

WHARF T&T LIMITED

**SUBMISSION IN RESPONSE TO
THE TELECOMMUNICATIONS AUTHORITY (“TA”)
THIRD CONSULTATION PAPER DATED 11 MAY 2007 ON PROVIDING RADIO
SPECTRUM FOR BROADBAND WIRELESS ACCESS SERVICES**

18 July 2007

1. INTRODUCTION

- 1.1 We welcome the opportunity to submit our views on the third consultation paper issued by the TA on 11 May 2007 on Providing Radio Spectrum for Broadband Wireless Access (BWA) Services.
- 1.2 We note in the third consultation paper, the TA has reached the preliminary view that the proposed allocation in the 3.5 GHz band for BWA should be held in abeyance. This is resulted from the conclusion reached by the working group that deployment of BWA service in the 3.5 GHz band would cause interference to the FSS and the measures required for protecting FSS would make it difficult for wide and cost effective deployment of BWA systems in the 3.5 GHz band in Hong Kong.
- 1.3 In light of the preliminary view on the allocation in the 3.5 GHz band, in the third consultation paper, the TA would like to seek the views of the industry about the allocation of the 2.3 – 2.4 GHz band (the 2.3 GHz band) and the 2.50 – 2.69 GHz band (the 2.5 GHz band) instead of the 3.5 GHz band for BWA deployment.
- 1.4 We support the Government’s vision to make broadband Internet access available to all citizens in Hong Kong, regardless of whether they are at home or on the move. We agree that the introduction of BWA services would facilitate the establishment of Hong Kong as a ubiquitous wireless city. As rightly pointed out by the TA many countries have already deployed or planned to deploy BWA shortly. Unless there are any technical interference issues, we support the making available of spectrum for deployment of BWA services as proposed by the TA in the third consultation paper.
- 1.5 In this submission we set out our response to the various issues raised by the TA in the third consultation paper.

2 SPECTRUM AVAILABILITY

2.3 GHz Band (2.3 – 2.4 GHz)

- 2.1 In the third consultation paper the TA considers that 2.3 GHz band can be allocated for the BWA applications in Hong Kong, however its usage is subject to further coordination with the Mainland authorities. After coordination, BWA licensees may be required to comply with a set of technical requirements to be specified by the TA so as to avoid excessive signal overspill to the border areas in Guangdong Province.

2.5 GHz Band (2.50 – 2.65 GHz)

- 2.2 The TA has also identified the 2.5 GHz band for BWA services. However in view of the competing demands for 3G, BWA and mobile TV services to operate in the 2.5GHz band in Hong Kong and the forthcoming World Radiocommunication Conference 2007 (WRC-07), the TA considers that it is pre-mature to consider the allocation of the 2.5 GHz band for BWA service. Nevertheless the TA will keep in view the development in WRC-07 and determine the way forward for the allocation of 2.5 GHz band. Notwithstanding that the TA would like to use this consultation to assess the interest and demand for the use of 2.5 GHz band for BWA services in Hong Kong so that the appropriate amount of spectrum would be included in the bidding exercise planned for 2008.
- 2.3 Our specific responses to the questions raised in the third consultation paper are as follows:

Question (1): Do you agree that the 2.3 GHz band be allocated for BWA services? If agreed, when the spectrum should be made available?

We agree that the 2.3 GHz band should be allocated for BWA services. We believe the spectrum should be made available as soon as possible before the end of 2007.

Question (2): Do you agree that the opening up of the 2.5 GHz band for BWA should be considered at a later stage? If agreed, when and how much of the bandwidth should be made available to the market?

Although we note that with 2.5GHz band deployment would be easier than 2.3 GHz due to readiness of equipment to operate within the 2.5GHz, we agree that the opening up of the 2.5GHz band for BWA should be considered at a later stage. We believe when and how much of the bandwidth is to be made available to the market would depend on the demands at the time and the allocation of the 2.3 GHz. We suggest that the TA consults the industry further on this subject matter.

Question (3): Do you have any preferred frequency bands for BWA services? How much spectrum do you need initially and for future expansion (number of blocks, spectrum width of each block, in which bands) and when the spectrum should be made available to the market?

We believe 2.3GHz and 2.5GHz frequency bands are acceptable for BWA services. However, the current market and technology information indicate that more 2.5GHz WiMax equipment is available. Eventually, WiMax vendors would support both 2.3GHz and 2.5GHz bands.

In terms of frequency spectrum, 30MHz bandwidth (i.e. 6 x 5MHz blocks or 3 x 10MHz blocks) is initially required to provide reasonable BWA services. The future spectrum requirement is highly dependent on the development of WiMax technology and the WiMax application requirements.

Potential Supply of Spectrum

2.3 GHz Band (2.3 – 2.4 GHz)

- 2.4 In the third consultation paper, the TA indicates that potentially the 2.3 GHz band could be divided into 20 blocks of 5 MHz widths, with 17 frequency blocks (Block 2 to Block 18) available for BWA deployment. Our specific response to question 4 in the third consultation paper is as follows:

Question (4): Do you agree with the proposed frequency allocation plan given in Annex 1? If not, what is your proposal?

We agree with the proposed frequency allocation plan given in Annex 1 to the consultation paper.

- 2.5 In the third consultation paper, the TA considers that each operator should be allowed to bid for no more than six 5 MHz frequency blocks (i.e. a maximum of 30 MHz bandwidth for each operator). With such allocation there should be sufficient spectrum to license at least 3 BWA operators in the 2.3 GHz band. The TA also indicates that initially only part of the spectrum in the 2.3 GHz band may be offered for bidding if the anticipated demand is insufficient or if coordination with the Mainland results in part of the 2.3 GHz band in Hong Kong not initially usable due to potential radio interference.

- 2.6 Our specific responses to questions 5 and 6 in the consultation paper are as follows:

Question (5): Do you agree that a BWA licensee should be assigned no more than six 5 MHz blocks of the BWA spectrum?

In view of limited available bandwidth in the 2.3GHz band, we believe the number of frequency blocks assigned to each BWA licensee should be restricted. However, six 5 MHz blocks are minimum requirement to provide an acceptable throughput under the current technology.

Question (6): If the result of the coordination with the Mainland authorities confirms that 85 MHz bandwidth in the 2.3 GHz band can be made available, do you agree that the TA should make available all the 85 MHz bandwidth for BWA service? If not, what is your proposal with reasons?

We agree that the TA should make available all the 85 MHz bandwidth for BWA services if the result of the coordination with the Mainland authorities confirms that 85 MHz bandwidth in the 2.3 GHz band can be made available.

2.5 GHz Band (2.50 – 2.69 GHz)

- 2.7 On the making available of 2.5 GHz band, our response to question 7 in the third consultation paper is as follows:

Question (7): Do you have any views on the frequency allocation plan for the 2.5 GHz band?

We believe the frequency allocation plan for the 2.5 GHz band would need to be discussed later. This band indeed could be allocated to support multiple wireless services such as BWA services and 3G mobile services. A detailed discussion, especially on the demand for different wireless services should be carried out in order to determine the allocation of this band.

3 LICENSING ISSUES

Unified Carrier Licence (UCL)

- 3.1 The TA has indicated in the third consultation paper that BWA services would be licensed under the UCL. We note that the TA would recommend to the Secretary for Commerce, Industry and Technology to make the necessary regulation under the Telecommunications Ordinance for the creation of the UCL. It is expected that the UCL would be available in mid-2008 and UCL would be used for licensing BWA services. Subject to further consultation on the general conditions and special conditions of UCL, we do not have any specific comments on the proposed UCL at this stage other than the specific issues raised in the third consultation paper.

Term of Licence

- 3.2 The TA has indicated in the third consultation paper that UCL to be created should have a validity period of 15 years. This is consistent with the term of the current fixed carrier licence and we support the proposed validity period of 15 years.

Scope of Permitted BWA Services

- 3.3 The TA proposes in the third consultation paper that there should be no restriction on types of applications and services that may be provided using the BWA spectrum. In view of the time frame, we believe any restriction would be short-lived and meaningless. Our response to question 8 in the third consultation paper is as follows:

Question (8): Do you have any comment on the TA's preliminary view that no restrictions should be imposed on the types of applications and services that may be provided using the BWA spectrum?

We support the TA's preliminary view that there should be no restriction on the types of applications and services that may be provided using the BWA spectrum. We believe this is consistent with the Government's technology neutrality principle and market driven approach.

Standard Issues

- 3.4 The TA has indicated in the third consultation paper that no particular standard or technology would be prescribed for the BWA deployment, provided that the proposed BWA technology conforms to recognized open standards and is compatible with the use of the radio spectrum allocated for such applications in Hong Kong. This is

consistent with the Government's technology neutrality principle. Our response to question 9 in the third consultation paper is as follows:

Question (9): Do you have any further comments on the preliminary view of the TA that he should not prescribe any particular standard or technology for the BWA deployment?

We support the TA's preliminary view that no particular standard or technology should be prescribed for the BWA deployment. This is consistent with the Government's technology neutrality principle and market driven approach.

Territory-wide Assignment

- 3.5 In the third consultation paper the TA maintains the view that assignment of frequency blocks for BWA services would be made on a territory-wide basis. Our response to question 10 in the third consultation paper is as follows:

Question (10): Do you have any further comments on the TA's preliminary view that assignment of the frequency blocks for BWA services should be made on a territory-wide basis?

We support the TA's preliminary view that assignment of the frequency blocks for BWA services should be made on a territory-wide basis. For a small geographical area such as Hong Kong we do not believe it would be workable to devise assignment of spectrum to specific geographical area.

Roll-out Obligation

- 3.6 In the third consultation paper the TA maintains that BWA licensees should be required, under the licence, to roll out the services within 24 months from the date when the licence is issued. There would be no requirement on licensee to roll out a particular type of services and in view of the lead-time for various activities, it was suggested that the roll out requirement would not be too stringent. To ensure roll out obligation is met, performance bond would also be required. Our response to question 11 in the third consultation paper is as follows:

Question (11): Do you have any further comments on the TA's preliminary view that BWA licensees will be required, under the licence, to roll out the services within 24 months from the date when the licence is issued and that performance bond will also be required?

We do not consider that it is necessary to impose roll-out obligation given the proposed payment of spectrum utilization fee for the BWA spectrum. Nevertheless we urge the TA to give further indications on the roll out obligations other than the general indications given in the third consultation paper that it would not be too stringent. If the TA maintains the requirement on roll-out obligations, we submit that the roll-out obligations should be realistic or practicable and for the best interests of Hong Kong. To ensure that Hong Kong maximizes benefits from the introduction and wide deployment of BWA services, licensees should be expected to have sufficient scale of operation, not only in network but also in all aspects of customer service

terms, throughout the Territory. In our view any licensee without sufficient scale of operation would not be able to sustain a satisfactory service to the community, as it would not be able to successfully deploy BWA services given the investment required and the keen competition in the telecommunications market.

Spectrum Utilization Fee for BWA Services

- 3.7 In the third consultation paper the TA maintains that spectrum utilization fee (SUF) should be imposed on spectrum for commercial use. This is also in accordance with the Government's recently announced Radio Spectrum Policy Framework for Hong Kong.

Spectrum Assignment Method

- 3.9 In the third consultation paper the TA maintains that the BWA spectrum should be assigned by a hybrid selection method including a simple pre-qualification and an auction. Our response to question 12 in the third consultation paper is as follows:

Question (12): Do you agree with the proposed frequency assignment method as stated above?

We note the deficiency with the beauty contest approach. The proposed hybrid selection method including a simple pre-qualification and an auction, in our view, is not necessarily the best approach to assigning spectrum. We agree in principle that auction provides a fair, transparent and objective means to determine who should be assigned the spectrum. However auction is not necessarily an economically efficient means.

The TA has not set out any pre-qualification requirements other than indicating that they would be simple. We welcome further information from the TA on the pre-qualification requirements. We believe one of the pre-qualification requirements from potential bidders should be their BWA roll-out plan. Any roll-out plan should be realistic or practicable and for the best interests of Hong Kong. In order to ensure that Hong Kong maximizes the benefits from the introduction and wide deployment of BWA services, bidders should have sufficient scale of operation, not only in network but also in all aspects of customer service terms, throughout the Territory otherwise they would not be able to sustain a satisfactory service to the community or successfully deploy BWA services given the investment required and the keen competition in the telecommunications market.

We submit that incumbent 2G and 3G mobile operators and their related parties should be disqualified at the outset to avoid spectrum hoarding.

SUF Payment Method

- 3.10 The TA maintains that an up-front lump sum payment basis should be adopted for SUF, the amount of which will be determined through an open auction. The TA considers that up-front payment method is more straight forward, easier and less expensive to administer. Our response to question 13 in the third consultation paper is as follows:

Question (13): Do you have any further comments on the TA's preliminary view that an up-front lump sum payment basis should be adopted for SUF, the amount of which will be determined through an open auction?

We would expect the SUF payment to represent a fair value. We query if there would be a reserve price set.

Interconnection Terms and Conditions

- 3.11 We note the same regulatory arrangement for fixed mobile interconnection charge would be applicable to BWA licensees during the transition period as set down by the TA in the statement dated 27 April 2007 on Regulation for Fixed-Mobile Convergence. We query how the TA would determine whether a particular service operated by a new BWA licensee is primarily a fixed or mobile service given that some services may be fixed at some times and mobile at other times, the split between fixed and mobile is driven by users behaviour and it is not constant. Besides given that the UCL would not be available until mid 2008 and the transition period for fixed mobile interconnection charge to end on 26 April 2009, the determination on whether a particular service operated by a BWA licensee is primarily a fixed or mobile would probably be academic.

Open Network Access

- 3.12 In the third consultation paper the TA proposes that ONA requirement as an ex ante obligation would not be imposed on BWA licensees. Our response to question 14 in the third consultation paper is as follows:

Question (14): Do you agree that BWA licensees should not be subject to an ex ante ONA requirement?

We agree that BWA licensees should not be subject to an ex ante ONA requirements. There is really no justification for any ex ante ONA requirements given the market development and that there is no such requirement on the 2G or 3G mobile operators.

Assignment of Telecommunications Numbers

- 3.13 We note as part of the regulation for fixed-mobile convergence, the TA would invite the Telecommunications Numbering Advisory Committee (NAC) to review the long-term development of the existing numbering plan to determine if there is a need to allocate new number ranges for FMC services. Our responses to questions 15 and 16 in the third consultation paper are as follows:

Question (15): Do you consider that FMC services should be allocated with new number ranges?

In view of the TA's decision to invite NAC to review the long term development of the existing numbering plan to determine if there is a need to allocate new number ranges for FMC services, we would consider this issue further as part of the discussion to be undertaken at the NAC.

Question (16): Do you agree that numbers with prefixed "2" and "3" should be allocated to fixed/"limited mobility" BWA services while numbers with prefixed "6" and "9" should be allocated to "full mobility" BWA services?

Our response is the same as for question 15, i.e. we would consider this issue further as part of the discussion to be undertaken at the NAC.

Number Portability

- 3.14 The TA proposes in the third consultation paper to include relevant conditions on number portability in the BWA licence and that BWA licensees would be directed to implement ONP, MNP and FMNP as appropriate. Our response to question 17 is as follows:

Question (17): Do you agree that BWA licensees should be subject to the requirement of facilitating both ONP and MNP, including the FMNP to be introduced in the future?

We agree that BWA licensees should be subject to the requirement of facilitating both ONP and MNP, including the FMNP to be introduced in the future.

Authorisation under Section 14

- 3.15 We note the TA's comment in the third consultation paper that the building access right to be granted to BWA operators under UCL will follow the same principles as applied to the existing fixed network operators and mobile network operators depending on the nature of the particular installation. We are however concerned with the possible confusion on whether a particular installation would be considered mobile or fixed and the possible delay with the case-by-case consideration by OFTA. This would introduce uncertainty and could affect roll out of network by licensees. Perhaps the TA should consider setting some guidelines with a view to facilitate network and services roll out by BWA licensees.

Denial of Service to Suspected Stolen Apparatus

- 3.16 The TA proposes to include a licence condition about denial of service, similar to that found in the mobile carrier licences so that new BWA licensee would be required to implement denial of service to suspected stolen apparatus if directed by the TA. Our response to question 18 is as follows:

Question (18): Do you agree that BWA licensees should be subject to the requirement of denial of service to suspected stolen apparatus?

Although we do not believe it is necessary and that this issue should be left to licensee to commercially decide, we do not have strong objection to the proposal.

4 TECHNICAL ISSUES

Block Edge Emission Mask in 2.3 GHz Band

- 4.1 The TA subscribes to the view that a more light-handed approach should be adopted and BWA operators should coordinate among themselves to resolve the adjacent channel interference issues and that the compliance with Emission Masks will be enforced only if the interference issue cannot be resolved through the coordination among the operators concerned. The Emission Masks will be developed by the TA in consultation with the BWA licensees.

Question (19): Do you agree with the proposed approach as stated in paragraph 58 to resolve adjacent channel interference issues?

We agree that BWA operators should be allowed to coordinate among themselves first to resolve any potential adjacent channel interference issues.

Guard Bands and Available Bandwidth for BWA Service in 2.3 GHz Band

- 4.1 *Question (20): Do you agree with the proposed guard banks for the 2.3 GHz band? Do you agree with the arrangement for the spectrum holder at the lower edge of 2.3 GHz band to use the spectrum 2.300 – 2.305 GHz as stated in paragraph 60?*

The proposed guard banks are acceptable but it is preferred to allow the use of 2.300 - 2.305 GHz for BWA services so that 3 BWA operators could be allocated with 6 x 5MHz blocks. However, additional cost would be incurred for the technical measures to protect BWA from possible interference generated by ENG/OB links and the RF would be more complicated. Perhaps the SUF of the spectrum holder at the lower edge of 2.3GHz band could be lower than the others spectrum holders.

5 CONCLUSION

- 5.1 We welcome the TA's proposal to make available 2.3 GHz band for BWA applications in Hong Kong instead of the 3.5 GHz band.
- 5.2 We are in general agreement with the TA's proposals on the proposed frequency blocks and the various licensing issues raised in the third consultation paper.

**Submitted by Wharf T&T Limited
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