

# **PROPOSED APPROACH TO FIXED-WIRELESS BROADBAND DEPLOYMENT AND SERVICE PROVISIONING IN SINGAPORE**

## **A RESPONSE TO AUTHORITY'S CONSULTATION PAPER OF 16 FEBRUARY 2000**

### **SINGAPORE TELECOMMUNICATIONS LIMITED**

#### **1. SUMMARY**

- 1.1 Singapore Telecommunications Ltd (“SingTel”) strongly supports the move by the Info-communications Development Authority of Singapore (“the Authority”) to issue Public Fixed-Wireless Broadband Multimedia (“PFWBMM”) licences and allocate spectrum for the provision of fixed-wireless broadband multimedia services.
- 1.2 SingTel believes that such a move is critical to achieving the Authority’s mission of spearheading Singapore’s drive to be a vital global info-communications center and facilitating the transformation of Singapore into a knowledge-based digital economy and society. Fixed-wireless broadband access technology will enable the delivery of broadband services in competition with other broadband access technologies such as xDSL, fibre and hybrid fibre co-ax.
- 1.3 The granting of licences will encourage investment in the info-communications infrastructure necessary for Singapore to exploit the opportunities created by convergence and to deliver the benefits of the new information age to all members of the Singapore society. To realise this objective, SingTel fully supports the Authority’s intent to impose obligations on new entrants who are awarded PFWBMMs to deploy nationwide broadband networks and services. We believe that imposing such network and service roll-out obligations are necessary to ensure that all Singaporeans are able to enjoy the benefits that the

info-communications age will bring. SingTel is concerned that in the absence of such commitments, new entrants using the fixed-wireless broadband access technology may make minimum investments in infrastructure and restrict the deployment of their networks to limited geographic areas to serve a small and select group of consumers.

- 1.4 SingTel, as an existing operator providing broadband services, has already invested significantly in broadband infrastructure and would welcome the opportunity of using the fixed-wireless broadband access technology to complement our existing broadband access technologies such as ADSL.

## **2. SPECIFIC RESPONSES TO THE AUTHORITY'S QUESTIONS**

- 2.1 Below we address each of the questions raised by the Authority in the Consultation Document of 16 February 2000 titled "Proposed Approach To Fixed-Wireless Broadband Network Deployment And Service Provisioning In Singapore."

- 2.2 **The potential of and benefits arising from the deployment of fixed-wireless broadband network, the likely services / applications to be deployed and the potential demand from business and consumers.**

- 2.2.1 the potential of and benefits arising from the deployment of fixed-wireless broadband network;

As an alternative broadband access technology, deployment of fixed-wireless broadband networks will increase competition at the facilities level and at the services level, encouraging innovation and ensuring the delivery of broadband services at competitive prices.

Below, in paragraph 2.2.2 and 2.2.3, we deal more specifically with the potential demand for broadband services and the likely broadband services/applications which could be offered.

### 2.2.2 the likely services/applications to be deployed:

SingTel believes that it is reasonable to expect that the spectrum designated for the provision of fixed-wireless multimedia and broadband service distribution will be used solely for that purpose. The likely services/applications to be provided include:

- high-speed internet;
- video telephony;
- video conferencing;
- video-on-demand;
- home shopping;
- home banking;
- tele-commuting;
- tele-education;
- broadcasting;
- e-commerce;
- e-government i.e. on-line access to government services.

### 2.2.3 the potential demand from business and consumers.

It is difficult at this point in time to predict the demand for fixed-wireless broadband services. However, it is reasonable to expect that there will be an immediate demand in the business market. Businesses are continuing to require higher bandwidth facilities which can carry increasing amounts of data at 2Mbit/s and above between fixed points.

SingTel would expect that the initial demand from businesses will be for high speed internet access, remote LAN access, file

and data transfer and video conferencing. We would expect that, in time, businesses will demand e-commerce applications (business-to-business and business-to-consumer).

Residential consumers will increasingly demand faster access to various info-communication services such as tele-education, entertainment, home shopping, video-on-demand and e-government.

**2.3 The possible uses for the fixed-wireless broadband technology, and how the competing demands for the spectrum should be managed, including the allocation process, the timing of the process and criteria to be used. Authority also seeks comments on whether there are interconnection and access issues that may pose problems to achieving Authority's objective of transparent and seamless interconnection and open access; and how these may be practically and realistically addressed. Authority further seeks comments on the type and level of Quality of Service (QOS) standards, both network and customer QOS standards, that would be appropriate to benchmark the quality of the network and services deployed**

**2.3.1 the possible uses for the fixed-wireless broadband technology;**

Please refer to our comments in paragraph 2.2.3 above in relation to the potential fixed-wireless broadband services.

**2.3.2 how the competing demands for the spectrum should be managed;**

We strongly support the Authority's statement in point 6 of its Fact Sheet on full competition in the telecommunications sector that:

"FBOs using wireless technologies will however be required to ensure nationwide coverage and availability."

We note, and agree, with the Authority's reinforcement of the above statement in paragraph 2.2.2 of the Consultation Document that, given spectrum scarcity, preference should be given to those applicants who commit to deploy a nationwide fixed-wireless broadband network.

However, whilst new entrants to the broadband market should be required to commit to deploy a nationwide network, existing operators currently providing broadband services using other broadband access technologies such as xDSL should be able to participate in the comparative selection process, and if successful, use fixed-wireless technology to complement their existing roll-out of a nationwide broadband network.

As we have indicated above, SingTel believes that it is reasonable to expect that spectrum allocated for fixed-wireless multimedia and broadband service distribution be used solely for that purpose. Traditional telecommunications services can be provided competitively through alternative means.

### 2.3.3 the allocation process

SingTel supports an allocation approach whereby the Authority sets aside a minimum amount of spectrum for each successful applicant granted a licence through the comparative selection process.

We refer the Authority to our comments in paragraph 2.3.5 below in relation to the selection criteria.

#### 2.3.4 the timing of the process

We note that Mr Yeo Cheow Tong, Minister for Communications and Information Technology, in his keynote address at the opening of the Comdex Asia 2000 on 5 April 2000, stated that the Authority would undertake a comparative selection exercise to award fixed-wireless broadband licenses before the end of the year. Further, we note that the Authority has stated its intention in paragraph 3.1 of the Consultation Document to award Public Fixed-Wireless Broadband licenses in the 3<sup>rd</sup> Quarter 2000.

SingTel would support the Minister's and the Authority's proposed timing for the conduct of a comparative selection process.

#### 2.3.5 criteria to be used

SingTel welcomes, and supports, the statements made by Mr Yeo Cheow Tong, Minister for Communications and Information Technology, in his keynote address at the opening of the Comdex Asia 2000 on 5 April 2000, that the Authority would undertake a comparative selection exercise to award fixed-wireless broadband service licences before the end of the year.

PFWBMM licenses fall within the classification of a Facilities Based Operator ("FBO"). SingTel supports the approach enunciated by the Authority in its "Guidelines For The Submission Of Proposals Relating To The Operations & Service Provisioning For Facilities-Based Operations".

The Authority's comparative selection process reflected in the "Guidelines For The Submission Of Proposals Relating To The

Operations & Service Provisioning For Facilities-Based Operations states that the Authority will take into account, without limitation, the following in its consideration of the merits of an FBO applicant's proposal:

- vision of the applicant;
- organisational structure and financial capability and strength of the applicant;
- competition strategies of the applicant for the provision of services; technical soundness of the applicant's plans and technical capability to implement the plans;
- commitments of the applicant in fulfilling its vision and plans;
- benefits that will be brought by the applicant to the industry, users and the Singapore economy as a whole in terms of the investments in Singapore; enhancement of the telecommunication infrastructure, capacity, capability and connectivity; level of technological and service innovation and responsiveness; range and choice of products and service offerings; competitive pricing; level of quality of service; and level of customer service support; and
- limitations of available natural resources.

Further, SingTel supports the Authority's requirement in paragraph 3.7 of its "Guidelines For The Submission Of Proposals Relating To The Operations & Service Provisioning For Facilities-Based Operations", whereby FBOs, such as PFWBMM licensees, will have to roll-out their networks and provide services in accordance with their applications and that each licensee will need to provide a performance bond for the sum of five (5) percent of its total budgeted capital investment.

2.3.6 interconnection and access issues that may pose problems to achieving Authority's objective of transparent and seamless interconnection and open access; and how these may be practically and realistically addressed

SingTel supports the Authority's requirements with respect to interconnection and access as stated in paragraph 15 of its "Licensing Requirements and Regulatory Frameworks Governing Operations/Service Provision For FBOs."

Further, the provisions contained in the sample FBO licence published by the Authority, specifically Part IV, if incorporated in the PFWBMM licence will sufficiently address the issue of interconnection and access.

In relation to the Authority's question as to whether there are any interconnection and access issues which may pose a problem, fixed-wireless broadband technology is simply an access technology. SingTel sees no new conditions peculiar to this access technology which would necessitate specific intervention or the imposition of new obligations beyond those already referred to above.

SingTel notes, and agrees, with statements made by Mr Yeo Cheow Tong, Minister for Communications and Information Technology, in his keynote address at the opening of the Comdex Asia 2000 on 5 April 2000, that with the award of fixed-wireless broadband licenses by the end of this year, there will be multiple broadband access networks and infrastructure in place. SingTel believes that, with the deployment of a fixed-wireless broadband network, content providers and services providers will have alternative and competitive means of accessing and delivering their broadband services to customers. As such an interventionist regulatory approach to broadband interconnection and access issues may not be appropriate.



### 2.3.7 the type and level of Quality of Service (QOS) standards, both network and customer QOS standards

Consistent with the Authority's commitment to a technology neutral approach, the type and level of network and customer QOS standards for PFWBMM licensees should be no less stringent than those imposed on other licensees delivering broadband services utilising alternative access technologies.

We note that Mr Yeo Cheow Tong, Minister for Communications and Information Technology, in his keynote address at the opening of the Comdex Asia 2000 on 5 April 2000, has stated that the Authority is reviewing the minimum quality of service framework for broadband access services providers to raise the overall technical performance. We would propose that this may be done in consultation with existing broadband access network providers and would welcome the opportunity to contribute.

Further, we support the Authority's requirement in paragraph 3 of its document titled, "Licensing Requirements and Regulatory Frameworks Governing Operations/Service Provision For FBOs" regarding the issue of, and compliance with, Codes of Practice. Whilst SingTel holds the view that PFWBMM licensees should only be licensed to provide broadband services, should the Authority allow PFWBMM licensees to provide traditional telecommunications services, we would expect the Authority to enforce compliance with existing QOS standards and any relevant Codes of Practice in force, including the Code of Practice-Telecommunication Network Performance Indicators (COP-TNPI).

**2.4 The amount of spectrum that should be made available for terrestrial fixed-wireless broadband and satellite services, including the timing for review of spectrum reservation and allocation, where appropriate**

SingTel believes that the 3.55GHz of spectrum reserved by the Authority for fixed-wireless broadband services, with a minimum allocation of 300MHz and an additional 300MHz reserved for future use per licensee and, is sufficient.

**2.5 The optimal amount of spectrum to be allocated to each operator, including the detailed assumptions/basis/calculations used to derive the proposed spectrum bandwidth, and the timing of allocation where appropriate. Authority also seeks comments on the optimal number of operators that can be licensed, bearing in mind the growth of the broadband market in Singapore**

**2.5.1 optimal amount of spectrum to be allocated to each operator**

The amount of spectrum in the 25.25 GHz to 31.30GHz range available for allocation to fixed-wireless broadband services totals 3.55GHz.

SingTel would support an approach whereby PFWBMM licensees are each allocated a minimum of 300MHz of spectrum for the deployment of a nationwide fixed-wireless broadband network. This is consistent with the approach in Hong Kong and with the advice we have received from vendors.

An additional 300MHz should be reserved for each licensee to cater for future growth. The additional 300MHz should be allocated by the Authority upon demonstrable need.

#### 2.5.2 the timing of allocation

SingTel believes that 300MHz should be allocated upon the award of a licence.

The additional 300MHz should be allocated by the Authority upon demonstrable need.

#### 2.5.3 the optimal number of operators that can be licensed

SingTel agrees with the Authority's statement in paragraph 3.5 of, "Guidelines For The Submission Of Proposals Relating To The Operations & Service Provisioning For Facilities-Based Operations", that there should be no pre-set limit to the number of licenses.

Given our comments in paragraph 2.5.1 suggesting an allocation of 300MHz for each PFWBMM licensee and the reservation of a further 300MHz per licensee to cater for future growth, the award of five (5) or six (6) PFWBMM licenses would be reasonable.

**2.6 The most appropriate licensing and spectrum allocation approach to adopt. Views are also sought on whether spectrum should be assigned in a phased manner or allocated fully to the operator at the grant of license. Also whether there should be a separate component for license fees payable in addition to spectrum fees payable**

**2.6.1 The most appropriate licensing and spectrum allocation approach**

We would refer to our detailed comments in above. SingTel supports the statements made by Mr Yeo Cheow Tong, Minister for Communications and Information Technology, in his keynote address at the opening of the Comdex Asia 2000 on 5 April 2000, that a comparative selection approach would be adopted. This reflects the approach enunciated by the Authority in its document, “Guidelines For The Submission Of Proposals Relating To The Operations & Service Provisioning For Facilities-Based Operations”.

SingTel believes that a process of comparative selection is more likely to result in an innovative, dynamic and competitive broadband market. Licenses should be awarded on the merits of the application against objective, non-discriminatory, detailed, transparent and proportionate criteria.

All interested parties, including all existing fixed line operators, should be given the opportunity to freely participate. As an existing broadband infrastructure and service provider, SingTel would welcome an opportunity to participate in the comparative selection process and be able to use fixed-wireless broadband

access technology to complement our existing roll-out of a broadband access network. This will provide SingTel with the necessary technological flexibility to deliver broadband services using the most suitable combination of broadband access technologies.

Further, as we have indicated above, we support the Authority's statements that it will evaluate licence applications based on, but not limited to, an applicant's commitment in developing and investing in Singapore's info-communications infrastructure, ability to deliver its proposed service and/or infrastructure commitments, and commitment to quality of service standards.

2.6.2 whether spectrum should be assigned in a phased manner or allocated fully to the operator at the grant of license

As we have indicated in paragraph 2.5 above, SingTel believes that 300MHz should be allocated upon the award of a licence. An additional 300MHz should be reserved for each licensee to cater for future growth. The additional 300MHz should be allocated by the Authority upon demonstrable need.

2.6.3 should there be a separate component for license fees payable in addition to spectrum fees payable

SingTel supports the approach enunciated by the Authority in its "Guidelines For The Submission Of Proposals Relating To The Operations & Service Provisioning For Facilities-Based Operations".

PFWBMM licensees are Facilities Based Operators (FBOs). As FBOs, licence fees for PFWBMM licensees should be consistent with the general license fees applicable to FBOs.

The licence fee structure should be consistent with paragraph 3.6 of the “Guidelines For The Submission Of Proposals Relating To The Operations & Service Provisioning For Facilities-Based Operations”. The license fees should be based on an annual recurrent licence fee set at 1% of Annual Gross Turnover. We suggest that the minimum license fee be set at \$100,000 for new entrants in the broadband market. For existing operators who wish to use the fixed-wireless broadband access technology to complement their existing roll-out of a broadband access network, the minimum licence fee should be \$10,000. If the Authority allows the use of the fixed-wireless broadband network for the delivery of traditional telephony services, the minimum licence fee should increase. There should be no initial one-time licence fee upon the grant of a licence.

The licence fees should be in addition to any spectrum fees.

**2.7 Whether the spectrum band proposed in the consultation paper should be reserved primarily for IBBMM services or whether they should be assigned for broadcasters' usage**

**2.7.1 Whether the spectrum band proposed in the consultation paper should be reserved primarily for IBBMM services**

SingTel believes that the proposed spectrum band be used solely fixed-wireless broadband services, with the exception of the 28.6GHz-29.1GHz range for use by non-geo-stationary fixed satellite services is appropriate.

SingTel supports the Authority’s proposal to use spectrum in the 40GHz range for broadcasting purposes.

**2.7.2 whether they should be assigned for broadcasters' usage**

We refer to our comments in paragraph 2.7.1 above. The proposed spectrum band should be used solely for the provision of fixed-wireless broadband services. The Authority should consider allocating spectrum in the 40GHz range for broadcasting purposes.

**2.8 The appropriate licence duration for the provision of fixed-wireless broadband services**

SingTel believes that a ten (10) year licence term is appropriate and sufficient. PFWBMM licensees should be able to request for a renewal and the Authority may renew for a further period as it thinks fit.

**2.9 The timeframe for award of licence as well as the time needed by the operators to roll-out their networks and offer commercial services to the public**

As we have indicated above, SingTel agrees with the Minister's and the Authority's suggested timeframe.

In terms of the time needed for fixed-wireless network deployment, the equipment to operate with the spectrum range is available and given the comparative ease with which a fixed-wireless network may be rolled-out when compared with fixed wireline network, we would expect that nationwide network deployment could commence within six (6) months of the grant of licence.

We would suggest that the roll-out commitment (including committed timeframes) form part of the comparative selection process conducted by the Authority.

**2.10 How the issues of rain attenuation and compliance with QOS standards would be addressed.**

As we have indicated above, we note that Mr Yeo Cheow Tong, Minister for Communications and Information Technology, in his keynote address at the opening of the Comdex Asia 2000 on 5 April 2000, has stated that the Authority is reviewing the minimum quality of service framework for broadband access services providers to raise the overall technical performance. SingTel would welcome the opportunity to contribute to such a process.

The issue of compliance is more appropriately considered in the context of the Authority's review of the minimum quality of service framework for broadband access services providers.

**2.11 How operators plan to install their own internal wiring, the potential difficulties faced and the cost of doing so. Authority also seeks comments on how these difficulties can be practically and realistically addressed by potential operators and how Authority can facilitate the installation**

Each operator should install, own and maintain its own cabling and wiring. Recent public statements from Davnet Singapore regarding the deployment of its proposed network serve to evidence the cost effectiveness and relative ease with which a building may be wired.

SingTel sees no difficulties in PFWBMM licensees installing wiring in buildings.