Telstra

TELSTRA SUBMISSION
TO
THE PRODUCTIVITY COMMISSION

REVIEW OF RADIOCOMMUNICATIONS ACTS AND THE ROLE OF THE AUSTRALIAN COMMUNICATIONS AUTHORITY

Executive Summary

Coming as it does after a period of technological innovation and significant reform in spectrum allocation and management, and in the face of rapid technological and market convergence, the Productivity Commission's *Review of the Radiocommunications Acts and Market Based Reforms and Activities Undertaken by the Australian Communications Authority* is timely.

In its report, the Commission will need to not only evaluate past practices but also look forward into a rapidly evolving technological world. Only by looking both backwards to success and failure and forward to possibilities and opportunities, will Australia's radiocommunications and telecommunications industries attain and remain at the cutting edge.

The dynamic nature of the industry coupled with the commercial imperatives of participants (new and existing) create tensions between competing needs, objectives and philosophies. One corporation's commercial imperative to achieve a particular valid objective may be at odds with equally valid imperatives held by government, by other industry members or, indeed, within the same corporation.

The most obvious example is the tension between a licence holder's need for security of tenure (to ensure that its not-insignificant costs of investment are recouped) and the government's and regulator's need to be able to manage spectrum according to international and national priorities and obligations, so that it may be put to the most efficient use for the benefit of the community at large.

The challenge for the Commission will be to evaluate all competing options and make recommendations that provide the optimal balance of flexibility, security of tenure and transparency in policy development to ensure that maximum benefit flows to the Australian community.

In this context, while noting the conflicting policy tensions between issues such as: security of licence tenure; investment incentives in spectrum-related infrastructure; the need for safe and efficient spectrum allocation; conformity with internationally agreed-to standards; the general desirability of competition for spectrum use and allocation; and the different uses of spectrum (including in relation to satisfying the universal service obligation), Telstra -

- describes the current state of the radiocommunications industry as it relates to telecommunications
- discusses industry trends that are projected to arise as a consequence of converging technologies and services;
- queries the justification for the spectrum bidding limits that have been imposed to date;
- critiques the existing system of fixed tenure periods for the granting of spectrum licences; and
- highlights anomalies that the existing arrangements may pose in relation to Telstra satisfying its universal service obligation.

Telstra will explore these issues in more detail, as well as canvassing other issues, in a more detailed way, in a later submission.

1 Introduction

Telstra welcomes the opportunity to make this submission to the Review by the Commission of the Radiocommunications Acts and of the Market Based Reforms and Activities Undertaken by the ACA.

While the Review is clearly considering a wide range of issues, the issues that Telstra wishes to comment upon at this stage are confined to:

- the need for flexibility in spectrum allocation and management nationally to achieve the best result in a rapidly converging market operating within an international framework;
- the inefficiencies and market distortions that arise from unnecessary interference in spectrum allocation imposed by auction rules which affect bidding limits and geographic parcelling of spectrum - and, related to these distortions, the relationship between spectrum allocation and the ability of Telstra, or in the future, other carriers, to efficiently meet the universal service obligations; and
- issues associated with the tenure of spectrum licences.

Telstra will provide a more detailed submission on these and other issues raised by the Commission in response to the draft report.

2 Convergence

The Commission has expressed a clear interest in the topic of convergence. Telstra believes it is essential that the Commission's assessment of the matters under review acknowledge the very real impact that convergence is having, and will continue to have, on the telecommunications industry generally and in relation to spectrum allocation specifically. It is critical that policy settings are adjusted to ensure that regulatory distortions of this change process are kept to an absolute minimum. In Telstra's view, the concept of convergence has important implications for the current policy settings, including bidding limits and geographic constraints on spectrum acquisition.

What is convergence?

Clearly, there are differing views about the definition of convergence[1] and the extent to which it is occurring, or is likely to occur, in different markets.[2] Telstra considers that "convergence", viewed from a technological perspective, is the process by which services that were previously supported over distinct communications infrastructures are integrated around a common, high capacity, digital platform. This brings with it both the blurring of

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[1] In this submission, "convergence" refers to the situations where once distinct economic markets merge, or where firms that previously did not compete find themselves in the same (and perhaps new) market. Two products or firms can be said to belong "in the same market", if a price increase in one product above competitive levels would be rendered unprofitable by consumers shifting their demand to the other product, or by suppliers of the other product entering the first market, or by both.

[2] See, for example, Longstaff, P H, "New Ways to Think About the Visions Called "Convergence": A Guide for Business and Public Policy", 2001 (available at: http://www.pirp.harvard.edu/pubs/pdf-blurb.asp?id=484>).

boundaries between once-distinct services and the entry of suppliers from previously separate markets into a combined and necessarily expanded market-place.

Impact of convergence in the market place

Convergence is affecting, albeit at different speeds and in different ways, several markets in which Telstra currently supplies services. For example:

- Convergence in the traditional broadcast media markets has already occurred. Satellite, fixed-wireless (MMDS, LMDS) and HFC cable provision of broadcast television compete with traditional free-to-air broadcasters, and may indeed be displacing them.[3] This has brought new competing suppliers in broadcast transmission (Telstra, Austar and Optus in Australia) and in broadcasting (Foxtel, Austar and OptusVision in Australia).

- Mobile and traditional fixed line (narrowband[4]) voice communications markets are rapidly converging and it is likely that, within five years, these two services will be considered part of one market. Slightly lagging these developments is a merging of narrowband voice and data markets. Other things held constant, the supply of narrowband voice services will likely constrain the price of narrowband data services and *vice versa*, well within a decade.

- Other events are likely to overtake this convergence of voice communications markets. It is likely that, within 8 to 15 years, the emerging two-way broadband market will subsume both the narrowband voice and data markets. Traditional broadcast media (most particularly satellite transmission) are increasingly being used as alternatives to traditional two-way communications media (wireline and fixed radio communication links).[5] New technologies are also commercially available in some places bringing new players into this market,[6] and further convergence is likely from third generation mobile telephony (within three years) and possibly other technologies.[7] These developments are bringing media giants

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3 The use of digital signals in free-to-air broadcasting may allow traditional broadcasters to offer multiple pay-television channels, thereby putting them on an even footing with these new competitors.

4 For the purposes of this submission, narrowband services refer to those with a bandwidth of 64kbs or less, and broadband to services with higher transfer rates.

5 For example, Optus have just announced a VSAT service that offers download rates of 52.5 Mb/s with a 153 Kb/s return path (Newsbytes News Network, 22 June 2001, http://www.totaltele.com/view.asp?ArticleID=41268&Pub=tt).

6 For example, Nokia's Rooftop wireless routers can be purchased off-the-shelf and operate in the unlicensed 2.4 GHz band. These allow the rapid deployment of high bandwidth (total capacity 12 Mb/s) scaleable wireless networks where sequential line of sight can be obtained - see http://www.wbs.nokia.com/index.html. Metricom's proprietary Ricochet service offers a lower bandwidth (128 Mb/s) solution on unlicensed spectrum in 13 major U.S. markets—see http://www.ricochet.com. In the UK, a similar symmetrical 1Mb/s service is available through Tele2 on licensed spectrum—see http://www.tele2.co.uk.

7 In order of likelihood: fixed two-way wireless (either via LMDS or MMDS), use of current broadcast spectrum in conjunction with digital rather than analogue signals and two-way broadband via LEO satellite.

(most notably those who broadcast via satellites), independent mobile carriers and a range of entirely new players into direct competition with telecommunications firms.[8]

The major driver of these processes is technological change.[9] In the past, communications services were largely defined by the technology used for their delivery. For example, the free-to-air broadcast industry was predominantly developed around wireless unidirectional broadcast technologies, while the telephony industry was based on centralised switches using circuit-switching technologies to create a continuous link between the two communicating parties. However, technological change is allowing the delivery of multiple communications services through multiple technologies.[10]

Consequences of convergence

A major impact that the convergence process and the associated technological changes have had, and will continue to have, on the telecommunications industry is the dramatically increased levels of uncertainty it has brought to the telecommunications business and business planning. Telecommunications carriers face many uncertainties as a result of convergence, including: demand uncertainty; business model uncertainty; and uncertainty as to potential sources of competition and supply.

In view of these changes, it might be thought that policy would be carefully calibrated to ensure that it did not distort the way alternative and substitute technologies are utilised for different purposes, even though, in the past, those technologies might have been considered only suitable for particular purposes or relatively confined uses. This, however, does not appear to be the case.

Moreover, since, as a result of convergence:

- boundaries are blurring between different technologies; and
- alternative technologies can be used for similar, or competing services -

arbitrary policy settings which constrain the supply or acquisition of technologies such as spectrum on the basis that such measures will facilitate new entry, or will foster greater competition in respect of the supply of competing services, tend to underestimate the changing market dynamics that convergence brings.

In summary, regulatory settings that dictate the use of particular technologies for specific services beyond that required by the ITU for its reasonable and proper purposes require

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8 Other, more speculative, forms of convergence were omitted for purposes of brevity.

9 It is important to stress that other factors such as deregulation of various service industries around the world have also played a role in changing the structure of the communications industry.

10 The technological changes that are driving the convergence process include: digitalisation, compression, increased computing power, increased storage capability, greater access and transport bandwidths, Very Large Scale Integration (the ability to develop complex VLSI to integrate technology using agreed standards to create the economies of scope and scale for mass market products), increasing appliance capabilities, development of standard digital application interfaces and developing presentation technologies.

serious review and possible reassessment. On this basis, Telstra questions whether the imposition of bidding limits and related constraints on spectrum acquisition can be justified on the basis of good policy or sound economic reasoning.

Quite aside from the apparent inconsistency between the dynamism of the market and static regulatory rules, the market – however defined – is clearly rapidly evolving due to revolutionary technological change. It is not possible to predict with any degree of certainty what technology options may be available, or indeed what services may be being provided, in five, ten or fifteen years' time. Due to this technological uncertainty, Telstra encourages the Commission *not* to regard its review as having lesser significance because most of the significant spectrum allocations have already occurred. Rather, Telstra urges the Commission to take a forward looking approach to spectrum allocation and to consider the implications of its review in relation to new and perhaps unknown uses of spectrum.

3 International developments and spectrum re-allocation

Perhaps surprisingly, international developments are such that it might be necessary for Australia to revisit much of its current spectrum allocation in the relatively near term. For example, the current debate in the United States, in respect of belatedly identifying a suitable allocation for the introduction of nationwide 3G cellular services, is itself a potentially strong stimulus for further changes to the Australian spectrum plan in the future. The American market is obviously of sufficient scale to heavily influence global product development programs. Allocation of a spectrum segment *different* from that currently assigned in Australia could very well lead to service provider proposals to allow introduction of US technology in Australia, by re-allocation of the same spectrum segment.

Moreover, since the United States is presently and notably lagging the rest of the world in terms of 3G spectrum allocation, it is also possible that its strategy may involve regaining the technology lead by developing a more advanced cellular technology (for example - the so-called 4G) for that eventual mobile spectrum allocation. Such an initiative would have a significant effect on Australian industry directions.

Thus, Telstra believes that it may be unwise to assume that, even in the relatively near term, the major spectrum re-allocations have all been 'done' in Australia, and that no further spectrum re-allocations of significance are likely to arise in the foreseeable future. Indeed, there is already industry discussion in relation to re-allocating such bands as the 700MHz band (currently allocated to TV broadcasting) and the 2.5GHz band (presently used by TV services) to cellular mobile services.

4 Spectrum Allocation

Policy choices and spectrum allocation by the auction process

Despite the difficulty inherent in determining the infrastructure that is most efficient for a particular use, policy makers have historically embraced this decision. The current ACA auction rules for spectrum allocation give policy makers some capacity to make this decision. Specifically, the auction rules are designed to give preference to specific bidders and technologies over others.

Constraint of natural market development

The current auction format sets out to artificially structure and constrain the natural development of the market. It gives preference to some participants and technologies over

others and may not reveal the true relative efficiencies of one over another. For example, an auction structured in this way could result in a price for spectrum that is below the true opportunity cost of its use.

Exclusion

The spectrum auction rules give preference to specific bidders by limiting the parties that are allowed to participate in the auction. In some cases, the participants that potentially place the highest valuation on spectrum for use with wireless infrastructure have not been permitted to participate in the spectrum auctions. For example, the Minister for Communications, Information Technology and the Arts did not allow Telstra to bid for 3.4 GHz spectrum in major cities and towns and limited the amount of spectrum Telstra could acquire elsewhere.[11] Telstra consequently withdrew from the auction.

The necessity for the secondary market

Even though it was prevented from bidding for certain 3.4GHz spectrum lots, Telstra has since acquired some of that 3.4 GHz spectrum from another company. The licences obtained constituted a relatively small proportion of the licences that initially were available, accounting for only about 2.6% of the value of sales at the ACA's 3.4GHz auction. Their coverage is limited to Adelaide, Albury, Bendigo, Cairns, Canberra, Hobart, Launceston, Perth, Rockhampton, Toowoomba and Townsville.

Telstra acquired these licences predominantly so that the spectrum to which they relate could continue to be used to support certain existing telephone services currently operating on Fixed Radio Access ("**FRA**") technology in those areas. The FRA technology was used to meet Telstra's USO in some of those regions. Until the acquisition, Telstra was authorised to use the FRA technology under an apparatus licence; however, the expiry of, and consequent clearing of that licence (in 2002), meant that Telstra had to identify other means of meeting the USO.

Absent the opportunity to purchase the 3.4GHz spectrum, Telstra may have had to re-deploy copper PSTN infrastructure in order to satisfy the USO in the relevant regions. The cost of migrating existing customers to another platform would have significantly exceeded the costs to Telstra of acquiring the spectrum licences. Without the acquisition of the 3.4GHz spectrum, the only way Telstra could have satisfied the USO (or the needs of its end-users) was via the more expensive task of deploying copper-based PSTN technology, or by some other means.

This example highlights the potentially high cost of totally excluding a USP from a spectrum auction. Unless a purchaser at the auction is willing (and permitted) to on-sell, the USP may incur significant additional cost which will eventually be borne by the community.

Bidding limits

In this overall environment, the policy wisdom of continuing to impose bidding limits should be critically examined. Bidding limits reflect a policy desire to ease the entry of competitors into spectrum-related markets while constraining the established operators from competing in those spheres. Yet, even independently of other distortions (such as the USO), the bidding limits create a number of market distortions principally by artificially

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11 ACA (2000), Spectrum Auction Closes, Media release No. 65, 24 October 2000.

suppressing or constraining competitive bidding at auction and thereby deflating market based valuations of spectrum. Moreover, the bidding limits may even encourage prospective licensees who do not have the resources to fully exploit the spectrum to the economic benefit of the community. This is arguably the case in relation to the acquisition by Third Rail of the 3.4GHz spectrum and AAPT's acquisition of LMDS.

Under the current rules, and subject to the related parties provisions of the auction rules, bidding limits apply only during the period of the auction itself, while any after-market trading of spectrum is subject only to section 50 of the *Trade Practices Act.* Given the risk of distortion effects, consideration should be given to whether allowing the market to operate subject only to general competition law merger provisions would be preferable to special provisions devised prior to, and applicable only at, a particular spectrum auction.

Geographic parcelling

A further contributing factor to market distortions emerging from the prevailing auction process is the current approach by Government to geographic parcelling of spectrum lots on the basis of separating urban centres from regional and rural/remote areas.

As already suggested in relation to USO services, but more widely applied to mass-market services, the general principles of 'ubiquity' and 'non-discrimination' suggest that economic efficiency is best achieved when network deployment costs are amortised across a wide geographic area that includes a mix of both urban and non-urban service areas.

Clearly, where traffic densities are low per unit area and infrastructure deployment costs are high, the relative cost of service delivery in such regional areas can be substantially offset by linking those areas with nearby higher density urban centres. The cost averaging effect of interlinking regional areas with associated urban centres leverages the underlying economic surplus available in urban centres to deliver a wider variety of services to regional/rural areas at tariffs less than the marginal cost of delivery to those outlying areas.

In the extreme, without being able to secure the commercial benefits from an associated urban centre, the deployment of infrastructure to serve outlying areas can readily and obviously become commercially nonviable – a fact illustrated by Telstra's withdrawal from the 3.4 GHz auction, when it became clear that access by the firm to spectrum being offered in the associated urban centres, would be prohibited by the auction rules themselves.

In summary, Telstra contends that technology limiting and geographic parcelling of spectrum lots and the imposition of bidding limits inevitably leads to inefficiency and distortions in the market – resulting in a loss to the community as a whole in respect of the latent benefits inherent in the spectrum resource. In the absence of transparent assessment of the cost of introducing and perpetuating those distortions, the community cannot be assured that maximum public benefit is being gained from the allocation of spectrum.

Conclusion

Telstra contends that geographic-parcelling of spectrum lots, and the imposition of bidding limits inevitably lead to inefficiency and distortions in the market which may result in a loss to the community as a whole in respect of the latent benefits inherent in the spectrum resource unless there is an open and transparent process for assessing the underlying political and policy motivations for such limitations.

The Universal Service Obligation and alternative technologies

The USO, perhaps the most significant and most costly regulatory requirement in the telecommunications industry, has the objective of allowing equitable access by all Australians to basic telecommunications services. The costs of meeting the USO are high and are substantially under-funded. In addition, the costs of meeting the USO vary substantially between regions – typically, rural and remote regions are more costly to service; while the CBDs and metropolitan regions are generally less expensive in terms of meeting the USO requirements.

In practice, both the definition and the measurement of the cost of the USO are problematic. To begin with, the correct way to measure USO costs is to compare the profits realized by the operator at the market equilibria with and without the USO. This is obviously not an easy task for it requires estimating the hypothetical equilibrium that would occur if the USO were removed, allowing all operators to adjust their prices accordingly. Moreover, the benefits to society accruing from the USO – for example, the network externalities earned from additional customers connecting to the network and the efficiency of telephony service in the provision of public services such as police or emergency medical assistance – need to be included in the cost–benefit calculation. The efficiency losses arising from the price distortion which the USO imposes also need to be incorporated in any full cost-benefit analysis.[12]

These problems are compounded when the regulatory structure introduces additional distortions into the market for the supply of services in rural and regional Australia. The costs of providing the USO are a function of the rules imposed by the regulator. The legal requirements in terms of quality, reliability and access to specific technology are examples of parameters that have a crucial impact on the productive efficiency of compliance with the obligation. Additional constraints imposed on the Universal Service Provider will further limit its ability to be efficient, and hence, may have no effect other than raising the cost of an already-costly policy. Importantly, for the purposes of this inquiry, any distortions in the spectrum allocation process would be examples of such constraints because they in turn distort the choice of technology used to meet the obligation.

General principles of economic efficiency suggest that Telstra, as the USP, should be able to deploy the most efficient technology to meet that obligation.[13] This is particularly the case in areas that are expensive to serve where the consequences of getting the technology choice wrong, can be particularly significant. As explained below, Telstra doubts whether allowance for this view is reflected in the existing spectrum allocation arrangements.

Many technologies are, and have been, used to provide telecommunications services in rural areas. The infrastructure traditionally used is the public switched telephone network ("**PSTN**") but other infrastructures are now becoming more common place. For example, technological developments and economies of scale in vendor equipment have made it possible to deploy Wireless Local Loop ("**WLL**"), Multi-channel Multi-point Distribution Systems ("**MMDS**"), satellite and mobile networks relatively cheaply.

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12 Mirrlees J A and Diamond R A, "Optimal Taxation and Public Production I: Production Efficiency" American Economic Review, March 1971.

13 This principle holds true so long as the technology that is deployed meets certain basic standards of reliability and that the technology used provides equality of access and thereby promotes the objectives of the USO arrangements.

These infrastructures have added the benefit over the PSTN in areas of lower density as they have a relatively lower sunk cost of installation. Mobile and fixed wireless networks do not require a physical connection to customers' premises as is the case with the PSTN. Instead, wireless networks require only the installation of cell stations for transmission and switching and customer equipment for reception.

However, the PSTN typically has lower variable operation and maintenance costs than mobile and fixed wireless networks. Once the PSTN cable is laid, it is relatively robust to adverse weather conditions and other depreciating factors that contribute to variable costs. Furthermore, the physical characteristics of a copper line network make it less sensitive to congestion problems.

The trade-off between sunk and variable costs is one factor that determines which infrastructure is the most efficient for any particular area. If no additional constraint is imposed on the USP, it will be able to choose between different technologies in order to meet the USO at the least cost. The choice is a multi-dimensional minimisation programme whose solution necessitates a specific expertise. Any constraint which amounts to an exogenous choice made by somebody who is less informed on market conditions than the USP will likely lead to USO costs eventually borne by the community.

For example, if actual demand coincides closely with what is expected, the risk of a sunk cost being stranded is relatively low, in which case a high sunk cost/low variable cost infrastructure may be more efficient. Alternatively, if future demand in an area is uncertain, it may be more efficient for a firm to invest in a low sunk cost/ higher variable cost infrastructure. There are many factors that contribute to demand volatility, and consequently to the optimal mix of sunk and variable costs intrinsic in a technology choice - population volatility, the demand for advanced services, population densities etc. The sheer variety of these factors and the difficulty in measuring their effect on the success of an investment, makes it almost impossible for a policy maker to dictate which technology is and will remain the most efficient.

Even if the risk factor is not considered, a technological optimisation process is still required to be productively efficient in the provision of universal telephony services. In practice, the USO includes two types of components: the "social" component requiring that for volume users should be offered tariffs similar to heavy users[14]; and the "geographical" component that can itself be divided into two obligations: ubiquity and non-discrimination. The "ubiquity constraint" requires that all consumers should be connected to a network, whatever their location. The "non discrimination" constraint requires that the same tariff should be proposed to all those consumers, whatever their location or their connection cost. The optimal way to deal with these constraints will ultimately depend upon the cost structure of the service provision. The actual resolution of this challenge is a function of very specific features of the local conditions. Therefore, a great deal of flexibility is needed to obtain the most effective trade-off.

5 Spectrum licence tenure

Introduction

Telstra's welcomes the Commission's examination of the issues associated with the tenure of spectrum licences.

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14 Or low tariffs for targeted consumers

There are clearly conflicting tensions between the need for security of tenure to provide appropriate investment incentive (which, in turn, determines the efficient use of spectrum) and the need for flexibility in spectrum management to facilitate band clearance in order to accommodate technology change to ensure more efficient future use of spectrum.

While Telstra in no way purports to have all the answers to these questions, Telstra suggests that, in order to properly address these tensions, it is appropriate for the Commission to fully assess the costs and benefits of retaining the current system of time-delimited licences against alternative systems of licence tenure that may provide a greater certainty of tenure going forward.

Time-delimited leases and investment security

Each of the licences currently issued under the *Radiocommunications Act* 1992 - class licences; apparatus licences and spectrum licences – are time delimited with no rights of renewal, although renewal is possible at the absolute discretion of the ACA.

As the Commission points out, spectrum licences provide a maximum tenure of 15 years. Upon expiry, the licence may be resold by the ACA. The licence may be reissued to the same licensee only if the licence is being used to provide a service declared by the Minister to be in the public interest or if the ACA is satisfied that special circumstances exist.

In contrast, apparatus licences are usually issued for renewable one-year periods, but can be issued for any period of up to five years. They can be suspended, varied or cancelled by the ACA without any requirement to pay compensation. However, the normal practice is either to extend the licence or to relocate apparatus licence holders to a new frequency, at the licensee's expense, if the spectrum band they currently occupy is needed for other purposes.

Telstra acknowledges there are benefits that accrue from the use of time-delimited tenure – primarily in terms of the opportunities afforded for periodic band clearing[15] However, balanced against this is the possibility that the need to seek renewal, within timeframes that may be relatively short in the context of major infrastructure investment decisions, may in fact impede the making of decisions that should proceed in the public interest.

The problems with time-delimited licences arise from the properties of investments in spectrum and in the infrastructure necessary to supply services using the spectrum. Because investments in the industry are long-lived and highly specific, there are significant sunk costs associated with the deployment of infrastructure to supply services using spectrum. Accordingly, it is necessary to ensure that there is adequate incentive for appropriate investment decisions.

In addition, the extent to which the costs are sunk gives rise to a significant asymmetry in bargaining power between the ultimate owner of the spectrum (the Commonwealth and its agent the ACA) and the investor in infrastructure that makes use of that spectrum.

The firm invests in a specific asset, which is risky behaviour. Once this investment is made (and sunk), the Commonwealth has an incentive to extract any profits associated with a successful investment but no symmetrical requirement to compensate for unsuccessful investments. This could simply take the form of the potential threat of withdrawing the

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15 Of course, as the Commission notes in its Issues Paper, band clearing can also be achieved using the ACA's power of reallocation or conversion.

licence, unless the firm bid a significantly increased licence fee as part of an auction process.

Such behaviour represents a cost to society. Consider a licence holder that is seeking to extend its right to use the spectrum because it has not recouped the whole cost of its investment. It is likely that such a firm will have an incentive to successfully bid for renewal of the licence, even if it were not the most efficient user of the spectrum compared with current technologies. The argument is that the incumbent has invested to use the spectrum and it is assumed that a significant part of this investment is sunk, in that it cannot be recovered in the event of the incumbent losing the spectrum licence. The firm faces a choice of losing its sunk investment costs or producing while incurring losses. Therefore, it will have an incentive to win the auction even if it is not socially efficient, with the resultant economic efficiency losses ex post.[16]

If the firm anticipates this situation, it will have an incentive to under-invest ex ante. If the project requires sequential investments, under-investment will become apparent as the end of the licence period approaches. If there is a once-off investment, the investment will be tailored to fit the tenure period ex ante, regardless of whether or not such an investment is socially optimal.

In summary Telstra suggests that uncertainty as to security of future tenure of spectrum licences may lead to significant economic inefficiencies in the use of spectrum. It creates distortions in investment decisions relating to the use of that spectrum and has the potential to result in the allocation of the spectrum to a less-than-optimal user.

Security of tenure

It is because of these very real problems associated with balancing the lack of investment security inherent in utilising time-delimited spectrum licences against the need to be able to free up spectrum for evolving uses that Telstra believes the Commission should investigate closely alternative options. Telstra urges the Commission to closely examine the potential costs and benefits of each of:

- perpetual leases;
- leases with a first-option to renew;
- fixed-term leases renewable by the licencee subject only to a public benefit test.

Perpetual leases may be considered essentially equivalent to the granting of a freehold right. Telstra acknowledges that there are some potential difficulties associated with such a grant, particularly in determining how the rights are assigned initially; and how much spectrum

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16 Another incentive not to lose the auction is based on the fact that shareholders view the licenses as significant assets, thus increasing the valuation of the company. Failure to secure these assets may result in substantial falls in the share price. This creates a downside of not receiving a license far higher than the zero, or opportunity cost downside assumed in standard auction literature. For this reason, a firm views the financial value of receiving a license as the sum of this negative downside and the true profitability of using the spectrum. The sum of this valuation will be higher than the maximum bid leading to the possibility of overbidding. It is likely that incumbents within a market face a proportionately higher downside relative to new entrants, since the share price of the former already includes the expectation of a continual use of the spectrum.

holders should pay for such a right. Telstra is currently considering these issues and looks forward to working with the Commission on this matter.

However, moving towards a system of "freehold title" may have a number of attractive properties beyond the amelioration of the problems detailed above with time-delimited leases. In particular, a system of freehold title would facilitate the development of secondary trading in spectrum, whereby holders of the spectrum rather than the regulator will determine when to put part or all of their spectrum allocation up for sale. Telstra will provide a more elaborate position on the costs and benefits of secondary markets in its submission in response to the draft report.

As in property law where the Crown grants freehold interests in land but retains the ability to completely resume it and regulators have rights to shape planning and management of that property asset, the Commonwealth and the regulator could still be able to plan and manage the appropriate use of the spectrum asset through appropriate and publicly transparent processes.

Telstra also believes the alternative of providing licences with a first-option to renew needs to be carefully considered. The idea is that spectrum leaseholders/licensees would have some right of renewal, thereby providing them with a greater degree of certainty. Such rights could vary from an automatic right of renewal subject only to an exceptional change in circumstances clause, through to a first right of refusal.

The former right would come close to a freehold right, while providing the ACA with a periodic opportunity for band clearing in exceptional circumstances. The latter right would have many of the problems of a time-delimited leasehold, but these would be minimised in part by giving the leaseholder some additional security. Again, Telstra will undertake to elaborate more on the costs and benefits of such an option in future submissions.

Because there is a competing need to ensure that spectrum allocation is flexible enough to permit future change of use and to provide scope for band clearance should it be necessary, Telstra suggests that leasehold interests of these types could be provided subject to conditions providing for the resumption of spectrum in appropriate, limited circumstances.

Alternatively, licences could be issued on a fixed term basis for, say 15 [20] years and made renewable, on the proviso that a public benefit test is then satisfied. Such a test could have regard to the use made of the spectrum by the incumbent and any alternative use that may be possible under new or existing technologies or operators.