

- 3.48 The graph's curve line is the total forecast wireless spectrum demand in dense 'Tier 1' markets (this includes Australia). Clearly, the Government must move swiftly to release spectrum from the digital dividend and 2.5 GHz band if the mobile industry is to meet anticipated consumer demand for mobile data services in the medium term.

- 3.49 Even with these allocations (including the full 126 MHz target digital dividend), as the graph illustrates, spectrum available for mobile telecommunications and broadband services continues to exceed current allocations globally as well as in the Australian context.
- 3.50 Although no immediate action is required, AMTA believes that over the longer term, the Government will have to consider releasing additional spectrum to support mobile telecommunications and broadband services.
- 3.51 It is notable that a recommendation in the recent report prepared for the European Commission by Analysys Mason, DotEcon and Hogan & Hartson, *Exploiting the Digital Dividend – A European Approach*, concluded that:
- “The possibility of action in the medium – long term to either adopt a second sub-band or to clear entirely the 470-862 MHz band should not be ruled out.”⁴⁵ [to accommodate future mobile broadband use].*
- 3.52 Notably, the Federal Communications Commission⁴⁶ (FCC) announced on 24 February 2010 that the United States National Broadband Plan will set a goal of freeing up an additional 500 MHz of spectrum over the next decade for mobile broadband services⁴⁷.

Timely access to spectrum

- 3.53 It is clear then that there is real ongoing demand for new mobile broadband services; that the services will provide enormous benefits not just economically, but also socially and environmentally; that there is clear justification for the target digital dividend of 126 MHz; and that there is ample justification for allocating the entire 126 MHz for mobile telecommunication and broadband use (in addition to providing access to the 2.5 GHz band and reissuing existing mobile spectrum licences). The timing of access to this new spectrum is the next critical consideration.
- 3.54 Businesses need to be able to plan to meet the forecast demand immediately. Overseas experience suggests that the opportunity costs of delayed spectrum release can be significant.
- 3.55 This means that decisions on the quantity and use of the digital dividend spectrum

⁴⁵ P37, Report for the European Commission: *Exploiting the Digital Dividend – a European Approach*, Analysys Mason, DotEcon and Hogan & Hartson, 14 August 2009

⁴⁶ The FCC is an “independent United States Government Agencies”. For more info, see: <http://www.fcc.gov/aboutus.html>

⁴⁷ See: DOC-296490A1, found at www.fcc.gov

must be finalised urgently to allow broadcasters to restack and to provide the necessary certainty for mobile operators to allow operational business planning decisions to progress.

- 3.56 AMTA asks the Government to announce a clear timetable for clearance, auction and restacking of the digital dividend. This is critical to ensure national availability of the digital dividend to mobile operators immediately upon completion of the digital switchover by 31 December 2013.
- 3.57 AMTA further asks that the Government co-ordinate all spectrum activities currently underway: licence reissue, digital dividend and 2.5 GHz release, and the broader national infrastructure agenda, and commit to a timetable with key milestones clearly identified. This will allow planning and investment decisions for industry while also assisting Government.
- 3.58 In practical terms, AMTA suggests that this might include some of the following milestones:
- (a) Confirmation that the digital dividend will be 126 MHz in the range 694-820 MHz size - as soon as possible;
 - (b) Announcement of intent to allocate the 126 MHz for mobile telecommunications and broadband services use - as soon as possible⁴⁸;
 - (c) Integrated timetable announced in conjunction with (b) above. This would include:
 - Confirmation of Government policy intent, including timing and proposed cost, for the 2.5 GHz band and spectrum licence renewal; and
 - A band clearance timetable. It is important that there are clear dates committing the broadcasters to vacate the band by certain times and a clear indication of when the spectrum will actually be available for commercial use. Failure to meet timelines could result in considerable opportunity costs.
 - (d) Price based allocation process timed to ensure that there is commercial availability of spectrum immediately after completion of digital switch off.

⁴⁸ As noted earlier in this submission, Australia's band plan can't be finalised until ITU has finalised Region 3 timetable, but any of options canvassed would need to be supported by the full 126 MHz target DD.

4. Fixed wireless broadband and NBN issues

Section summary

- 4.1 AMTA supports the Government's view that fast broadband services will provide the foundations for productivity and efficiency across the economy. AMTA also concurs with the Government's view that fixed and mobile broadband are complementary services; and that both will play a central role in ensuring Australians can continue to enjoy the benefits of full participation in the digital economy.
- 4.2 AMTA's position insofar as spectrum resource requirements for these complementary technologies is that the optimal use of the 126 MHz spectrum released from the digital dividend is mobile broadband use. This will deliver the best value for Australia's economy and its community.
- 4.3 This section of AMTA's submission explores these issues in more detail, considering questions 3.5 – 3.12 of the discussion paper.

Questions considered in this section:

- 3.5 How might the roll-out of the NBN impact on the provision of fixed wireless broadband services?
- 3.6 How much spectrum would be required to provide these services?
- 3.7 How many networks will need to be accommodated to provide a competitive communications industry?
- 3.8 When would this spectrum be required?
- 3.9 What would be the benefits of this use? Arguments should focus on the value this use of spectrum presents for the Australian economy.
- 3.10 What are the spectrum implications associated with the NBN?
- 3.11 What other implications might the NBN have for the allocation of digital dividend spectrum?
- 3.12 What would be the benefits of this use? Arguments should focus on the value this use presents for the Australian community and economy.

Fixed and mobile broadband: complementary services

- 4.4 AMTA strongly agrees with the Government's assessment that mobile broadband and fixed broadband solutions are complementary; it is important that consumers have the ability to choose access to fixed and mobile broadband and mix and match in a way that best suits their lifestyle and application.

4.5 The complementary nature of fixed and mobile broadband services is recognised both internationally and at home. For example:

- (a) The Minister for Broadband, Communications and the Digital Economy commented at the recent Radcomms Conference that:⁴⁹

The National Broadband Network is a transformational project for the sector and will provide the foundations for productivity and efficiency across the economy.

Of course, while this is a crucial project, the National Broadband Network is not the only measure necessary to underpin Australia's communications future.

The Government is also addressing the necessary wireless and spectrum issues that will enable our nation to move confidently into the next phase of the connected economy.

There is no doubt about the complementary nature of wireless and fixed line communications.

In fact, this is clearly demonstrated in our vision for the National Broadband Network.

Equally, mobile broadband offers many benefits for users to access services and applications wherever they choose.

Indeed, the ability to switch between fixed and wireless networks is becoming increasingly commonplace in mobile devices such as PDAs and laptop computers⁵⁰.

- (b) The recently released report, "Getting the most out of the digital dividend in Australia", noted that "while it is expected that there will be some mobile-fixed substitution from a consumer perspective, fixed networks remain critical for ubiquitous consistent quality of service and scalability"⁵¹.
- (c) Comments in the recent Communications Market Report in 2008⁵², a report by the United Kingdom's Office of Communications (OfCom), also acknowledge the technical reasons for fixed and wireless services operating in a complementary

⁴⁹ Senator the Hon Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, RadComs09

⁵⁰ IBID

⁵¹ P15, Getting the most out of the digital dividend in Australia, Spectrum Value Partners/Venture Consulting, April 2009

⁵² A copy is available at: <http://www.ofcom.org.uk/research/cm/cmr08/telecoms/telecoms.pdf>

fashion⁵³. The report also notes competitive forces as a factor for ensuring on-going fixed relevance, at least in the UK market, with healthy tariff competition between fixed and mobile players⁵⁴.

- 4.6 Notwithstanding the complementary nature of fixed and mobile broadband, there are clearly differences between fixed and mobile broadband solutions, from a consumer and infrastructure perspective.
- 4.7 From the consumer perspective, as the Digital Dividend Green Paper notes, there is “a growing interest in users being able to access fast broadband when they are away from their premises and on the move – a need that only mobile broadband can deliver.”⁵⁵”
- 4.8 From an infrastructure perspective, radiofrequency spectrum is the critical enabling infrastructure for the deployment of mobile telecommunications services, including mobile broadband. As this submission clearly illustrates, the highest value use of the entire 126 MHz target digital dividend spectrum is for mobile telecommunication and broadband services:
- (a) Mobile broadband services will provide enormous benefits to Australia, economically, socially and environmentally; and
 - (b) To even come close to meeting predicted demand for mobile broadband services, industry needs enough spectrum, and the right spectrum. As explored, in the Australian context this means retaining existing spectrum, gaining access to spectrum in the 2.5 GHz band and gaining access to the entire 126 MHz digital dividend spectrum.

⁵³ IBID, pages 301-303.

⁵⁴ IBID, p296

⁵⁵ P16, *Digital Dividend Green Paper*, January 2010

5. Mobile TV and multimedia

Questions considered in this section:

3.13 Should digital dividend be used to provide mobile television services?

3.14 How much spectrum would be required to provide these services?

3.15 When would this spectrum be required?

3.7 What would be the benefits of this use? Arguments should focus on the value this use of spectrum presents for the Australian community and economy.

5.1 AMTA does not believe that it is necessary to reserve dedicated spectrum within the digital dividend band (694 - 820 MHz) for mobile television services.

5.2 As the Green Paper recognises, mobile television is already a reality, with Australian consumers currently able to enjoy television services on their mobile handsets. In addition, there are a number of competing delivery models and technical standards for mobile television, each with their own supporters, detractors and spectrum requirements.

5.3 AMTA believes that the highest value use of the spectrum released from the digital dividend is mobile telecommunications and broadband services, with economic, social and environmental benefits flowing from an increased use of mobile broadband services.

6. Broadcasting uses

Section summary

- 6.1 An efficient, fair and well-balanced allocation of digital dividend spectrum between mobile telecommunication and broadcasting industries would ensure that Australia reaps the full economic and social benefits from the digital dividend.
- 6.2 Nationally, the optimal net economic benefit to Australia will be realised if 126 MHz of usable UHF spectrum is allocated to mobile broadband services. In rural areas, the maximum benefit would be realised with an allocation to mobile of 140 MHz of usable spectrum⁵⁶.
- 6.3 It is in Australia's national interest to allocate the target 126 MHz digital dividend to mobile broadband. The benefits to the Australian economy and community are greater when quick action is taken to reallocate spectrum for this use.
- 6.4 This section of AMTA's submission explores these issues in more detail; covering issues raised in questions 3.17 – 3.28 of the discussion paper, but does not seek to provide a detailed response on the requirements or technical capacity of the broadcasting industry.

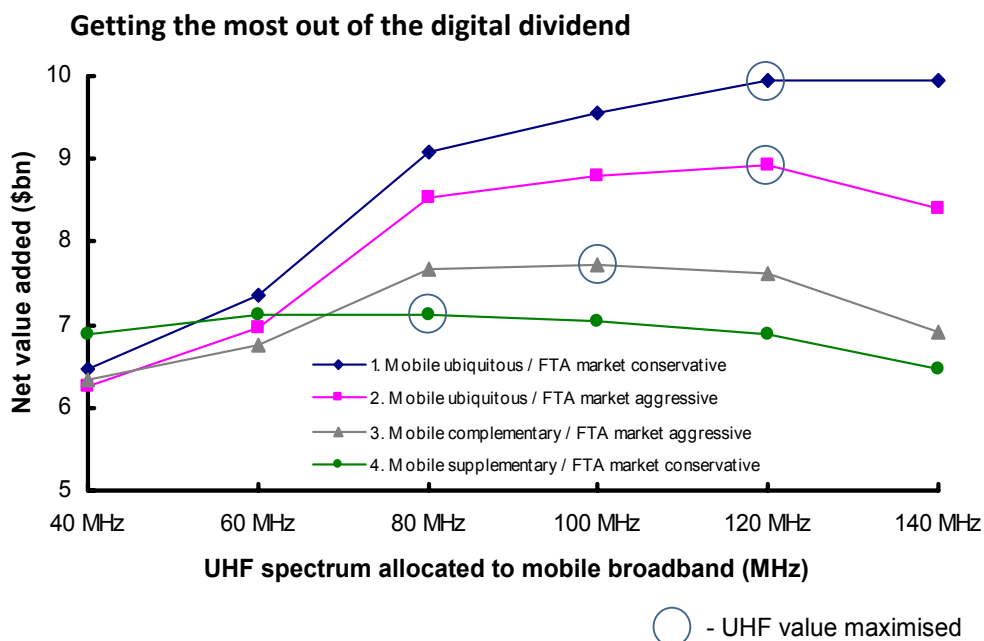
Questions considered in this section:

- 3.21 Should digital dividend spectrum be used to implement DVB-T/MPEG-2 to DVB-T2 or DVB-T/MPEG-4 conversion strategies? If so, which strategies?
- 3.22 Would additional spectrum be required? If so, how much?
- 3.23 When would this spectrum be required?
- 3.24 What would be the benefits of this use? Arguments should focus on the value this use of spectrum presents for the Australian community and economy.
- 3.25 Should spectrum from the digital dividend remain designated as broadcasting services bands spectrum to provide capacity for additional broadcasting services?
- 3.26 How much spectrum would be required for this purpose?
- 3.27 When would this spectrum be required?
- 3.28 What would be the benefits of this use? Arguments should focus on the value this use of spectrum presents to the Australian community and economy.

⁵⁶ Spectrum Value Partners 2009 *Getting the most of the Digital Dividend in Australia*

An optimal split

- 6.5 A report by international economic consultants, Spectrum Value Partners, and commissioned by AMTA, found that by modelling a number of mobile and broadcast market scenarios, Australia's economy would be boosted by up to \$10 billion if at least 120 MHz of useable spectrum was unlocked from the digital dividend to support mobile broadband use.
- 6.6 The report derived an 'optimal split' of digital dividend spectrum between mobile telecommunications and broadcasting use and found that spectrum allocation is 'optimal' when the net economic value generated from combined mobile and broadcasting services use is at a maximum.
- 6.7 In rural areas, where population density is lower, the propagation characteristics of digital dividend spectrum are more critical for mobile coverage. As a result, the report found that the maximum net economic benefit will be realised with an allocation to mobile of 140 MHz of usable spectrum.
- 6.8 The exhibit below illustrates the net value added to the Australian economy by allocating a varied amount of the digital dividend UHF spectrum for mobile broadband services under different overall market scenarios⁵⁷.



⁵⁷ Spectrum Value Partners 2009 *Getting the most of the Digital Dividend in Australia*

- 6.9 The modelling approach adopted in the report is conservative and intentionally favours the broadcast industry. Thus, the range of allocation of digital dividend spectrum to mobile operators could reasonably be taken as a minimum allocation range.
- 6.10 In summary, the SVP Report clearly supports the position of this submission that it is in Australia's national interest to allocate the target 126 MHz digital dividend to mobile broadband.

Non-economic benefits of mobile over broadcasting allocation

- 6.11 AMTA notes that the SVP study is based on an economic analysis and does not explicitly consider the social or environmental benefit of using spectrum for mobile telecommunications and broadband use, compared to broadcasting. AMTA makes the following points in relation to this:
- (a) Mobile telecommunications and broadband provide considerable social and environmental benefits, as described in the first section of this submission.
 - (b) Compared to broadcasting use, the SVP analysis reveals that the value consumers place on broadcasting is not dependent on the number of channels; most value is placed on the first few channels. Reserving spectrum from the target 126 MHz digital dividend for enhanced or new broadcasting needs is not, therefore, justifiable:
“The majority of value for UHF spectrum is concentrated in the first few channels as they account for the majority of the viewing share and therefore the majority of the value consumers place on FTA TV.

The economic benefit generated by additional DTT channels, and hence by allocating incremental UHF spectrum to broadcasting, quickly diminishes.⁵⁸”
 - (c) There is considerable evidence that Australians value their mobile services highly.

For example, research conducted by university-based researchers and AMTA, under the umbrella of the Australian Research Council Linkage grants scheme, looked to provide an evidence-based understanding of the social impact of the mobile phone on work/life balance. It was the first study specifically designed to

⁵⁸ P52, *Getting the most of the Digital Dividend in Australia* Spectrum Value Partners 2009

provide nationally representative data on how mobile phones have become integrated into the everyday life of Australians⁵⁹. Key findings included:

- The mobile phone is an indispensable part of the everyday life of Australians. About nine in ten people report that their lives could not “proceed as normal” if they were suddenly without their mobile phone.
- People aged under 30 years will give up TV before their mobiles.
- Carrying a mobile phone makes most people (75 percent) feel more secure.
- A third of workers say that it would be difficult to do their job properly without their mobile. This is particularly the case for men.
- Over two-thirds of the respondents report that the mobile phone is an important medium for maintaining kinship ties, especially for women. It is very well suited to maintaining intimate relationships at a geographical distance.
- More than half of the employed respondents believe that the mobile helps their work-life balance. Very few report that the mobile phone has a negative impact. More than half of mobile-owning workers who have high levels of satisfaction with their family interactions regard the mobile as having increased their ability to find work/life balance.

6.12 AMTA agrees with the Government’s conclusion that reserving spectrum for the potential future transition from current to future broadcast technologies would not maximise the digital dividend⁶⁰.

6.13 In conclusion, AMTA contends that none of the target digital dividend of 126 MHz should be retained for broadcasting uses. The optimal use of the 126 MHz target digital dividend is mobile broadband and the benefits to the Australian economy and community are greater the quicker action is taken to reallocate spectrum for this use. To ensure these benefits are realised, there must be a clearance timetable for the digital dividend.

⁵⁹ *The Impact of the Mobile Phone on Work/Life Balance*, March 2008

⁶⁰ As discussed on pages 20-21 of the Green Paper

7. Government use and Class-licensed uses

Government use

Questions considered in this section:

3.29 Is access to digital dividend spectrum required for government purposes? If so, for what purposes?

3.30 How much spectrum would be required for these purposes?

3.31 When would this spectrum be required?

3.32 What would be the purposes of this use? Arguments should focus on the value this use of spectrum presents for the Australian community and economy.

- 7.1 AMTA recognises that the Government is the largest user of spectrum in Australia and the significant importance of ongoing Government spectrum holdings, particularly for Defence, law enforcement and emergency service purposes.
- 7.2 AMTA is not in a position to comment on whether digital dividend spectrum is required for Government purposes, but notes:
- (a) The Objects of the Act require ACMA to maximise the overall public benefit derived from using radiofrequency spectrum by ensuring the efficient allocation and use of spectrum. AMTA supports the principle that as a major user of spectrum Government agencies should be subject to transparency requirements to ensure that the allocation, use and full value of spectrum is understood and accords with the ACMA's spectrum management principles.
 - (b) AMTA does not have visibility of the Government's spectrum use or requirements. However, the evidence available to AMTA, as presented in this submission, suggests that the optimal use of the target digital dividend spectrum is for mobile broadband use. Government agencies would be beneficiaries of these services along with all other sectors. AMTA considers it highly likely that Government spectrum needs can be met elsewhere.

Class licences

Questions considered in this section:

- 3.33 How much spectrum are these devices likely to require in the future?
- 3.34 Will there be room in the broadcasting services bands, after digital switchover and restacking, to meet their future spectrum requirements?
- 3.35 Should separate UHF spectrum be reserved Australia-wide for use by these devices from the digital dividend spectrum? If so, how much?
- 3.36 When would this spectrum be required?
- 3.37 What would be the benefits of this use? Arguments should focus on the value this use of spectrum presents for the Australian community and economy.
- And
- 4.6 How would low-interference potential devices be best accommodated in the UHF bands in light of the proposed digital dividend and the restacking of digital broadcasting services?
- 4.7 Do these devices use specific frequencies within the UHF bands? Which frequencies do they use?
- 4.8 What costs would be involved for users to move frequencies?
- 4.9 Should one or more discrete frequency bands be set aside within the UHF bands for use by low-interference potential devices.

- 7.3 AMTA understands that the ACMA will need to accommodate class-licensed equipment currently operating in the broadcast band, including low interference devices.
- 7.4 Because of the risk of interference of these devices with mobile telecommunication and broadband services, AMTA's position is that every possible effort must be made to locate these devices elsewhere, outside the target digital dividend band.
- 7.5 AMTA notes a similar approach has been taken in other countries, with the United States and United Kingdom both making alternative spectrum arrangements for wireless microphone users, outside of the digital dividend band⁶¹.
- 7.6 This will allow digital dividend spectrum to be used for its highest value use, which, as this submission has established, is mobile telecommunications and broadband.

⁶¹ "Wireless microphone users ordered out of 700 MHz band in US: <http://www.fiercebroadbandwireless.com/story/fcc-adopts-order-banning-wireless-microphones-700-mhz-band/2010-01-19>; and Licensing arrangements for wireless microphones in UK: <http://www.ofcom.org.uk/consumer/2009/12/new-licensing-arrangements-for-wireless-microphone-users/>

8. Restacking

Questions considered in this section:

General comments in response to the following questions:

4.1 What issues will arise through viewers being required to rescan? Can receivers be developed that are able to automatically rescan?

4.2 In the small number of cases potentially affected, what is the likely cost for viewers associated with replacing their existing UHF antennas?

4.4 (*stet*)⁶² What is required in the restacking process for broadcasters? Are there potential spectrum use implications? How much time is required for broadcasters to plan and implement transmissions at new frequencies?

4.5 How much is it likely to cost broadcasters to move digital television services to alternative frequencies, both in terms of the purchasing of new transmission equipment or the returning of existing equipment?

8.1 AMTA does not attempt to provide detailed comments on questions 4.1 – 4.9, but its position on restacking is clear:

- (a) It is technically possible to restack all digital broadcasting services to achieve the target digital dividend of 126 MHz;
- (b) It is in Australia's best interest to restack as soon as possible in order to release the target 126 MHz digital dividend and use it for its highest-value use: mobile broadband; and
- (c) This should be done as part of an integrated timetable that includes confirmation of Government policy intent for the 2.5 GHz band and spectrum license renewal; and a band clearance timetable. It is important that there are clear dates committing the broadcasters to vacate the band by certain times and a clear indication of when the spectrum will actually be available for commercial use.

8.2 AMTA notes that there will be costs associated with clearing the digital dividend and a potential short-term inconvenience for consumers during the restacking process. In the longer term, however, the economic, social and environmental benefits that will be enjoyed by the Australian community as a whole will be substantial and will far outweigh any short-term costs. This net benefit has been recognised worldwide, with all global markets restacking to release the spectrum in the digital dividend for its highest

⁶² Note: there is no question 4.3 in the Green Paper

value use. The digital dividend represents a once-in-a-lifetime opportunity to release large, contiguous blocks of spectrum.

8.3 Further, as the Green Paper recognises⁶³, reserving spectrum for potential transition for migration to next generation broadcasting technologies would not maximise the digital dividend. As clearly demonstrated in this submission, there is a net benefit in reallocating the target digital dividend for mobile use:

- (a) Mobile broadband is today delivering considerable benefits to the Australian community but operators are already meeting capacity constraints.
- (b) To ensure future consumer demand for new mobile broadband services can be met in an efficient and affordable manner, access to spectrum in the UHF band, together with access to new spectrum in the 2.5 GHz band, is critical.
- (c) As the Green Paper notes, there are migration paths available to broadcasters that do not require use of the target digital dividend spectrum. These should be utilised to allow the digital dividend spectrum to be cleared quickly. This is supported by information from overseas that suggests that the social and economic cost of delayed spectrum release can be significant.

⁶³ P21, Green Paper

9. Conclusions

- 9.1 The Government's target digital dividend of 126 MHz of contiguous UHF spectrum in the range 694 – 820 MHz is achievable and desirable. It is in Australia's best interests to ensure that this once-in-a-generation opportunity to release large, contiguous blocks of spectrum is realised.
- 9.2 The maximum value of the digital dividend will be achieved when the entire target digital dividend spectrum (126 MHz) is used for mobile telephony and broadband services. These services are delivering substantial economic, social and environmental benefits to Australia but require
- 9.3 Clearance, auction and restacking of this spectrum must proceed in a timely manner to ensure that the released spectrum is commercially available as soon as switch-off is completed to facilitate the movement of the spectrum to its highest value use (mobile telephony and broadband services), in accord with the objectives of the *Radiocommunications Act 1992*.
- 9.4 The Government must commit to an integrated, co-ordinated timetable for all spectrum activities currently underway: licence reissue, digital dividend, the 2.5 GHz release and the broader national infrastructure agenda. This will allow planning and investment decisions to be made by industry and ensure demand for mobile broadband services can be met in a timely, efficient manner.