



NEW WORLD TELECOMMUNICATIONS LIMITED

SUBMISSION TO CONSULTATION PAPER

Licensing Framework for Deployment of Broadband Wireless Access

14 March 2005

Submission on Licensing Framework for Deployment of Broadband Wireless Access

0. Executive Summary

Market impact

- 0.1 NWT believes that the licensing of BWA spectrum will have a profound impact on market competition and must therefore be managed carefully.
- 0.2 The local fixed line market in Hong Kong is intensively competitive and is undergoing dramatic changes.
- 0.3 In particular, the policy decision to phase out Type II interconnection at telephone exchanges (Point A) has disrupted the investments in exchange colocation, and forced the relevant operators to find and adopt alternative customer access network solutions.
- 0.4 The introduction of BWA could add further disruption to the market if this is not properly managed:
 - (a) BWA may exacerbate the current situation of too many players in a small market;
 - (b) BWA spectrum is scarce, so the Government must allocate these spectrum fairly, efficiently and for public benefits;
 - (c) Auctions may result in high spectrum prices (e.g. 3G auctions overseas) which may place undue financial burden on the industry.
 - (d) Auctions exacerbate risks for operators. The allocation of spectrum should not be seen as having revenue-raising purpose – the goal should be to ensure fair allocation in the interests of market development.
- 0.5 NWT believes that BWA policy should integrate with the phase out of Type II Interconnection regime at telephone exchanges (Point A). BWA policy should cater for the need to ensure continuity of service to end-customers following the phase out of Type II lines.
- 0.6 In the current market context, NWT proposes an approach which best suits the stable development of the fixed line market, as follows:
 - (a) The three “first-wave” new entrant fixed carriers should be given a first right of refusal to the spectrum;
 - (b) Allocation of remaining spectrum limited to *existing and active* fixed carriers only. As spectrum is scarce, only active FTNS operators who are offering public services to end-users should be eligible for spectrum. This would preserve their commercial incentives to invest in the telecommunications infrastructure and help Hong Kong to

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maintain its competitive edge as a pre-eminent regional telecommunications hub;

- (c) Spectrum should be limited to fixed use;
- (d) Nominal licence fee (or alternatively, if spectrum is auctioned - nominal reserve price) to cover administrative expenses.

NWT's proposals

0.7 NWT proposes that the spectrum should be allocated by means of direct allocation and auction:

- (a) **Part Allocation:** The three “first-wave” new entrant fixed carriers (i.e. HGC, NWT and WT&T) who are directly affected by the phase out of Type II interconnection should have a first right of refusal on BWA spectrum. There should be low reserve price for such spectrum, no greater than necessary to meet administrative costs.
- (b) **Part Auction:** Any remaining blocks (including blocks not taken up by the three carriers) can be made available by auction to the *existing and active* local fixed carriers.
- (c) **Spectrum allocation:** In the interests of ensuring broader availability of spectrum to interested parties in the 3.4 to 3.6 GHz band, the available 200 MHz should be divided into in 28 lots each of 7 MHz. The maximum spectrum owned by each operator should not exceed 28 MHz.

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1. Introduction

- 1.1 New World Telecommunications Limited (“NWT”) welcomes the opportunity to respond to the consultation paper on **Licensing Framework for Deployment of Broadband Wireless Access**.
- 1.2 NWT believes that the allocation of broadband wireless access (BWA) spectrum will have a profound impact on the state of the fixed line market in Hong Kong, and therefore the licensing framework for its deployment needs to be considered carefully.

2. MARKET IMPACT ISSUES

- 2.1 As a preliminary matter, NWT wishes to highlight some key market competition issues in relation to the licensing of BWA spectrum.

State of Local Fixed Carrier Market

- 2.2 The local fixed carrier market in Hong Kong is intensively competitive and is undergoing dramatic changes.
- 2.3 NWT is concerned that the introduction of BWA could add further disruption to the fixed line market if this is not properly managed.

High level of competition

- 2.4 The fixed carrier market is characterised by a high number of competitors – a total of ten (10) local fixed carrier licensees, six (6)¹ of which are active in the retail market.
- 2.5 The fixed carriers also face significant competition in retail service markets from hundreds of ISPs and ETS operators.
- 2.6 OFTA research has shown that prices for fixed line services have fallen dramatically since liberalisation. In the international sector, it is estimated that cumulative savings recorded by consumers between 1999 and 2001 is nearly HK\$31.2 billion.²

¹ We note paragraph 3 of the Consultation Paper states: “Currently there are ten licensees of Fixed Telecommunications Network Services (FTNS), *five* of which are actively offering public services to end-users.” (*italics* added) NWT believes that there are possibly *six* active licensees, namely: (1) PCCW-HKT, (2) HGC, (3) HKBN, (4) NWT, (5) WT&T and (6) i-Cable Limited (which offers residential broadband services and bundled telephony via associate company network licensees Hong Kong Cable Television Limited and WT&T).

² OFTA, “*Report on the Effectiveness of Competition in Hong Kong's Telecommunications Market: An International Comparison*”, 30 June 2003.

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Market changes

2.7 The fixed carriers face a difficult market environment due to the significant structural and dynamic changes occurring in the market place:

- (a) Regulatory changes in Type II interconnection policy
 - Phase out of Type II interconnection at telephone exchanges (Point A) has disrupted investments in exchange colocation, and forced the relevant FTNS operators to find and adopt alternative customer access network solutions.
- (b) Technology changes eroding revenues and margins
 - Fixed-Mobile substitution
 - VoIP
 - substitution of conventional telephone line service
 - no usage based charges for IDD, evasion of LAC/USC
- (c) Competition eroding revenues and margins
 - Decline of margins in conventional telephone line rentals and IDD without commensurate market growth.

2.8 Also, competitive fixed carriers face added difficulties:

- (a) Network factors - market asymmetry against competitive licensees

Competitive fixed carriers face competitive disadvantages in time and cost to market. Former incumbents (PCCW and i-Cable) have incumbency advantages due to their pre-existing customer access infrastructure rollout, from which to supply narrowband and broadband services to customers.

Potential competing demand for spectrum

2.9 NWT foresees great potential demand for spectrum in the 3.4 to 3.6 GHz band.

2.10 As OFTA states in the Consultation Paper:

- (a) There is growing demand for broadband access services;
- (b) In light of the phase out of Type II Interconnection regime at telephone exchanges (Point A), there is emerging demand for alternative customer access network solutions; and
- (c) BWA provides a potential broadband solution for fixed carriers, because it may be deployed to serve a wide area within a relatively short time, overcoming traditional physical and economic barriers.

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- 2.11 Accordingly, potential demand for BWA may come from the following players in the industry:
- (a) Demand by existing fixed carriers
 - Spectrum supports technology that may offer more time and cost effective means of extending network – overcomes last mile access barrier
 - Spectrum supports technology that may be capable of extra functionality due to limited mobility service, with prospect for full mobility
 - If only limited spectrum is available, gaining spectrum may be a chance to gain competitive advantage
 - (b) Demand by potential new entrant fixed licensees
 - Spectrum technology may overcome last mile access barrier which may be preventing market entry
 - If only limited spectrum is available, gaining spectrum may be a chance to gain competitive advantage
 - (c) Demand by mobile licensees
 - (if use of spectrum is not limited to fixed carriers) extra spectrum combined with existing spectrum may help provide extra bandwidth for mobile services

Risks of spectrum allocation

- 2.12 NWT foresees many risks to the market associated with the issue of new BWA spectrum:
- (a) BWA may exacerbate the current situation of too many competitors in a small market
 - There are already 10 licensees (6 active);
 - Spectrum / technology may reduce barriers to entry; and
 - There is potential for additional risky or irrational entry into the market, which affects all market participants.
 - (b) BWA spectrum is scarce, so there may be high competition for spectrum, resulting in high spectrum prices at auction (e.g. 3G auctions overseas) which may place added financial burden on the industry.
 - (c) BWA technology risk
 - BWA technology is unproved and not mature. The technology may fail to provide anticipated benefits.

For example, the LMDS failure-

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- 5 original licensees
- technology later abandoned
 - 2 licences converted to wireline FTNS
 - 2 licences (Teligent & Winstar) lapsed due to bankruptcy of parent company that specialised in LMDS
 - 1 remaining licence (SmarTone) is inactive
- BWA standards are not uniform – there are multiple standards – TDD or FDD, TDCDMA or WiMax, etc. As there are multiple standards, there are risks also with the choice of technology. Technology choices may need to be made by carriers before the technologies become popular and gain mass market acceptance. Mass market acceptance is key when a significant part of the BWA service offering to consumers will be the availability of customer equipment (modem / mobile phone / PDA). The technologies that gain critical mass acceptance with customer equipment will enjoy economies of scale which will result in lower retail prices, thus accelerating demand. Failure to pick what becomes the popular standard, will result in lack of economies of scale and an uneconomical technology.

Why auction?

2.13 NWT questions the prudence of allocating all spectrum by auction:

- (a) Beauty contest approach was used for 2G and LMDS

For OFTA's allocation of LMDS (local wireless FTNS) licences

- In September 1999, 14 applications received by OFTA
 - 5 licences issued by 'beauty contest' (due to spectrum constraint)
 - PSINet Hong Kong Ltd
 - HKNet-Teligent Company Ltd
 - Hong Kong Broadband Network
 - Eastar Technology Ltd
 - SmarTone Mobile Communications Ltd
- (b) Assignment of spectrum should not be seen as having revenue-raising purpose – the goal should be to ensure fair assignment of spectrum in the interests of market development.
- (c) An auction open to all comers may exacerbate risky or irrational entry. Market has shown itself to be irrational – no consolidation in a crowded market has occurred to date.

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- (d) Auction exacerbates risks / premiums. Auctions place competitive pressure on the level of bidding – there may be a high price between winning and losing, in respect of technologies which can be judged on potential only without any track record of proven performance, and especially in an already difficult market.
- (e) Market players may not be able to handle further market disruption from auctioning and new entry, on top of existing pressures such as the phase out of Type II at telephone exchanges (Point A).

3. NWT'S PROPOSAL

- 3.1 NWT considers that OFTA should recognise the actual current market state which is marked by cut-throat competition and significant disruptions through regulatory and technological changes.
- 3.2 NWT believes that OFTA should be mindful of adding further disruption to the market, in light of the risks of BWA technology (in terms of the success or failure of the technology itself) and the impact the very potential of the technology will have on the investment plans of competitors.
- 3.3 NWT believes that BWA policy should integrate with the phase out of Type II Interconnection regime at telephone exchanges (Point A). BWA policy should cater for the need to ensure continuity of service to end-customers following the phase out of Type II lines.
- 3.4 In the current market context, NWT proposes an approach which best suits the stable development of the fixed line market, as follows:
 - (a) Initial allocation of spectrum to three original new entrant fixed carriers, to aid continuity of service following the phase out of Type II interconnection at Point A;
 - (b) Allocation of remaining spectrum by way of auction limited to *existing and active* fixed operators only. As spectrum is scarce, only active FTNS operators who are offering public services to end-users should be eligible for spectrum. This would preserve their commercial incentives to invest in the telecommunications infrastructure and help Hong Kong to maintain its competitive edge as a pre-eminent regional telecommunications hub;
 - (c) Spectrum should be limited to fixed use;
 - (d) Nominal licence fee (or alternatively, if spectrum is auctioned - nominal reserve price) to cover administrative expenses.

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3.5 NWT proposes a combination of direct allocation and auction:

- (a) **Part Allocation:** The three “first-wave” new entrant fixed carriers (i.e. HGC, NWT and WT&T) who are directly affected by the phase out of Type II interconnection should have a first right of refusal on BWA spectrum.
- These operators are required to reach commercial terms with PCCW or migrate to alternative customer access networks by 30 June 2008. Allocation of BWA spectrum to the three original new entrant fixed carriers would meet the public interest of ensuring continuity of service to end users following the sunset of Type II interconnection rights.
 - There should be low reserve price for such spectrum, no greater than necessary to meet administrative costs.
- (b) **Part Auction:** Any remaining blocks (including blocks not taken up by the three new entrant carriers) can be made available by auction to the *existing and active* local fixed carriers.
- Auction should be limited to *existing and active* local fixed carriers. As spectrum is scarce, only active FTNS operators who are actively offering public services to end-users should be eligible for spectrum, as this would better promote the government’s goal of rollout of high speed last mile networks.
- (c) **Spectrum allocation:** In the interests of ensuring broader availability of spectrum in the 3.4 to 3.6 GHz band, the available 200 MHz should be divided into 28 lots each of 7 MHz.
- Bidders should have the freedom to choose the lot or lots bid for. Bidders should have flexibility to choose pairs or continuous blocks of varying size as desired.
 - The maximum spectrum owned by each operator should not exceed 28 MHz.
 - 28 MHz is more than adequate for commercial BWA service. BWA service would normally require at least 2 blocks and no more than 4 blocks. Thus, in theory the number of BWA spectrum licences could be as low as 7 and as many as 14.

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- OFTA should also consider applying a lower cap with respect to the incumbent PCCW-HKT, as adopted in Singapore;³

4. RESPONSE TO OFTA'S SPECIFIC QUESTIONS

- 4.1 NWT's response to the specific questions raised by OFTA in its consultation paper, are set out in this section.

Spectrum issues

Spectrum for BWA in Hong Kong

Paragraph 15

Having regard to the gradual withdrawal of mandatory Type II interconnection by 2008, the considerations above and the unavailability of spectrum in other candidate frequency bands for BWA, the TA is of the preliminary view that the 3.5 GHz band is a possible and could be the most appropriate licensed band for BWA deployment in Hong Kong.

- 4.2 NWT agrees with the TA's preliminary view that the 3.5 GHz band is an appropriate licensed band for BWA deployment in Hong Kong.
- 4.3 NWT also considers that:
- (a) spectrum planning should continue to be reviewed on a regular basis in line with developments in technology; and
 - (b) OFTA should consider the feasibility of expanding BWA spectrum profile into the adjacent frequency bands (e.g. 3.3 to 3.4 GHz - as is apparently being considered in China and India, and 3.6 to 3.8 GHz - as being considered in France and CEPT consultations)⁴ in line with market demand.
- 4.4 To supplement paragraph 4.3 (b) above, OFTA should clarify BWA spectrum expansion plans, as applicants for spectrum need to have an insight into the medium to long term scarcity of spectrum in order to determine the appropriate market value of such spectrum. Unreasonable withholding of spectrum will artificially inflate spectrum values.

Spectrum Sharing between FSS and BWA

Paragraph 19

Having considered the international deployment of spectrum for BWA, the possible benefit

³ IDA (Singapore), "Auction of Wireless Broadband Spectrum Rights – Information Memorandum", 25 February 2005. Total cap per bidder is 6 lots, but total cap for SingTel and StarHub is 4 lots.

⁴ WiMax Forum, "Regulatory Working Group Update", January 2005, page 10.

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that BWA may bring into Hong Kong, the gradual withdrawal of mandatory Type II interconnection in the run up to 2008, the equipment availability, the co-existence between BWA and FSS, the TA is of the preliminary view that the 3.4 - 3.6 GHz band may, depending on the actual requirement of BWA, gradually be allocated to BWA on a primary basis. FSS may still be used in this band on a secondary basis, or in a 600 MHz band outside the 3.4 - 3.6 GHz band on a primary basis. The TA invites views from the industry on this spectrum management issue.

- 4.5 NWT agrees with the TA's preliminary view that the 3.4 - 3.6 GHz band may, depending on the actual requirement of BWA, gradually be allocated to BWA on a primary basis.
- 4.6 Spectrum is, based on current technology, a scarce resource, as users of spectrum require allocations to the exclusion of others in the interests of avoiding interference problems. There is compelling reason to re-farm spectrum from FSS for BWA application, as this would serve the wider public interest in promoting broadband infrastructure rollout and services.

Spectrum Sharing between FDD and TDD

Paragraph 22

For coexistence of TDD and FDD services within the 3.4 - 3.6 GHz band, proper band plan will be devised to address the interference issues. Proper geographical separation of TDD and FDD systems will also be arranged where possible. The TA invites views from the industry on any other measures that will help tackling the interference issue. The TA would also like to receive input from interested parties on their expected bandwidth requirement and modes of operation (TDD or FDD) for BWA.

- 4.7 NWT has reservations about OFTA proposal to utilise fixed guard bands to deal with FDD / TDD interference. NWT believes that guard band planning:
- (a) may be wasteful, by consuming spectrum to be left idle;
 - (b) is not technologically neutral, by requiring OFTA to pre-determine the technologies used, or likely to be used, for the spectrum;
 - (c) uses regulatory resources and involves regulatory hazard, by requiring specific frequency co-ordination; and
 - (d) may be avoidable technically, if frequency block edge EIRP density emission mask is feasible.
- 4.8 NWT acknowledges an orthodox view that FDD and TDD bands should be separated by guard bands of bandwidth roughly equivalent to the wider of the separated bands.⁵

⁵ TDD Coalition, "Tutorial on TDD Systems", 3 December 2001, slide 50.

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- 4.9 Nevertheless, recent studies have shown that the use of block edge EIRP masks may be a solution which provides efficient use of spectrum and technology neutrality.⁶
- 4.10 Non-use of guard bands should be feasible. In Australia, spectrum is allocated and traded freely, divided into bandwidth and geographic units, without regulatory setting of guard bands. Interference through out-of-band and out-of-range emissions is dealt with by core technical standards and the placing of responsibility on contiguous owners to manage spectrum use and co-ordinate on interference problems.
- 4.11 In the event that OFTA decides to implement guard band planning, for optimal spectrum usage the spectrum block could be segregated into three contiguous segments to minimise guard bands. In such arrangement, FDD could take the low / high ends (to achieve necessary block offset) and TDD could take the middle, with guard bands between, as illustrated below.⁷

Illustration 1 (guard band implementation)

3.4GHz			3.5GHz				3.6GHz				
FDD		Guard band	TDD			Guard band	FDD				
A ₁	B ₁	C ₁		D	E	F	G		A ₂	B ₂	C ₂

For illustration only:

- 3 paired (2 x 14 MHz) spectrum (A₁ and A₂, B₁ and B₂, and C₁ and C₂)
- 4 unpaired (20 MHz) spectrum (D, E, F, G)

Spectrum Allocation

Paragraph 24

The TA is of the preliminary view that a paired band of 14 MHz x 2 for each block for IEEE 802.16 or ETSI HiperMAN service provision and an unpaired band of 20 MHz for each block for UMTS TDD service provision may serve the need of BWA in the 3.5 GHz band. The TA invites views from the industry on the proposed channel bandwidth and bandwidth for each block.

Paragraph 25

Subject to the industry demand, the TA may ultimately allocate roughly three 14 MHz x 2 paired frequency blocks and four 20 MHz unpaired frequency blocks. The frequency spectrum allocated for BWA in the initial phase may however be limited, and the TA will decide the spectrum pool to be offered based on the industry's immediate need. The TA invites views from the industry on the total bandwidth allocated for BWA in the initial phase.

⁶ Electronic Communication Committee (ECC) within the European Conference of Postal and Telecommunications Administrations (CEPT), "The Analysis of the Coexistence of FWA cells in the 3.4 – 3.8 GHz band", ECC Report 33, Cavtat, May 2003, section 1.2.

⁷ Refer TDD Coalition, *supra*, slide 61; WiMax Forum, *supra*, page 16.

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- 4.12 NWT recommends a technologically neutral frequency assignment plan. NWT believes that OFTA should not try to pre-judge present or future technology deployments.
- 4.13 However, OFTA's proposed spectrum planning contradicts technology neutrality. OFTA's proposal of 3 paired blocks (for IEEE 802.16 or ETSI HiperMAN) and 4 unpaired blocks (for UMTS TDD) inherently represents some sort of prejudgement regarding the use of technologies, by assuming the technologies are relatively equal and that there is relatively equal demand and equal utility for both types of spectrum.
- 4.14 NWT observes that WiMax is the highest profile standard for BWA. Based on our understanding of WiMax, the following points should be noted:⁸
- (a) WiMax will support both FDD and TDD configurations. TDD configurations will be attractive to operators because:
 - (i) TDD potentially uses less bandwidth than FDD;
 - (ii) TDD may possibly be more easily adapted to support asymmetric traffic patterns (e.g. customer internet use, which has greater demand for download bandwidth rather than upload bandwidth).
- It would be unwise for OFTA to predetermine frequency planning in terms of a (roughly) equal split of FDD / TDD, if the market does not choose FDD;
- (b) WiMax's channel size, whether for FDD or TDD type configurations, is flexible. WiMax can utilise blocks in multiples of 3.5 MHz or 5 MHz.
- 4.15 In addition, there should be no need for preset guard bands, as discussed above in paragraphs 4.7 to 4.10.
- 4.16 In Europe, CEPT is devising recommendations for frequency assignment planning. The draft recommendations include:⁹

⁸ WiMax Forum, "IEEE802.16a Standard and WiMAX - Igniting Broadband Wireless Access - White Paper".

⁹ ECC within CEPT, "DRAFT Recommended guidelines for accommodation and assignment of multipoint fixed wireless systems in frequency bands 3.4 – 3.8 GHz and 3.6 – 3.8 GHz", Draft ECC Recommendation (04)05, Annex 1 (footnotes omitted).

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GUIDANCE FOR THE PREFERRED CONSTRUCTION OF FREQUENCY ASSIGNMENT PLANS

Steps leading to a general case of recommended assignment plan with no pre-judgment on present and future technology

FWA systems may be provided by a number of different access technologies. The following approach, recommended as the General Case, includes steps addressing the situation whereby no decision is taken beforehand by an administration regarding the technology anticipated. It provides the most flexibility and freedom for operators to choose how to make best use of the spectrum:

1. *Consider any constraints brought about by the need to share with other services;*
2. *The blocks should be based on the raster of frequency slots, 0.25 MHz wide, or basic 3.5 MHz frequency channel arrangements provided by CEPT ERC/RECs 14-03 and 12-08;*
3. *Consider the appropriate block size (B) for assignment. Although it is difficult to determine an absolute value for the optimum block size, typical values of ~ 7 to 14 MHz (e.g. derived from a block of channels based on 3.5 MHz raster) or ~10 to 15 MHz (e.g. derived only from the 0.25 MHz slot raster) are considered practical for new wide/broad band services demand. Nevertheless the guidance given here is valid also for wider block sizes (e.g. up to ~ 28/30 MHz) that might be set up depending on the band availability in each country;*
4. *Taking due account of the technology choices and the constraints on spectrum access brought about by the need to share the band, consider the following guidelines in order to develop an appropriate frequency block assignment plan:*
 - *Paired equal blocks offset by 50 or 100 MHz should be assigned to each operator irrespective of the technology.*
 - *For FDD systems, the definition of a single duplex spacing for symmetric systems of 50 or 100 MHz also facilitates a reasonable, economically viable range of duplex spacings for asymmetric FDD systems, whilst allowing TDD.*
 - *Asymmetric FDD systems can be accommodated in the paired equal blocks if the up and downstream transmission directions are allowed to be mixed within a block.*
 - *Whilst contiguous frequency blocks for TDD would have been most advantageous in terms of equipment cost and spectrum efficiency, TDD systems do not necessarily require contiguous frequency blocks; therefore, in view of balancing flexibility and complexity into the assignment criteria, their use may be fitted in the general policy of paired symmetric block assignment.*
 - *For a generic coexistence enhancement and for harmonisation of the CEPT market, in absence of any different legacy or other constraints (e.g. at bi- or multi-lateral co-ordination agreements at country-borders), symmetric FDD PMP systems should use the lower sub-band for the transmission from the terminals to the central station and the upper sub-band for the transmission from the central station to the terminals.*

4.17 In the interests of allowing spectrum owners the utmost flexibility, NWT proposes that spectrum should be sold in lots of 7 MHz. The spectrum should be configured in such a way, by having an offset of 50 to 100MHz, that applicants could purchase a lot comprising its natural “pair” if they so desired.

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Illustration 2 (28 blocks of 7 MHz spectrum)

3.4GHz							3.5GHz														3.6GHz						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

For illustration only:

- 28 blocks of 7 MHz spectrum
- 1 or more blocks could be obtained (subject to any maximum holding)
- configured with offset of 50 to 100MHz, so that applicants could acquire blocks comprising its natural “pair” if they so desired

4.18 Also, OFTA should consider allowing spectrum trading. Spectrum blocks and pairs could be created after the allocation if a licensee were able to find a seller if a secondary market in spectrum units were to develop. (how does it ties to a low reserve price in auction?)

4.19 The maximum spectrum owned by each operator should not exceed four (4) spectrum blocks, i.e. 28 MHz. 28 MHz is more than adequate for commercial BWA service. BWA service would normally require at least 2 blocks and no more than 4 blocks. Thus, in theory the number of BWA spectrum licences could be as low as 7 and as many as 14.

4.20 The approach of small spectrum blocks is being used in Singapore, where 25 lots of 5 MHz or 6 MHz spectrum are being released, with maximum holdings of 6 lots (or 4 lots in the case of the incumbents).¹⁰

4.21 For operators, flexible use of spectrum is vital. Many BWA technologies are still in development, so it may be premature for fixed line operators to be able to choose the appropriate technology to deploy. Therefore, it is important for operators that spectrum allocations are technology neutral, to allow flexibility for use with all potential technologies.

Standards Issues

Paragraph 32

Consistent with the technology neutrality principle, the TA does not intend to mandate which technology or technologies should be used in the delivery of BWA services in Hong Kong. The TA invites views from the industry on this proposal. In addition, he would like to invite views as to whether the concerned equipment market being dominated by one or just a handful of manufacturers should be a valid regulatory concern from a competition perspective.

¹⁰ IDA, *supra*.

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- 4.22 NWT agrees that technology neutral approach should be adopted for standards. The market, not the regulator, is best placed to choose standards.
- 4.23 As mentioned, many BWA technologies are still in development, so it may be premature for the moment for fixed line operators to be able to choose the appropriate technology to deploy.
- 4.24 Standards are related to the technologies that can utilise the spectrum. However, NWT notes above that OFTA's proposed spectrum planning contradicts technology neutrality.

Licensing Issues

Paragraph 37

The TA is of the preliminary view that BWA in Hong Kong may initially be offered as a wireless extension of the conventional wireline based fixed network service. Under this proposal, BWA spectrum should be reserved for carriers with an intention to establish fixed networks in Hong Kong. Interested parties who are not already fixed carrier licensees should apply for a fixed carrier licence before they are eligible to bid for the BWA spectrum.

Paragraph 38

To differentiate BWA services from a full mobile service, the TA proposes that the service offered by a fixed carrier licence through BWA would only be allowed to have 'limited mobility'. 'Limited mobility' here shall be interpreted as no cell handoff capability allowed.

- 4.25 NWT agrees with the TA's preliminary view that initially BWA should be offered as a wireless extension of the conventional wireline based fixed network service.
- 4.26 OFTA should clarify that this BWA is reserved for *local* fixed carriers, and not external fixed carriers.
- 4.27 In light of the phase out of Type II Interconnection regime at telephone exchanges (Point A), there is emerging demand for alternative customer access network solutions. BWA provides a potential broadband solution for fixed carriers, because it may be deployed to serve a wide area within a relatively short time, overcoming traditional physical and economic barriers.
- 4.28 At this moment there is a clear regulatory distinction between fixed and mobile carriers. In the interests of making the BWA available as soon as possible to fixed carriers for deployment, OFTA should determine the scope of BWA service in the current licensing framework.
- 4.29 The subject spectrum should be made available to fixed carriers only, because:
 - (a) The technology for BWA for fixed services is available and mature, or highly likely to be available and mature in the next year. In contrast,

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mobile capability is speculative and in any event it would not be commercially viable before 2008;

- (b) Mobile carriers already had (directly or indirectly as MVNO) broadband capable spectrum in 3G spectrum; and
- (c) OFTA is presently proposing to assign additional spectrum directly to mobile network operators, without auction.¹¹

4.30 Furthermore, NWT believes that BWA spectrum should be released among *existing* fixed carrier licensees only.

4.31 NWT has concerns over the prospect of new entry into the fixed line market on the basis of availability of BWA spectrum, and considers that this is not constructive for the market. The widely held perception among the industry and commentators is that there is already too much competition in the Hong Kong fixed line market.¹²

4.32 We believe that OFTA should study the economic viability of introducing too many new BWA licensees, similar to what it has done in respect of the proposal to issue a new 3G licence in the vacated CDMA/TDMA spectrum. In that case, OFTA commissioned a consultant to conduct financial modelling on the Hong Kong mobile market and assess the business case of a potential investment in a new mobile system operating in the CDMA/TDMA spectrum to be vacated. That consultancy study did not provide a conclusive result on the prospect of a new system and the economic benefits to the Hong Kong market generated by licensing this new system. Ultimately, the TA declined to introduce a new licence system operating in the spectrum vacated.¹³

Assignment of Spectrum

Spectrum Assignment Method

Paragraph 43

Taking into accounts the pros and cons as set out above, the TA is of the preliminary view that the BWA spectrum may be assigned by auction.

4.33 NWT has concerns about the burden of spectrum fees under an auctioning process.

¹¹ OFTA Consultation Paper, "Assignment of the Available Spectrum in the 800 MHz and 1800 MHz Bands to the Existing Mobile Network Operators, 28 February 2005. OFTA proposes assigning six 1.6 MHz x 2 blocks to the 6 MNOs.

¹² Telecom Asia, "Wireless tech proposal underlines need for less competition", 6 January 2005.

¹³ TA Statement, "Licensing of Mobile Services on Expiry of Existing Licences for Second Generation Mobile Services, 29 November 2004.

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- 4.34 OFTA should set a low reserve price sufficient to cover OFTA's administrative costs. Any savings in spectrum fees by licensees can be transferred to accelerated rollout and lower prices to consumers.
- 4.35 NWT believes that BWA policy should integrate with the phase out of Type II Interconnection regime at telephone exchanges (Point A). BWA policy should cater for the need to ensure continuity of service to end-customers following the phase out of Type II lines.
- 4.36 NWT proposes that the three "first-wave" new entrant fixed carriers (i.e. HGC, NWT and WT&T) who are directly affected by the phase out of Type II interconnection should have a first right of refusal on the BWA spectrum. These operators are required to reach commercial terms with PCCW or migrate to alternative customer access networks by 30 June 2008. Allocation of BWA spectrum to them would meet the public interest of ensuring continuity of service to end users following the sunset of Type II interconnection rights.
- 4.37 NWT has reservations about auctions for spectrum in the manner proposed by OFTA, especially with regard to technology that is yet to be proved, which may lead to high prices based on the mere potential of such technologies with no guarantee of success. We point out the 3G auctions experience overseas which resulted in excessive bids and licensees laden with debt that has probably affected rollout and pricing of services. Spectrum costs are invariably passed to consumers.
- 4.38 In addition:
- (a) BWA is largely a speculative technology, with WiMax, one of the most publicised standards, not even available at present.¹⁴ The market is not able to judge the price of value of spectrum in any clear manner. Auctions will only serve to encourage speculative bidding, which would be detrimental to genuine bidders, the fixed line market and ultimately consumers;
 - (b) Auctioning places undue emphasis on financial standing of the bidder, rather than any relevant service capabilities;
 - (c) In a pure auction, it is not possible to prevent strategic bidding to hoard and deny use of spectrum by one's competitors.
- 4.39 In case OFTA decides to adopt an auction approach, NWT suggests that the reserve price should be minimal to cover administrative expenses only (for example, Singapore¹⁵). Spectrum auctions should not be regarded as having

¹⁴ Economist, "World domination postponed", 27 January 2005.
¹⁵ IDA, *supra*.

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revenue purpose, but rather to ensure allocation according to which market players most value the right to use the spectrum.

- 4.40 BWA spectrum should not be subjected to royalty scheme. BWA should be distinguished from 2G and 3G mobile spectrum (which is subject to minimum royalty payments) because BWA will be a supplementary means of customer access. BWA will complement the fixed line services of fixed carriers. Therefore it will be difficult to gauge the extent of utilisation of spectrum, and, as admitted in the Consultation Paper, this would entail complicated accounting separation requirements in order to ensure accurate determination of royalties.

Payment Approach

Paragraph 49

Based on the consideration above, the TA is of the preliminary view that SUF for BWA spectrum may be charged annually on a per MHz basis.

- 4.41 In the event that OFTA decides to charge a spectrum licensee fee, then NWT would agree with the TA's preliminary view that SUF for BWA spectrum should be charged annually on a per MHz basis.

Spectrum Usage Period

Paragraph 52

The TA is of the preliminary view that a usage period of ten years may be sufficient for successful bidders of BWA spectrum. The actual spectrum usage period will however be subject to the licence validity period as mentioned above.

- 4.42 Agree.

Surrendering Spectrum

Paragraph 54

The TA is of the preliminary view that successful bidders of BWA spectrum may be given the option to return any unused BWA spectrum to the Government, thereby reducing the level of SUF payment, over the spectrum usage period except for the initial 5 years.

- 4.43 Agree.

Change of Spectrum Usage

Paragraph 56

The TA would like to invite comments from the industry on his preliminary views concerning the various issues on SUF for BWA as given in paragraphs 43, 49, 52 and 54.

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- 4.44 NWT agrees with the TA's preliminary views that initially, the subject spectrum should be limited for fixed use only. This is consistent with the licensing framework proposed in paragraph 27 of the Consultation Paper.
- 4.45 In the allocation stage, spectrum applicants can base their business plans and spectrum pricing on the limitation of use of spectrum for fixed services only.
- 4.46 At a later stage, the licensing policy can be reviewed upon the application of the spectrum licensee for extension to mobile usage by the licensee on terms and conditions (i.e. pricing) to be discussed.

5. Final remarks

- 5.1 BWA may have a significant impact on the market structure of the fixed line industry, by potentially lowering barriers to entry through the use of new fixed wireless technologies.
- 5.2 NWT believes that the consultation paper raises many complex issues which affect the industry, especially regarding:
- (a) spectrum planning and the number of available spectrum licences; and
 - (b) manner of spectrum allocation, whether by auction or direct assignment and rules for its implementation.
- 5.3 We believe that OFTA needs to introduce BWA spectrum into the fixed line market to *existing and active* fixed line operators only, in order to avoid unnecessary disruption to the industry.
- 5.4 We would request that this first consultation deal with basic principles and that a second consultation should be conducted to specially deal with implementation issues.

New World Telecommunications Limited
14 March 2005