Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz Band upon Expiry of the Existing Frequency Assignments for 3G Mobile Services

Consultation Response

15 July 2012

HKT

EXECUTIVE SUMMARY

1. In 2001, four mobile operators acquired spectrum to provide 3G mobile services. Since that date these mobile operators have invested billions of dollars to bring innovative services to Hong Kong consumers. Indeed, the mobile market is now hyper-competitive, with consumers enjoying "global bests" in terms of low prices, high penetration rates, spectrum efficiency, choice of operators and substantial benefits.

2. This consultation will determine the renewal arrangements for the 3G spectrum allocated in 2001 under fifteen year licences. The choice is quite clear, either: (a) allowing the current four 3G licensees to continue to provide service on an uninterrupted basis (in exchange for the payment of appropriate fees); or (b) ending the current service provisioning arrangements and re-assigning the spectrum via a new auction (in exchange for the payment of the auction fee). The re-assignment of the 3G spectrum to the current licensees (i.e. a "right of first refusal") would ensure the *continuity* of uninterrupted service to consumers, the *continuity* of efficient investment and service innovation, and the *continuity* of a hyper-competitive market with low prices to the benefit of consumers and the economy. The auction approach, by comparison, would very likely require one or more 3G licensees to give up their specific 3G spectrum, which in turn would *disrupt* services provided to consumers, *disrupt* efficient investment and service innovation, and *disrupt* benefits to all users and the economy.

3. Those are the options: continuity or disruption. On a more micro level, disruption means congestion and service degradation and, in particular, substantial degradation of service in high usage areas such as the MTR, resulting in missed/dropped calls, lower data speeds, etc. affecting all transmissions to and from the 3G networks. Hong Kong's position as a digital city and a communications hub would be threatened and consumer complaints would rise substantially.

Only Option 1 satisfies the stated criteria and the public interest

4. Option 1 (of the three options presented) is recognized by OFCA and the CEDB to be the only option that satisfies the stated criteria found in paragraph 16 of the Consultation Paper and the statutory mandate of the Communications Authority under the new Communications Authority Ordinance (Section 4). To be clear, Option 1, and only Option 1:

(i) Protects consumers by ensuring the uninterrupted provision of service;

(ii) Makes the most efficient use of spectrum;

(iii) Preserves the existing hyper level of competition;

(iv) Encourages network investment; and

(v) Promotes the development of innovative services.

5. The other two options fall woefully short of protecting consumers, promoting efficiency, maintaining the high level of competition, encouraging investment or enhancing innovation. OFCA explicitly acknowledges the significant strengths of Option 1 and the substantial weaknesses of the other two options. Option 1 is also consistent with Hong Kong

and global best practices regarding spectrum renewals, as found in the UK, Australia, Canada, etc. Accordingly, Option 1 should be selected. The other two options should be rejected.

6. It is important to separate two very different matters, which are not always clear in the consultation paper. The first matter is the spectrum renewal/assignment issue. There is no doubt that Option 1 which continues the existing spectrum assignment best protects the continuity of service to customers (see paragraph 24), best encourages efficient spectrum utilization (see paragraph 19), best promotes investment and innovation (see paragraph 19), and best preserves the existing high levels of competition (see paragraphs 1, 23, 37 and 49). At the same time, the weaknesses of Options 2 and 3 are acknowledged (see paragraphs 36, 38, 39, 40, 48 and 50).

7. The second matter is the spectrum utilization fee: the amount paid by the mobile operators to the Government for access to the relevant spectrum bands. Such a fee can be determined by various methods as described in the consultation paper. Of course, it is not a statutory or policy requirement that maximum fees be extracted from the mobile operators regarding spectrum renewals or that an auction be employed, especially when such fees relate to a renewal. High fees will only flow through as a tax and an unnecessary burden on mobile consumers. It is the case that mobile services (and telecommunications services generally) play an important role in the personal lives of 7 million consumers and thousands of businesses in Hong Kong, having a multiplier effect on the "happiness" and economic development of Hong Kong. In short, the matters of renewal/assignment and fees are distinct. A right of first refusal best serves consumers. Extraction of the highest possible fees is both unnecessary and counter-productive, and is not required by law or policy.

8. As to the spectrum utilization fees, the UK approach should be adopted in Hong Kong. Fees would be obtained from the auction which initially releases spectrum into the market. Thereafter, licences with no specified expiry date and spectrum trading would allow the market to work on its own. On this basis, no licence renewals or renewal fees would be necessary, similar to land sales in Hong Kong.

The analysis supporting Options 2 and 3 is appallingly superficial

9. Consumers in Hong Kong currently receive a good and efficient service in a very competitive market based on billions of dollars of investment. Option 1 would preserve this success and is acknowledged to be the best way forward to continue and enhance these benefits. With so much at risk, any change from the "global best" status quo must be based on a clear and convincing analysis. Yet the core analysis supporting Options 2 and 3 is based on words and phrases of no actual analytical value.

10. These words and phrases which are the core analysis of options 2 and 3 include: "the TA is not certain" (paragraph 20); "it may be possible" (paragraph 21); "the TA cannot ignore the possibility" (paragraph 23); "it is possible" (paragraph 37); "it can be argued" (paragraph 39); "may" (paragraph 40"); "it is conceivable" (paragraph 47); and "to explore the possibility" (paragraph 49). The analysis supporting Options 2 and 3 is appallingly superficial. It cannot form a solid foundation upon which to make a legally sound and rational decision.

Precedent and public policy strongly support Option 1 (the right of first refusal)

11. For over twenty years, licences for fixed line and mobile service provision have been consistently renewed. There are no instances known to HKT of licensees losing their licences except voluntarily or due to unlawful conduct. In the wireless arena, the PMRS licences were renewed in the early 1990's as services migrated from analogue to digital. The regulator noted the difficulty of one operator taking over the spectrum occupied by another operator. The regulator also found that it would be unreasonable not to renew the licences where the operators were providing a good and satisfactory service.

12. In 2004, the regulator decided that the 2G licences (expiring in 2005 and 2006) would be renewed for the existing licensees. Among the frequency bands being renewed was spectrum in the 800/900 MHz band which has now been or will be refarmed for use in offering 3G mobile services. Therefore, 2G spectrum is effectively the same as the 3G spectrum. Accordingly, the 3G spectrum today should be renewed on the same basis consistent with past treatment. Moreover, holders of 3G spectrum who do not possess 2G 800/900 MHz band spectrum will be discriminated against in the renewal process if their 3G spectrum is not renewed on a right of first refusal basis.

13. For the 2G spectrum, no auction was held even though competing demands for the spectrum existed. The renewal was made on the public policy basis that the licensees had made efficient use of the spectrum and were providing satisfactory service to their customers, with continuous investment and improvements. The regulator emphasized the importance of a stable investment environment, the importance of mobile services to users, and the need to avoid service interruptions (including confusion and inconvenience to users). A 'right of first refusal' was therefore granted to the incumbent 2G operators. There are no precedents where spectrum licences have not been renewed when the spectrum was being used efficiently.

14. The reasons employed to support the 3G spectrum renewals are stronger today than in the early 1990's or in 2004. The 3G spectrum holders have been diligent in rolling out their 3G network and services, and have been providing a very satisfactory suite of voice and data services. The incumbent 3G operators have efficiently used spectrum, invested much greater amounts (i.e. billions of dollars) than in 2G, introduced innovative services, and produced 'global best' benefits for users. International precedent also supports a right of first refusal approach. The public policy exception contained within the April 2007 Radio Spectrum Policy Framework adopts the established precedents and supports the right of first refusal for the 3G spectrum.

15. Indeed, it is respectfully submitted that there is no basis to conclude that the current 3G market is broken or in any way deficient. In such circumstances, where the market is operating very well, OFCA must tread very carefully and not take any steps that would potentially negatively affect the market or consumers' interests. This is not a time for OFCA to be creative or experimental or otherwise depart from the established practice of licence renewals which has served Hong Kong exceptionally well.

Spectrum trading should be introduced <u>now</u>

16. If OFCA is anxious to let market forces decide the allocation of spectrum without any interference from the regulator then it should expedite the timetable for the introduction of spectrum trading. Only via spectrum trading can frequency bands be timely acquired by operators (on a flexible basis) that need the spectrum resources and are willing to pay for the use of the spectrum. While spectrum trading has been informally discussed by OFTA and the Government since the 1990's and more formally since 2006, to date nothing has progressed although it has been stated that spectrum trading should be introduced in the future. The issue is thus when, rather than if. Hong Kong is lagging behind the many countries that have already introduced spectrum trading. These countries include: the UK, USA, Australia and Canada. The way forward is to more fully rely on market forces; to combine spectrum trading with long term (i.e. unlimited) licence renewals as has recently been adopted in the UK. Auctions would be used to initially bring spectrum into the market. Thereafter, the market (and not the regulator) would decide any future outcomes. OFCA should expedite the introduction of spectrum trading and thereby take itself out of the way of the market freely trading spectrum and pricing it appropriately – just as other valuable assets, e.g. land, are traded in the market.

Conclusions

- Option 1 best ensures the uninterrupted provision of service to consumers.
- The analysis supporting the other options is appallingly superficial and unreliable.
- Precedent, public policy and the Radio Spectrum Policy Framework strongly support Option 1.
- Spectrum trading needs to be introduced along with licences that carry no fixed term as soon as possible.

HKT

SUMMARY OF POSITION

I Introduction

17. Hong Kong Telecommunications (HKT) Limited ("**HKT**") welcomes the opportunity to present its views on the matters raised in the consultation paper jointly issued by the Commerce and Economic Development Bureau ("**CEDB**") and the Office of the Telecommunications Authority ("**OFTA**") on 30 March 2012 entitled: *Arrangements for the Frequency Spectrum in the 1.9 – 2.2 GHz Band upon Expiry of the Existing Frequency Assignments for 3G Mobile Services* ("**Consultation Paper**"). OFTA has now become the Office of the Communications Authority ("**OFCA**") supporting the new Communications Authority ("**CA**").

18. This is a critically important consultation. Mobile services are used by almost every person (resident and tourist) and business in Hong Kong. Mobile services are a vital and core component of Hong Kong's daily life which benefits users and has a multiplier effect on the economy. In this proceeding CEDB and OFCA should act to ensure that the 'global best' benefits enjoyed by Hong Kong consumers are not placed at risk.

19. At the same time, the Government needs to move away from micro and ad hoc spectrum decisions, which lack consistency and a long term vision. The Government's vision must place a greater reliance on market forces (e.g. especially spectrum trading) and should abandon 'command-and-control' mechanisms which are both outdated and arbitrary. It is HKT's view that spectrum trading should be implemented now as that would directly accelerate the role of the market, ensure level playing field competition and maximize benefits for users. Spectrum trading has been under discussion in Hong Kong since the 1990's and more formally since 2006. In the meantime, many other OECD countries have moved forward and adopted this efficiency enhancing and flexible market mechanism. Hong Kong is being left behind.

20. In the Consultation Paper, OFTA puts forward three options for dealing with the **3G Spectrum**[1], assigned to the **Incumbent 3G Operators**[2] in October 2001, which is due to expire in October 2016. Views and comments on each of these three options are then sought. The three options are:

Option 1:	A right of first refusal is offered to the Incumbent 3G Operators
Option 2:	All the spectrum is re-auctioned
Option 3:	A hybrid option whereby a right of first refusal is offered to the Incumbent 3G Operators for part of the 3G Spectrum, with the remainder being auctioned

[1] The 3G Spectrum consists of four blocks of: (2 x 14.8 MHz) + (1 x 5 MHz) in the 1.9 to 2.2 GHz range, i.e. approximately 120 MHz of paired spectrum and 20 MHz of unpaired spectrum.

[2] The Incumbent 3G Operators refers to the four mobile operators who were assigned 3G Spectrum via auction in October 2001: (i) CSL Limited ("**CSL**"); (ii) HKT; (iii) Hutchison Telephone Company Limited ("**Hutchison**"); and (iv) SmarTone Mobile Communications Limited ("**SmarTone**").

21. HKT supports the adoption of Option 1 as it will ensure a continuity of services to users in a competitive and vibrant environment, an environment recognized as producing world best benefits for users. At the same time, Option 1 will provide the operators with a stable and predictable environment in which to continue investing, efficiently plan for the future and provide innovative services. Option 1 also most efficiently uses the assigned spectrum as it avoids spectrum fragmentation and the inherent inefficiencies that such fragmentation brings. Option 1 will ensure Hong Kong's role as a leading trade, business and communications hub, and a digital city.

22. HKT cannot support Options 2 and 3 because they would likely cause service congestion and degradation, lower data speeds, dropped calls and increased costs. Options 2 and 3 will also cause uncertainty in the market, from at least 2013 to 2016. This will discourage investment, which will have a chilling effect on innovation, competition and user benefits. OFTA acknowledges the disruptive shortcomings of Options 2 and 3 at paragraphs 36, 38, 39, 40, 48 and 50 in the Consultation Paper.

23. In evaluating Options 1, 2 and 3, OFTA intends to select the option which best meets the following objectives:[3]

- Continuity of service to consumers (consumer protection);
- Promotion of innovative services;
- Encouragement of investment; and
- Efficient spectrum utilization;
- Promotion of effective competition;

24. In looking at these five criteria and the three Options presented, HKT would make the following observations:

(i) OFTA states that customer service continuity is best preserved by Option 1. See paragraph 24 in the Consultation Paper.

(ii) OFTA states that investment and innovation are best encouraged by Option 1. See paragraph 19 in the Consultation Paper.

(iii) OFTA notes the importance of spectrum efficiency in competitive markets at paragraph 18 and then states at paragraph 19 that Option 1:

> *[…] will maximize the flexibility of the operators in spectrum planning along with spectrum in the other frequency bands. Thus Option 1 is expected to contribute to efficient spectrum utilization through continuous capital investment and more certain spectrum planning.*
>
> It is clear that neither Option 2 (at paragraph 36) nor Option 3 (at paragraphs 47 and 48) can ensure more efficient spectrum utilization. OFTA concedes as much at paragraph 48:

[3] See paragraph 16 of the Consultation Paper.

Similar to the discussion under Option 2, the incumbent 3G operators will face uncertainty under Option 3. This would impact on the efficiency in spectrum utilization […] [Emphasis added]

(iv) OFTA states numerous times that the mobile market is highly competitive. See paragraphs 1, 23, 27, 37 and 49 in the Consultation Paper. OFTA states at paragraph 22 that, "competition is unlikely to change much under Option 1". OFTA appears to interpret this outcome as a negative, yet maintaining a high level of competition should be seen as a positive. It is clear from OFTA's own analysis that neither Options 2 nor or 3 can ensure higher levels of competition. Under Option 2 OFTA states at paragraph 37 that:

[…] it is possible that new players [if there are indeed any] *may bring about even keener competition […]* [Emphasis added]

Under Option 3, OFTA states at paragraph 49:

It has been said time and again in this consultation paper that the Hong Kong mobile telecommunications market is already keenly competitive [but] *[t]he idea underlying both Options 2 and 3 is to explore the possibility of facilitating even more effective competition […]* [Emphasis added]

25. With respect, the status quo (which has already seen billions of dollars being invested) has produced what are recognized to be "global best" levels of competition and consumer benefits. Why jeopardize this? It would not seem appropriate to endanger the status quo on the basis of "possible", "may bring" or "explore the possibility" arguments, particularly when the benefits of introducing more competition are not certain and, in fact, may lead to adverse and disruptive consequences.[4]

26. In sum, Option 1 by OFTA's own words is the best choice for Hong Kong. At best, the arguments for Options 2 and 3 rely on language such as "it is possible", "may", "it is conceivable" and "it is arguable" rather than real facts and analysis. This is conjecture and should not be confused with any real analysis. As such, Options 2 and 3, with their substantial disruptive outcomes, should be rejected.

27. HKT is extremely perplexed by OFTA's apparent preference to adopt Option 3 (i.e. the hybrid approach). OFTA's proposed approach disregards its own analysis as outlined above. It also:

[4] The dangers of opening up the market to more players when there is already healthy competition within the market place was previously recognized by the Deputy Postmaster General (the forerunner of the Deputy Director-General of OFTA) in an AmCham IT Executive Committee Meeting held on 4 September 1990. In this meeting, Ms Elle Shum remarked:

[…] we have been constantly reminded there is already three operators and have a healthy competition already, and by allowing more entrants to the field, we don't necessarily improve the standards of service and price structures. And what you might do is to widen the opportunities so much that service standards might even decline and have the opposite effect from what we have been intending to do. [Taken from transcript of the meeting]

- Disregards the interests of 7 million consumers who depend on the efficient and effective delivery of mobile services in their personal lives and business. Increased disruption, degradation, network congestion, lower data speeds, more dropped calls and rate increases are a real probability under Option 3, and are not in the public interest.
- Requires existing spectrum bands to be fragmented, which adversely affects on a permanent basis the efficient provision of mobile services. It is globally recognized that larger, not smaller, spectrum bands are essential as mobile data usage explodes. Spectrum fragmentation increases costs and adversely affects investment, innovation and the customer experience in multiple ways.
- Disregards existing precedent regarding licence renewals in Hong Kong as well as around the world. Further, the papers issued by the Commerce, Industry and Technology Bureau ("**CITB**") and OFTA during 2000/2001 in relation to the licensing of 3G mobile services in Hong Kong, and the language of the Radio Spectrum Policy Framework issued in April 2007 ("**SPF**") all support a right of first refusal.
- Creates a chilling effect on investment and innovation, to the detriment of users.
- Explicitly favors one mobile operator over the others. OFTA should not propose an approach that will so favor one market participant at the expense of that participant's competitors.
- Is not technology neutral as it explicitly considers that one mobile operator needs spectrum in a particular band (which makes up a small percentage of total assigned spectrum now and will make up a much smaller percentage of total spectrum in 2016).
- Turns Government policy of relying on market forces on its head. Market forces (including spectrum trading) and commercial arrangements should be relied upon. The old "command-and-control" approach to spectrum allocations should not be resurrected for a competitive market.
- Ignores the substantial benefits that spectrum trading would bring to the market. Spectrum trading should be introduced now. Spectrum trading coupled with future spectrum allocations (in 2013 and the digital dividend in 2014/2015), Mobile Virtual Network Operator ("**MVNO**") and resale arrangements, joint ventures, merger and acquisition opportunities, the development of LTE and 3G migration to LTE, etc. all enable market forces to work and provide existing mobile operators and any potential new entrants a fair opportunity to obtain specific spectrum if they place a higher value on that specific spectrum than an existing player. Spectrum trading should be combined with licences that carry no fixed expiration date, as with the 3G licences in the UK, as this really does allow the market to decide.

II The mobile market is producing "global best" benefits to users

28. It is widely recognized that the Hong Kong mobile market is one of the most competitive markets around the world and is producing "global best" benefits to consumers. In a presentation made by OFTA in February 2012 on the *Overview of Developments in the*

Telecommunications Market in 2011, OFTA highlighted several statistics which clearly show the success of the Hong Kong mobile market:

- The number of mobile users exceeded 14.4 million, representing a penetration rate of over 200% (per OFCA's website, this figure now stands at 15.3 million as at March 2012); and
- The number of mobile broadband (2.5G + 3G) users stood at over 7.7 million with mobile data usage more than doubling from the previous year to 3,568 terabytes (per OFCA's website, this figure now stands at 5,045 terabytes as at March 2012).

29. Further, in an international tariff benchmarking study commissioned by OFTA in 2010 and released by OFTA in May 2011[5], Hong Kong came out very favorably against the six other major cities. In terms of residential mobile voice services, Hong Kong exhibited the lowest tariff based on a basket of calls (to fixed lines, mobile users and international destinations). To emphasize how low prices are in Hong Kong, it is worth pointing out that Hong Kong's nearest rival (London) recorded charges which were more than twice those for Hong Kong.

30. Indeed, the highly competitive nature and low price levels of the Hong Kong market are continually emphasized by OFTA throughout the Consultation Paper:

> *Hong Kong has one of the most competitive mobile telecommunications markets in the world, with five mobile network operators ("MNOs") serving a population of 7 million using frequency spectrum in the 800/900 MHz, 1700 – 1900 MHz, 1.9 – 2.2 GHz and 2.5/2.6 GHz bands.*[6]
>
> *[…] Hong Kong already has one of the most competitive mobile markets in the world, with a mobile penetration rate exceeding 200% and mobile charges among the lowest in the world. In particular, competition in every aspect (price and non-price) has been keen among the four incumbent 3G operators.*[7]
>
> *[…] the Hong Kong mobile market is already one of the most competitive in the world.*[8]
>
> *It has been said time and time again in the consultation paper that the Hong Kong mobile telecommunications market is already keenly competitive.*[9]

31. It is clear that consumers in Hong Kong are already benefiting from one of the most hyper-competitive, dynamic and advanced mobile telecommunications markets in the world. Such market conditions have been achieved through substantial network investment and service innovation undertaken by the current operators striving to gain the preference of

[5] The study compared the prices of telecommunications services in Hong Kong with those in Copenhagen, London, New York, Shanghai, Singapore and Tokyo.

[6] Paragraph 1 of the Consultation Paper.

[7] Paragraph 23 of the Consultation Paper.

[8] Paragraph 37 of the Consultation Paper.

[9] Paragraph 49 of the Consultation Paper.

consumers. The elimination of regulatory risk, continuity and stability are critical to maintain these global best benefits. On this basis, it is difficult to understand what further benefits (if any) OFCA can realistically expect to achieve by re-auctioning the 3G Spectrum. In short, the disruptive risks inherent in Options 2 and 3 outweigh any possible or theoretical benefits.

III The analysis supporting Options 2 and 3 is appallingly superficial

32. This Consultation Paper is extremely important to consumers who face service disruptions and rate increases as well as to operators who face the loss of spectrum, decreased spectrum efficiency and cost increases if OFCA gets things wrong. Consumers in Hong Kong receive a good and efficient service, based on substantial investment (i.e. billions of dollars) and innovation, at extremely competitive prices. This highly competitive market has provided substantial benefits to Hong Kong users. This cannot be debated. Yet vital decisions are being proposed in this Consultation Paper based on high level theoretical economics un-tethered to the realities of the Hong Kong market, mobile technologies, costs or user interests. At the same time, the fundamental basis of the analysis is hedged with words and phrases with little or no usefulness in analyzing the market.

33. For example, in the Consultation Paper, OFTA states:

> *[…] the TA is not certain whether the existing assignment of the 120 MHz of 1.9 – 2.2 GHz spectrum among the four incumbent 3G operators has already delivered the optimal consumer benefit […]*[10] [Emphasis added]

It is possible that the Telecommunications Authority ("**TA**") is not and cannot be 100% certain (of anything). But 100% certainty is neither the legal test nor what can pragmatically be required. The TA can very well be confident, almost 100% sure or substantially assured that consumer benefits in the mobile market today are at a very high level and indeed are global best. The TA and the CEDB recognize in multiple places in the Consultation Paper (and elsewhere) that the Hong Kong market is extremely competitive, rich in investment and innovation, and producing world beating consumer benefits. "Optimal consumer benefit" is being obtained, unless of course that term refers to the most theoretical situation reserved to PhD economists sitting in their universities or government offices writing papers on pure economic theory.

34. In the Consultation Paper, OFTA states:

> *It may be possible to attain higher spectrum efficiency […]*[11] [Emphasis added]

Anything "may be possible", but in real world markets producing world recognized consumer benefits it is disingenuous to suggest that the fifth mobile operator's acquisition of a bit of spectrum in the 1.9 – 2.2 GHz band would bring Nirvana to Hong Kong consumers. Indeed, breaking up the existing spectrum bands into smaller bands would (as a scientific fact) adversely affect spectral efficiency (i.e. spectrum fragmentation actually lowers spectrum

[10] Paragraph 20 of the Consultation Paper.

[11] Paragraph 21 of the Consultation Paper.

efficiency) and be disruptive to consumers. Thus, the Option 3 proposal will lower spectrum efficiency, not increase it.

35. In the Consultation Paper, OFTA states:

> *[…] the TA cannot ignore the possibility that potential new players may be at the forefront of service innovations […]*[12] [Emphasis added]

As above, anything is possible. The fifth mobile operator is not a new player. 21 ViaNet is a new player that successfully obtained spectrum in a recent auction. HKT understands that 21 ViaNet is struggling to find a workable business plan. In any event, if a potential new entrant with a great innovation or a new business paradigm desires to enter, capacity is available before 2016 via market forces (mergers, acquisitions, joint ventures, MVNO, new spectrum, digital dividend, resale, etc). If a new entrant places greater value on capacity than an incumbent, the market will work. Policy should be made on hard facts and substantive analysis. Indeed, with respect, OFCA should ignore something if it is just a theoretical possibility. In weighing up these probabilities, it is incumbent on OFCA to consider the very real possibility that by interfering with the market and changing spectrum allocations, it could actually do harm – surely a responsible regulatory body ought not chase 'theoretical' possibilities in the face of a real risk of doing harm.

36. In the Consultation Paper, OFTA states:

> *[…] it is possible that new players may bring about keener competition by introducing innovative service or new business paradigms.*[13] [Emphasis added]

The possibility language appears again for the third time. It is not clear whether this possibility is a 1% or 99% certainty. Based on the billions of dollars that have been invested and millions of consumers who are enjoying world class service which is both innovative and delivered in a hyper-competitive market it would appear that the "possibility" stated here is quite theoretical and speculative, and cannot be the basis for good decision making. Indeed, the previous sentence in paragraph 37 states that "*the Hong Kong mobile market is already one the most competitive in the world.*" In any event, new players have the total freedom to enter the market. There are no foreign ownership restrictions or other barriers for a new entrant or an incumbent from acquiring new or additional spectrum via commercial agreements.

37. In the Consultation Paper, OFTA states:

> *However complicated the process [losing spectrum and coordinating with other operators to switch spectrum bands on or off] may sound, it can be argued […]*[14] [Emphasis added]

Anything can be argued, but substantial policy changes effecting billions of dollars of investment and 7 million consumers need a very clear and convincing analysis. "It can be

[12] Paragraph 23 of the Consultation Paper.

[13] Paragraph 37 of the Consultation Paper.

[14] Paragraph 39 of the Consultation Paper.

argued" cannot be the basis or a substitute for reasoned decision making with a full and complete analysis. A process that is complicated and disruptive cannot be ignore.

38. In the Consultation Paper, OFTA states:

> *The prospects of service disruption under Option 2 may not be so gloomy.*[15] [Emphasis added]

OFTA then notes that by 2016, 4G LTE networks will be in use and will be expanded; mobile operators with 800/900 MHz frequency will have deployed this spectrum for 3G; and Wi-Fi, femtocells and other technologies will be used to offload traffic (OFTA could also have noted the forthcoming spectrum auction in the first quarter of 2013 and the 2015 digital dividend). But the real point of the above that HKT would make is not that the losers of 3G spectrum (under Options 2 or 3) may not need to be so gloomy (which they would be) but rather, with all these options, why would OFCA need to so blatantly help the mobile operator with no 3G spectrum? Let that operator (which currently has the most 4G spectrum, and is financially capable of acquiring the most 3G spectrum under Options 2 and 3) consider all the commercial alternatives while OFCA opts for Option 1, which OFTA recognizes is the best result for consumers in terms of continuity of service in an extremely competitive market.[16]

39. In the Consultation Paper, OFTA states:

> *It is conceivable that if one or more of the incumbent 3G operators are assigned more 3G spectrum under Option 3 they can put it to better and more efficient use.*[17] [Emphasis added]

Phrases like 'it is possible', 'it can be argued' and 'it is conceivable' should not be confused with reasoned analysis. What OFTA suggests in paragraph 47 is conceivable/possible. More importantly, however, is whether the overall market efficiency increases or decreases and the impact on all the stakeholders, including licensees and consumers. The market can achieve a more efficient result via Option 1, where stability, investment, innovation and user benefits are ensured and spectrum can via market forces migrate to those who value it most. There is no need for Government to employ a command-and-control approach to assist any mobile operator when market forces can work and will work (especially with spectrum trading) more efficiently to produce benefits for users.

40. In the Consultation Paper, OFTA states:

> *It has been said time and again in the consultation paper that the Hong Kong mobile telecommunications market is already keenly competitive. The idea underlying both Options 2 and 3 is to explore the possibility of facilitating even more effective competition […]*[18] [Emphasis added]

[15] Paragraph 40 of the Consultation Paper.

[16] See paragraph 24 of the Consultation Paper.

[17] Paragraph 47 of the Consultation Paper.

[18] Paragraph 49 of the Consultation Paper.

This paragraph is revealing. The highly competitive nature of the market is acknowledged. This is beyond any possible or conceivable debate. This market has delivered global best penetration rates, investment, innovation, quality and prices. This has been a boon to customers, businesses and the local economy. But now, in order to "explore the possibility" of a relatively untested economic theory and auction approach, the existing benefits rooted in a stable operating environment are to be disrupted and placed at risk. That is, with respect, not a prudent approach – indeed, it is reckless.

41. The above examples of 'non-analysis' are not tangential to a more comprehensive analysis. The above is the core analysis and basis for OFTA favoring Option 3. This is not a sound foundation to make a rational decision effecting millions of users and billions of dollars invested in a highly competitive market generating global best benefits to users. This is doubly true when the decision is quite disruptive in its impact on both operators and users.

42. OFTA's proposal is at best a risky approach even when a clear market failure exists and it can be demonstrated that a regulator can do better. But this is not the case here. No market failure exists (i.e. consumers are doing very well; and there is no anti-competitive conduct that needs to be addressed) and no data or analysis supports a heavy handed and disruptive intervention into the market. OFTA's analysis is all about "it is possible", "it is conceivable", "it may", "it is uncertain". Indeed, it is actually more possible, conceivable, and certain based on OFTA's own language that its favored approach would lead to a disruption of service continuity, stranded investment, inefficient service provision, a decrease in investment and innovation, less competition and a decline in global best consumer benefits. Even if a regulator was somehow smarter than the market, why choose an option which he recognizes has substantial negatives?

43. HKT would note that OFCA has no actual "skin in this game" (i.e. no investments, no network, no customers) and may be inclined to experiment with high level economic theory that is not global best practices and has not been done before in Hong Kong. But this temptation must be avoided. Will OFCA compensate users for any service disruption, a loss of investment and innovation, a decline in efficiency or a lessening of competition? Will OFCA compensate licensees for stranded investment, re-alignment costs, or business losses? Will OFCA compensate shareholders for the fall in a licensee's share price? OFCA holds licensees accountable for the provision of a good and continuous service, but will it accept the same level of responsibility? OFTA in this Consultation Paper proposes a fundamental change in the provision of mobile services to users. Where the market isn't broken, OFCA has a heavy burden and responsibility (and accountability) before it elects to intervene to 'fix it' (i.e. to make such an untested and substantial change) when it doesn't really need fixing.

IV Precedent and public policy support a right of first refusal

44. According to OFTA at paragraph 3, per the SPF promulgated by the Government in April 2007, the Incumbent 3G Operators who obtained their capacity in 2001 cannot have any legitimate expectation that they will be given a right of first refusal for the frequency bands upon expiry of the assignment. OFTA's view is that the only requirement is that the incumbent spectrum holders be notified, and sufficient notice given (in this case three years before expiry of the frequency assignment), as to whether the spectrum is to be withdrawn or varied upon expiry of the assignment period.

45. With regret, OFTA's reading of the 2007 SPF is incomplete. First, the SPF explicitly contains a public policy exception that would allow a right of first refusal per existing precedents.[19] Second, none of the relevant 3G consultation papers, briefings to the Legislative Council ("**LegCo**"), auction documents, etc. from 2000 and 2001 stated that spectrum holders would not have some type of first refusal rights upon expiry of the spectrum assignments. Third, in the early 1990's, the spectrum originally used by the mobile operators for analogue mobile services was subsequently re-assigned to the incumbent licensees for providing digital mobile services ("**PMRS Spectrum**"). Also, in 2004, the TA decided to renew the 2G spectrum for the incumbent licensees, i.e. a right of first refusal was recognized. The 2G spectrum included frequency bands in the 800/900 MHz range that was envisaged would be refarmed for use in offering 3G mobile services, and this has indeed subsequently happened. Fourth, the Competition Economics Group ("**CEG**"), in its May 2012 report to the GSMA[20], recommended a right of first refusal for spectrum renewals. Fifth, important international precedents support a right of first refusal approach for spectrum renewals. Sixth, the stated "mission" of the CEDB and the Communications Authority Ordinance ("**CAO**") support a right of first refusal. These six reasons are described further below.

The language of the SPF embraces existing precedent

46. The language of the SPF is clear on its face. Where competing demands exist for spectrum, a market-based approach would be appropriate. However, public policy reasons may justify a departure from this general market-based approach.[21] The SPF at paragraph 3.1 states:

> *The policy inclination is that a market-based approach in spectrum management will be used for spectrum wherever TA considers that there are likely to be competing demands from providers of non-Government services, unless there are overriding public policy reasons to do otherwise.*

47. Paragraph 17 of the LegCo Brief adopting the SPF[22] is particularly relevant in assisting the operators understand how the SPF is to be applied in the assignment and renewal of spectrum, and the circumstances under which public policy reasons may override the inclination to employ a market-based approach:

> *We maintain our view that, at this stage, there should be no legitimate expectation for renewal at the end of spectrum assignments and have made this clear in paragraph 4.2 of Annex A. The TA should decide whether a new spectrum assignment, with the same or varied radio frequencies, should be given to the licensees. To provide greater transparency, we make it clear in the policy framework that the spectrum*

[19] HKT does not here express a view as to whether the 2007 SPF can apply to spectrum granted in 2001 and acquired by it subsequently.

[20] Report on Licensing to Support the Mobile Broadband Revolution ("**CEG Report for GSMA**").

[21] "Market-based approach" for spectrum management means methods relying on market forces to ensure the efficient use of spectrum as a public resource. This does not necessarily mean an auction. Spectrum trading would be the best example of a market-based approach.

[22] File Reference: CTB(CR) 7/14/16(06) issued on 24 April 2007.

> *policy objectives and public interest grounds should be considered when the TA makes such decisions. Indeed, the TA considered, among other factors, public interest grounds when he decided to offer the "right of first refusal" to 2G mobile carriers whose licences expired in 2005 or 2006. Since public interest would have to be considered in each case, we do not deem it appropriate to give existing spectrum assignees, as a matter of course, the right of first refusal. We accept that the absence of automatic right of renewal may affect the value of spectrum when auctioned, and potentially hamper the effectiveness of spectrum trading and spectrum liberalisation as possible market tools. Once spectrum trading and/or spectrum liberalisation is implemented, the issue of spectrum rights at the end of a spectrum assignment should be revisited.* [Emphasis added]

48. From the above, it is clear that the TA considered public interest grounds when granting a right of first refusal for the 2G spectrum renewals, and that these public interest grounds are the same public interest grounds that would be considered under the SPF public policy exception. The SPF therefore fully embraces and is consistent with the PMRS Spectrum and 2G renewal precedents. Based on these precedents, and as described below, the actions of the Incumbent 3G Operators (in terms of investment, innovation, satisfactory service provision, efficient use of spectrum, etc. as well as the need to ensure service continuity) require a renewal on a right of first refusal basis.

None of the relevant 2000/2001 documents stated that the spectrum holders would not be granted a right of first refusal upon expiry of the assignment term

49. In considering the issuance of 3G spectrum in 2000 and 2001 the Government (i.e. the Bureau and OFTA) released multiple documents including three consultation papers/statements, OFTA briefings to industry, an Information Memorandum, a formal Question and Response paper, briefing papers for LegCo, etc. These documents total several hundred pages, including sections on Licensing Issues, Regulatory Issues, the Regulatory Framework (5 times), Operator Selection Arrangements, Other Regulatory Issues, Policy Issues, the Licenses, etc. None of these documents contained any language that stated there was (or would be) no right of first refusal.

The PMRS Spectrum and 2G spectrum were re-assigned to the existing licensees

50. Two spectrum renewal cases exist in Hong Kong. Both decisions adopted a right of first refusal approach. The SPF and global precedents (i.e. fixed line licences being routinely renewed and carrier licences having no expiration date) support this approach. These cases are described below.

51. In the November 1990 *Consultative Paper on Licensing of Digital Public Mobile Radiotelephone Services in Hong Kong* issued by the Telecommunications Branch of the Hong Kong Post Office (the forerunner of OFTA) ("**Consultative Paper on Digital Mobile Services**"), it was recognized that, although there was no obligation for spectrum to be re-assigned back to the existing holders after expiry of the assignment term, there would be strong and valid practical reasons why it might be preferable for the incumbent licensees to continue using their allocated frequency bands. The Consultative Paper on Digital Mobile Services states:

> *10. […] Under the existing licences for the operation of analogue PMRS, the operators do not have an automatic right to convert their systems to digital PMRS. Existing licences also contain a note to the effect that the licences may not be renewed after 30 June 1995. However, there would be great difficulty for a block of spectrum occupied by an existing operator to be taken over by another operator for operations* (sic) *digital PMRS. Moreover, the existing operators have a wealth of expertise and experience through setting up the infrastructure for the operation of PMRS in Hong Kong. As long as the operators are providing a good and satisfactory service, it would be unreasonable not to renew their licences after 30 June 1995.*
>
> *11. Based on the above considerations, the Post Office has taken the view that CSL and Hutchison should be permitted to convert their TACS systems into GSM systems within the spectrum currently occupied by their analogue systems. Pacific Link should also be permitted to convert its ETACS system into a digital PMRS which is likely to be a USDC system. However, if the GSM standard is extended eventually to cover the ETACS bands, the Post Office should have no objection to a request from Pacific Link to implement a GSM system and a USDC system within the 10 MHz of ETACS spectrum.*

52. The proposals in the Consultative Paper were subsequently implemented, and the three incumbent spectrum holders at that time (CSL, Hutchison, Pacific Link) had their licences automatically renewed upon expiry so that they could migrate their mobile services from analogue to digital.

53. A few years after the Consultative Paper on Digital Mobile Services was released, the TA applied the same criteria in re-assigning 2G spectrum to the existing spectrum holders upon expiry of the assignment term, i.e. no auction was conducted.[23] It was envisaged that part of this spectrum, i.e. spectrum in the 800/900 MHz band, would be refarmed for 3G mobile services and, indeed, this has subsequently taken place (or will soon do so). On this basis, consistency of treatment between the 3G Spectrum today and that which was previously renewed (and then refarmed) supports an automatic renewal of the 3G Spectrum to the Incumbent 3G Operators upon expiry in October 2016. In fact, holders of the 3G Spectrum who do not possess 2G 800/900 MHz band spectrum will be discriminated against in the renewal process if their 3G Spectrum is not renewed on a right of first refusal basis.

54. The TA made a decision not to conduct an auction in spite of the fact that the spectrum in the 800/900 MHz frequency range was much sought after by other mobile operators because of its coverage capabilities compared to spectrum in the higher frequency ranges. The 2G spectrum was re-assigned to the existing spectrum holders on the basis that they had made efficient use of the frequency in the past and they had been providing satisfactory service to their subscribers with continuous investment and improvements. In this decision dated 29 November 2004, the TA recognized the need to provide a stable investment environment and ensure continuity of customer service:

[23] See TA's Statement on: Licensing of Mobile Services on Expiry of Existing Licences for Second Generation Mobile Services issued on 29 November 2004 ("**2G Spectrum Renewal Statement**").

> *In the Consultation Papers, the TA proposed to grant the "right of first refusal" to the nine incumbent GSM and PCS licensees who had been making efficient use of the frequency spectrum assigned to them in the past years. The TA also took into account the importance of providing a stable investment environment and ensuring continuity of customer service. It was also recognized that the nine incumbent GSM and PCS licensees had been providing satisfactory service to their subscribers with continuous investments and improvements.*[24]

55. In paragraph 13 of the consultation paper in the same proceeding dated 19 March 2004, the TA provided his justification for proposing a re-assignment of the 2G spectrum to the existing spectrum holders:

> *The TA is aware of the consideration to provide a stable investment environment and to ensure continuity of customer service. At present, there are more than 7 million mobile customers in Hong Kong. Discounting the relatively small number of customers subscribing to the CDMA and TDMA services, the GSM and PCS services have become a general commodity penetrating all walks of our society and affecting every aspect of our daily life. The existing GSM and PCS licensees have been providing a satisfactory service with continuous investments and improvements. They have also been making efficient use of the scarce frequency spectrum assigned to them. If they were not allowed to continue offering their services to their customers, there would be severe service interruptions, causing confusion and inconvenience to the public. The social consequence would not be acceptable to society as a whole.*

56. The market conditions and public interest considerations which the TA took into consideration when he re-assigned the PMRS Spectrum and the 2G spectrum remain relevant for the 3G Spectrum. Today, the market has become more competitive, substantially greater investment has been made[25], there is more service innovation and prices have continued to drop. The operators are providing a good and satisfactory service to almost eight million consumers. Spectrum is being used efficiently and more efficient use is driven by innovation, investment, user requirements and competition. For example, the mobile operators have invested billions of dollars to meet the growing data requirements of users. The volume of mobile data per month has grown from 2 terabytes in December 2004 (the year in which 3G services were first introduced in Hong Kong) to 5,045 terabytes today (March 2012), representing a staggering two and a half thousand fold increase over the space of less than eight years. By OFTA's own admission in the Consultation Paper, mobile data usage expanded by 124% in 2011 alone, with usage per customer rising by 72% year-on-year to 509 megabytes per month at the end of 2011.[26] Continued investment in the network is therefore critical (and needs to be supported by regulatory policies, not discouraged) in order to sustain

[24] See paragraph 6 in the 2G Spectrum Renewal Statement.

[25] HKT estimates that, so far, it has already invested at least 30% more in its 3G network compared to its 2G network, and this investment is continuing.

[26] The latest figure per OFCA's website stands at 588 megabytes per customer (March 2012). Further, in a presentation made by Cisco at the Mobile Asia Expo 2012 in June 2012 entitled: *Mobile Networks in a Zettabyte World – Trends from Cisco's Visual Networking Index*, Cisco forecast that global mobile data traffic would increase 18X from 0.6 exabytes per month in 2011 to 10.8 exabytes per month in 2016.

the exploding growth in use of mobile data services. Proposals that are disruptive should not be considered.

57. Consumers at large are doing very well indeed, enjoying global best benefits. Per OFCA's website, as at March 2012, there were approximately 7.9 million 3G customers in Hong Kong, and this number is expected to continue to grow in view of the increasing use of smartphones. At the same time the mobile penetration rate is over 200%. With the growing complexities in the services provided (and handsets used), there is no need to risk service disruptions, customer confusion and inconvenience to the public all with substantial social consequences.

58. Given the circumstances under which the PMRS Spectrum and the 2G spectrum were re-assigned back to the incumbent operators without going through an auction process, clear precedent already exists to do the same regarding the 3G Spectrum. Further, the Incumbent 3G Operators have never been warned by the TA that they were making inefficient use of their spectrum, nor have they been told that the service they were providing using the 3G Spectrum was in any way unsatisfactory. In fact, under the terms of their licence, the Incumbent 3G Operators are required to "operate, maintain and provide a good, efficient and continuous service in a manner satisfactory to the Authority", and HKT does not recall any of the Incumbent 3G Operators having infringed this licence condition.[27] On this basis, given the amount of investment they have made in their networks and the improvements over the years, the Incumbent 3G Operators should be provided with a right of first refusal.[28]

59. As to the 2007 SPF, the renewal of the PMRS Spectrum and the 2004 2G renewals on a right of first refusal basis would simply be examples of the SPF's "public policy reasons" overriding the market-based approach. Paragraph 17 from the LegCo Brief adopting the SPF is clear. As described above, better reasons exist today than in 2004 for such an exception,

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[27] The one exception is the recent SmarTone network outage, but this reflects a one-off short term event, not a systemic issue.

[28] Whether these precedents create a legitimate expectation need not be addressed here since the precedents and public policy considerations supporting a right of first refusal are so clear. However, HKT is of the view that a legitimate expectation does exist based on precedent and Government action.

For the avoidance of doubt, the doctrine of legitimate expectation exists in Hong Kong. This doctrine, from English jurisprudence, moved from a legitimate expectation to be heard (i.e. a 'process' legitimate expectation) to a legitimate expectation that Government practices and actions will be consistent (i.e. a 'substantive' legitimate expectation). This doctrine and its application were described by the Court of Final Appeal in the landmark *Ng Siu Tung and Others v The Director of Immigration* case. The criteria of Ng Siu Tung are satisfied in the 3G Spectrum renewal matter. First, by not stating that there would be no right of first refusal in 2000/2001 and then employing a right of first refusal in the similar situation of the PMRS Spectrum and 2G spectrum renewals, an expectation was created by practice that the 3G Spectrum renewal would be handled in a similar manner. Second, the right of first refusal is consistent with Government (both CEDB and OFCA) objectives and the public interest such as promoting investment and innovation, maintaining high levels of competition, encouraging efficient spectrum usage, and enhancing consumer benefits. Third, there are no reasons recognized by law for not giving effect to the legitimate expectations. Fourth, the Incumbent 3G Operators have invested billions of dollars based on their licence grants representing a substantial and reasonable reliance on the Government's past actions. If a right of first refusal was denied, the Incumbent 3G Operators would be harmed (i.e. detrimental reliance). Fifth, recognizing a legitimate expectation for the four Incumbent 3G Operators would be in all the circumstances both proportionate and rational.

While it is not necessary to address this issue further at this time, **HKT reserves all its rights on this matter should OFCA deviate from precedents**.

and the two precedents would require an exception for the 3G renewal. This exception is noted in paragraphs 7 and 12 of the Consultation Paper, but it is curious that no public policy analysis was included in the narrative section of the Consultation Paper. Question 1 of the Consultation Paper raises the public policy exception but it is unfortunate that no analysis was done before Option 3 was presented as the favored way forward.

The CEG Report for GSMA recommended a right of first refusal for spectrum renewals

60. A renewal with a right of first refusal would be consistent with the recommendations made by CEG in the CEG Report for GSMA. In its report, CEG supports the position that operators should expect their spectrum to be renewed otherwise they would be discouraged from continuing investment and there would be risk of service disruption to customers. Only in exceptional circumstances should the regulator consider not re-assigning the spectrum:

> *Recommendation 10 – There should be a presumption in favour of licence renewal for operating and spectrum licences to encourage long-term investment and minimize the risk of service disruption to customers. Reasons for not renewing licences should be limited to spectrum replanning, where there is little risk of stranding substantial investments, or where there has been a serious breach of licence conditions which should be evident in advance of the renewal time. Exceptionally, a licence may not be renewed in relation to the whole or part of the relevant spectrum so as to promote competition through re-assignment of spectrum. However, before not renewing a licence for this reason, regulators should first (i) assess whether competition is already effective in the market; (ii) identify whether competition can be promoted by other means such as the release of alternative spectrum; and (iii) assess whether the expected competition benefits will exceed the potential costs such as in relation to spectrum replanning, customer migration and risk of deterring investment.*

61. As suggested by CEG, the TA should only consider not re-assigning the spectrum to the Incumbent 3G Operators if it can be shown that competition is not effective in the market and there are no other means of promoting competition. To do so, the TA would need to conduct a study to substantiate any assertion that the Hong Kong mobile market is not competitive. Clearly, however, this cannot be the case. Hong Kong is one of the most competitive mobile markets in the world, with five operators serving such a small territory with exceptionally low retail price levels and high penetration rates as testament to this state of affairs. Critical to the TA's decision is also the cost impact resulting from not re-assigning the spectrum to the incumbents, i.e. the operational costs involved in shifting use of spectrum bands, migrating customers from one band to another and the chilling effect this will have on upcoming network investment plans.

International precedent supports a right of first refusal approach

62. There are international precedents which support a right of first refusal approach to spectrum renewals. In the Paper prepared by OFTA for the Regulatory Affairs Advisory Committee on 13 January 2012 (RAAC Paper No. 2/2012) on *Licensing Arrangements for the 1.9 – 2.2 GHz Spectrum upon Expiry of the Existing Licences for 3G Mobile Services*, OFTA has recognized that certain leading overseas regimes (such as Australia) have already

adopted an approach whereby the incumbent spectrum holders are given a right of first refusal on the frequency bands upon expiry of their assignment term.

63. Canada adopts a policy whereby spectrum licensees will normally have their licences renewed at the end of the term unless a breach of a licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises. This policy was applied in March 2011 when the Canadian Government decided that the current PCS/cellular licence holders would be reissued with new licences on condition that all conditions of their current licences had been met.

64. In the UK, the regulatory authorities went even further and decided to renew the 3G licences *indefinitely*, thereby re-assigning the spectrum back to the incumbent spectrum holders and allowing them to continue using the spectrum unless they breached their licence. This approach should be of particular appeal to OFCA as it includes spectrum trading and is totally market-based. Indeed, HKT would very much advocate that adoption of the UK approach as it maximizes the use of market forces and allows the regulator to exit.

65. The Australia, Canada and UK examples are discussed more fully later on in the section of this submission in which HKT responds to each of the specific questions raised in the Consultation Paper.

The stated mission of the CEDB and the CAO support a right of first refusal approach

66. Per paragraph 16 of the Consultation Paper, the mission statement of the CEDB states:

- *We will foster a business-friendly environment and attract investment to Hong Kong.*
- *We will position Hong Kong as the premier digital city and telecommunications hub of Asia.*
- *We will promote high value-added, creative and high technology activities in Hong Kong, leveraging on the very strong services and manufacturing sectors in Hong Kong and in the Pearl River Delta respectively.*

67. It is clear from the Consultation Paper that a business-friendly environment that attracts investment to Hong Kong is best met via Option 1. This is true for both investors in the mobile market as well as consumers of mobile services. As to the investing licensees, Option 1 is ideally suited to facilitating a stable environment in which to invest and innovate which in turn promotes competition and user benefits. Investors do not under Option 1 face the risk of stranded investments or inferior service offerings. For both the business community and personal users, Option 1 ensures hyper-competition in the mobile arena which generates "global best" benefits. Maintaining Hong Kong's role as the premier digital city and telecommunications hub of Asia is best achieved by stability and predictability. Introducing substantial risk to spectrum usage will adversely affect investment and innovation, and will undermine the stated goals of the "mission" and the CAO. Indeed, Options 2 and 3 are recognized by OFTA to create a chilling effect on investment and innovation. Neither creative nor high technology activities can thrive if the underlying

infrastructure is subject to uncertainty. Investment and innovation will decline if uncertainty occurs, undermining Hong Kong's regional and global role and status.

68. Further, Section 4 of the CAO lists the factors that OFCA must take into account when performing its functions. These factors include the encouragement of innovation and investment, the promotion of competition and the adoption of best practices for the benefit of the industry and consumers, and enhancing Hong Kong's role as a communication hub. Per OFTA's own analysis, only Optional 1 meets these criteria.

69. In sum, based on: (a) precedents; (b) the actions of the 3G incumbent spectrum holders (i.e. investment, innovation, efficient spectrum usage, satisfactory service, etc.); (c) the SPF; (d) the GSMA position; (e) international precedent; (f) the mission of the CEDB; and (g) the CAO, the incumbent spectrum holders should be given the right of first refusal to continue using the frequency bands after the spectrum assignment term has ended since they have made proper use of the spectrum during the term of their holding. OFCA has a duty to provide a consistent business environment to the telecommunications industry and not deviate from its previous approach unless there is evidence that this has resulted in a market failure. Clearly, there is no such evidence here. The 3G Incumbent Operators satisfy the public interest exception of the SPF.[29]

V It is not OFCA's role to tilt the playing field to the advantage of one mobile operator

70. In 2001, an open auction was held in which spectrum in the 1.9 – 2.2 GHz band was assigned to (or the predecessors of) CSL, Hutchison, SmarTone and HKT. The fifth mobile operator had an equal opportunity to acquire spectrum in this auction but opted not to. Again, in the spectrum auction for the 850 MHz, 900 MHz and 2 GHz bands which took place in February 2011, the fifth mobile operator had a chance to acquire spectrum for 3G use but chose not to. So why tilt the playing field in 2012/2013 to help that operator, particularly when that operator currently has more spectrum than HKT and SmarTone?

71. Mobile operators today have multiple capacity/spectrum options. They may acquire more capacity/spectrum via negotiated resale or MVNO arrangements. They may acquire additional spectrum via future auctions (or whatever arrangements the Government creates). 50 MHz of new capacity will be made available early next year in the 2.5/2.6 GHz spectrum auction. Substantial capacity will be made available via the digital dividend in 2014 or 2015 (one or two years before the subject 3G spectrum licenses expire). Mobile operators may also acquire capacity via joint venture, merger and acquisition activity. These and other commercial avenues are open to mobile operators if they wish to acquire additional spectrum. So why tilt the playing field to help one particular operator?

72. The MVNO option is particularly important as the 3G licenses all have MVNO spectrum set asides where 30% of each 3G licensee's spectrum is required to be made available to a "Qualified MVNO or CSPs" upon request. The Authority may determine the terms and conditions of an MVNO agreement under Section 36A of the Ordinance.

[29] At the very least HKT has satisfied this exception through its massive investment to expand and up-grade Sunday's meager 3G network. HKT estimates that, in just a few years, it has already invested at least 30% more in its 3G network as compared to the 2G network.

Accordingly, any "Qualified MVNO" has multiple options and indeed could acquire more capacity under such agreements than any one 3G licensee has alone. In sum, the fifth mobile operator has access to sufficient 3G capacity; if it did not it could negotiate for more, including with the assistance of OFCA. So why tilt the playing field to help that operator?

73. There is no doubt that OFTA is intentionally seeking to assist the fifth mobile operator. At paragraph 34, OFTA states that by re-auctioning the 3G Spectrum the fifth mobile operator will be able to compete on a level playing field with the existing mobile operators. At paragraph 37 OFTA states that the auction approach would allow "the fifth MNO which currently does not operate 3G network" to enter the market. The Consultation Paper contains no analysis that the fifth mobile operator is now unable to compete on a level playing field or cannot itself address any disadvantages that it faces. Indeed, the Consultation paper does not even indicate what the relevant market is in which the operator in question is unable to compete on a level playing field (i.e. the mobile market generally, a specific 3G market, etc). If OFTA is keen to assist the fifth mobile operator, who is one of the larger mobile operators, then HKT would be interested to know OFTA's reasons why it should do so at the expense of the interests of operators like HKT and SmarTone that have less spectrum than the fifth mobile operator.

74. Tilting the market to facilitate the market expansion of a particular operator is exactly the opposite of Government policy to allow market forces to determine outcomes. Market forces would say to the fifth mobile operator (which already has the most 4G LTE spectrum while other market participants have none): obtain spectrum in 2013 or 2014/2015, negotiate resale or MVNO agreements, merge, acquire, etc. OFTA has suggested a very dangerous way forward in which it proposes to re-arrange the competitive landscape on a command-and-control basis. Why should HKT or SmartTone as the holders of the least amount of spectrum be put at such a disadvantage?

75. OFTA's proposal is also not technology neutral. Instead of treating spectrum and the mobile market in a holistic and general manner, OFTA is suggesting that a particular spectrum band (i.e. 1.9 – 2.2 GHz) should be made available to a particular mobile operator outside of the normal workings of the market. As noted above, the fifth mobile operator has multiple market mechanisms available to it. OFTA should therefore, absent a real and demonstrated market failure, let the market work.

76. The fifth mobile operator does not need OFCA's help. It has extremely deep pockets and government support. It benefits from asymmetrical roaming and accounting rate arrangements which affords it competitive advantages unavailable to other operators. OFCA will be aware of these issues due to its continued monitoring of the market.

VI Spectrum Trading would assist all market participants (including the fifth mobile operator) in a fair way

77. Once spectrum has been taken out of the Government's reserves and assigned to operators via an open and competitive auction, HKT considers that thereafter the market should be allowed to decide of its own accord how the spectrum should be re-allocated amongst the industry players or new entrants. This is consistent with the strong "market-

based approach" stated within the SPF. To allow this to happen the TA must allow for spectrum to be traded amongst the operators.

78. In OFTA's 2006 Consultation paper on the SPF, the issue of spectrum trading was addressed. At paragraphs 57-59 the TA stated:

> *57. Secondary trading of spectrum refers to a situation where a spectrum assignee may, through bilateral negotiations, allow another party to use all or part of the spectrum for the duration of the spectrum assignment, possibly in exchange for financial benefits. Secondary trading of spectrum has been introduced in some frequency bands in Australia, Canada, Guatemala, New Zealand, the UK and the US. Some limited form of trading is also allowed in Austria, Germany, the Netherlands, Norway and Sweden. The consultant has described the international experience in secondary trading of spectrum in the Consultancy Report.*[30]
>
> *58. Secondary trading of spectrum can be an important market mechanism whereby spectrum assignees have financial incentives to put spectrum to the most efficient use. For example, a mobile operator with a relatively small customer base may choose to lease part of its underutilized spectrum assignment to another mobile operator running short of spectrum to support its larger customer base. Both operators will stand to gain from secondary trading in this case. At present, other than seeking additional spectrum from the TA, the only way a spectrum assignee may obtain additional spectrum from another spectrum assignee is by way of acquiring the entire company, thereby acquiring its assets including the spectrum assigned to the latter. This approach may not be able to deliver maximum benefits to the community as "subdivision" of spectrum rights is not possible under such an arrangement. The option of acquiring additional spectrum in the secondary market would also promote competition, since potential service providers can negotiate with existing spectrum assignees to use the desired amount of spectrum for the duration of their choice, instead of awaiting the release of spectrum from the TA, thereby lowering the barrier to enter the market. It should be stressed that allowing secondary trading of spectrum is not a means to benefit spectrum assignees by enabling them to generate financial gains from the spectrum assigned to them, but is a framework that releases market forces to improve the efficient use of spectrum as a public resource, a statutory responsibility of the TA under section 32G(1) of the TO.*
>
> *59. The consumers will also gain from the option of acquiring additional spectrum in the secondary market. First, the customer may be able to enjoy cheaper prices for the more popular services because the mobile operator is potentially able to provide extra capacity more cheaply by acquiring rights to use additional spectrum in the secondary market. If additional spectrum can be obtained from the secondary market, the existing network equipment would be used even more efficiently, and the resulting economy of scale should result in lower prices for such popular services. Otherwise, the operator may require a larger investment for additional network equipment to support a larger customer base and the higher costs may be passed on to its subscribers. Secondly, it provides consumers with greater choice of service*

[30] See section 5.4 of the Consultancy Report.

providers as a potential service provider of popular service will be able to enter the market by negotiating with existing spectrum assignees in order to acquire spectrum rights of the amount of their choice. Thirdly, it enables consumers to have faster access to innovative services, since entrepreneurial service providers with more advanced innovative service could attempt to enter the market through acquiring spectrum rights in the secondary market as soon as the service is ready for offer to consumers.

At paragraph 64 the TA reached the view that:

64. We propose, as a broad direction under the proposed spectrum policy framework, that consideration should be given to introducing secondary trading of spectrum in the longer term future, subject to a study on the feasibility of this proposal in Hong Kong.

79. In 2007, when adopting the SPF, the Government stated in regard to spectrum trading:

Spectrum trading

23. There is general support for the introduction of spectrum trading whereby a spectrum assignee may, through bilateral negotiations, allow another party to use all or part of the spectrum for the duration of spectrum assignment. Respondents consider this an important means to ensure the most efficient use of spectrum and further stimulate growth and innovation. Most mobile carriers would like this measure introduced as soon as practicable. They are of the view that the existing competition provisions in the TO should be sufficient to guard against anti-competitive behaviour if trading is allowed. A couple of submissions consider that trading gains should be treated as any gains from the sale of business assets. [Emphasis added]

24. In the light of the support received in the submissions, we have indicated in the spectrum policy framework the policy inclination to introduce spectrum trading in Hong Kong in the long term (para 5.3 of Annex A). We will proceed to undertake a feasibility study on the many implementation issues identified by the consultant, including the licensing arrangements, the question of financial gains from trading, and regulatory measures to prevent anti-competitive practices (e.g. hoarding of spectrum by operators with means)

Annex A

5.3 The policy inclination is to introduce spectrum trading in Hong Kong in the long term, subject to a feasibility study and resolution of various implementation issues.

80. Thereafter, in spite of the adoption of spectrum trading in many markets, spectrum trading is still not allowed in Hong Kong. More troubling, is that little progress seems to have been made. In OFCA's *Major Tasks and Projects for 2012-13* the following appears:

In 2009, we commissioned a consultant to conduct a study on the feasibility of introducing spectrum trading in Hong Kong. Based on the report prepared by the

consultant, we will consider critically whether a spectrum trading scheme should be implemented.

81. Essentially, the same language appears in OFTA's "Major Tasks and Projects" for 2011-2012 and 2010-2011. With respect, this is unacceptable in a dynamic and fast moving sector of the economy which plays such an important role in the daily lives of 7 million people and thousands of businesses.

82. The 2009 Consultant's report recommended the introduction of spectrum trading in Hong Kong, noting that "spectrum trading encourages efficiency and supports innovation in spectrum usage". The Consultant also stated that spectrum trading would "reduce the regulatory burden" and that spectrum trading "should be applied unless there are specific reasons not to". The Consultant concluded that spectrum trading could be initially introduced for cellular spectrum subject to OFTA's scrutiny of trades for competition, interference and the ability to meet licence obligations.

83. The Consultant also addressed the theoretical negatives of spectrum trading. As to speculative activity, the Consultant said there was no evidence that speculative activity had disrupted spectrum use in other countries, perhaps because spectrum is not particularly a liquid asset. As to windfall gains, the Consultant said these are not an efficiency issue but steps can be taken to ensure equitable outcomes, e.g. a windfall gains tax. As to spectrum fragmentation, the Consultant found no evidence of problems in other markets. The evidence was that spectrum trading increased the value of licences (and in any event minimum trading units could apply). As to market power (i.e. competition) concerns, ex post competition laws (as exist in Hong Kong) were sufficient.

84. Overall, the Consultant concluded that spectrum trading should be introduced for cellular; that an open and managed (OFTA oversight) approach would maximize benefits; and that no additional restrictions need be placed on eligible parties.[31]

85. Spectrum trading has been discussed by various overseas policy makers and Governments for several years. These informal discussions date from the 1990's in Hong Kong and abroad. There is wide consensus that spectrum trading allows the market to efficiently and effectively allocate spectrum to those entities who value it most, thus benefiting the economy. In a presentation on to regulators and policy-makers under the ITU's ICT Regulation Toolkit, consultants McLean Foster & Co. emphasized the importance of spectrum trading:

[31] Such competition and windfall gains concerns are likely to be overstated in view of the current spectrum allocations among carriers and the high levels of investment (and competition). Yet safeguards exist or can be easily created. As to Government revenues, the Government should see no loss of revenue. First, spectrum trading increases the value of spectrum and thus raises the amounts derived under the SPF by auctioning new spectrum. An operator, knowing that spectrum trading is available as a worst case exit strategy, will more likely seek spectrum. Second, modest transfer fees could be imposed on spectrum trades. Third, windfall gains fees could be imposed under specified circumstances. In any event, market efficiency and the knock on effect of efficiently operating markets are more important than maximizing spectrum revenues.

It is viewed as the key step in the spectrum management regulatory reform, capable of unlocking the potential of new technologies and of eliminating artificial scarcities of spectrum which find expression in inflated prices for spectrum-using services.[32]

86. Spectrum trading is an extremely valuable and dynamic mechanism as it is market driven and can be used to quickly and flexibly satisfy market requirements. It is more responsive to fluctuating and changing spectrum needs and uses over time compared to an auction where the timetable is decided under a three year plan with minimal flexibility.

87. Spectrum trading allows operators who need spectrum to acquire it from operators who may need it (or value it) less. This generates the most economically efficient use of the scarce spectrum resources. It does not require a long consultation or other review. It promotes the Government's objects of promoting efficiency, investment, innovation and competition. It increases predictability and signals market participants that they may use or dispose spectrum in an orderly fashion per their business requirements. The most efficient allocator of capacity (i.e. the market) is allowed to work to produce a win-win for users and operators. A simple, quick and predictable process to support spectrum trading while dealing with any possible distortions is both needed and overdue.

88. As to Government revenues, the Government should see no loss of revenue. First, spectrum trading increases the value of spectrum and thus raises the amounts derived under the SPF by auctioning new spectrum. An operator, knowing that spectrum trading is available as a worst case exit strategy, will more likely seek spectrum. Second, modest transfer fees could be imposed on spectrum trades. Third, windfall gains fees could be imposed under specified circumstances. In any event, market efficiency and the knock on effect of efficiently operating markets are more important than maximizing spectrum revenues.

89. Spectrum trading has already been introduced in several countries around the world. In the *Consultation Paper on Proposed Spectrum Policy Framework* issued by the CITB in October 2006, the CITB at paragraph 57 noted that spectrum trading was already being introduced in Australia, Austria, Canada, Germany, Guatemala, the Netherlands, New Zealand, Norway, Sweden, the UK and the US. Other countries such as Bulgaria, El Salvador, France, Hungary, Ireland, Poland, Slovenia and Spain have also introduced spectrum trading[33], and the list is growing. Hong Kong was early in considering this matter in the 1990's, but sadly it has now fallen behind.

90. On this basis, OFCA should now accelerate the timetable for introduction of spectrum trading in Hong Kong. With spectrum trading, there would be greater certainty and continuity in the market, ensuring continued investment, innovation and user benefits. In fact, there is no debate as to the benefits of spectrum trading. The issue in Hong Kong has always been one of when, not if. It is disappointing that Hong Kong, which was an early leader in liberalization and the policies surrounding liberalization (e.g. number porting, unbundled local loop, road openings, interconnection, collocation, etc.), is now such a

[32] Presentation on *Introducing Spectrum Trading* made by McLean Foster & Co. to regulators and policy-makers on 2-3 December 2006 at Hotel Kowloon Shangri-La, Hong Kong ("**McLean Foster Presentation**").

[33] See McLean Foster Presentation.

laggard in market driven policy formation. Hong Kong has been overtaken by a substantial number of markets, to the detriment of users. It is time for Hong Kong to at least catch up with other liberalized and leading markets, and to do so for the benefit of consumers. There is certainly enough time to introduce spectrum trading well before the expiration of the current 3G licenses and thereafter allow market forces to work with Option 1 to give all entrants (and any new entrants) all the tools they need to efficiently and effectively compete.

VII Option 1 is best for consumers

91. Option 1, in which the Incumbent 3G Operators are offered the right of first refusal on their existing 3G Spectrum holdings, has no adverse consequences and substantial benefits. Option 1, and only Option 1, best meets the criteria put forward by OFTA, CEDB and the CAO. It would be irrational not to select Option 1. By implementing Option 1:

- Customer service continuity is best preserved. There will be no service disruption or service quality problems (service congestion and degradation, dropped calls, calls unable to be put through, etc.) associated with the loss or movement of spectrum capacity. OFTA explicitly recognizes this in paragraphs 24, 38, 39 and 50 of the Consultation Paper;
- The most efficient use can be made of the spectrum. OFTA clearly acknowledges in paragraph 19 of the Consultation Paper that Option 1 results in the most efficient use of the spectrum as no fragmentation of the existing frequency blocks needs to take place;
- The already highly competitive state of the Hong Kong mobile telecommunications market is preserved. OFTA has already stated numerous times throughout the Consultation Paper that the Hong Kong market is already intensely competitive, and this has so far brought significant benefits to local consumers. Options 2 or 3 would likely result in less competition if spectrum is fragmented and some operators lose spectrum. There is no reason to jeopardize the status quo;
- Network investment can continue to be made by the Incumbent 3G Operators (between now and 2016) in full confidence that they will re-acquire their existing spectrum holding and can carry on providing service to their customers. OFTA explicitly recognizes that Option 1 best encourages network investment and innovation in paragraphs 19, 36 and 48 of the Consultation Paper; and
- Hong Kong consumers will continue to benefit from innovative technology and services developed by the operators because: (i) operators will be strongly encouraged to maintain their investment plans; (ii) the spectrum is not forcibly fragmented; and (iii) competition will continue to meet consumer requirements. OFTA explicitly recognizes that Option 1 best encourages network investment and innovation in paragraphs 19, 36 and 48 of the Consultation Paper.

92. In addition, a significant amount of re-engineering costs will be saved as the operators will not need to make any adjustments to their Integrated Radio Systems ("**IRS**") or POIs. If spectrum trading is permitted, this will provide further options for the industry and facilitate the most economically efficient use of scarce spectrum resources

93. OFTA's own analysis supports granting the incumbent spectrum holders the right of first refusal. This is also supported by international and Hong Kong precedent, the law, public policy, the SPF, etc. There is no convincing analysis presented to not adopt Option 1.

VIII Options 2 and 3 must be rejected

94. Unlike Option 1, Options 2 and 3 are inconsistent with the stated objectives of this consultation, the stated Government policy and the CAO.

95. In the Consultation Paper, the TA has tasked himself to come up with a solution that ensures: customer service continuity; efficient spectrum utilization; promotion of effective competition; encouragement of investment and promotion of innovative services.[34] However, unlike Option 1, neither Option 2 nor Option 3 manages to fulfill any of these objectives because:

- Customer service continuity is put at risk if an operator loses spectrum or has to employ different spectrum. OFTA explicitly acknowledges that Options 2 and 3 do not satisfy the customer service continuity criteria;
- Forcing operators to accommodate their existing customers on reduced spectrum bands, or causing fragmentation of the existing 3G spectrum bands is not an efficient use of the spectrum resources. Service congestion and degradation are likely results of Options 2 and 3. Options 2 and 3 are recognized by OFTA as negatively impacting spectrum efficiency;
- There is nothing to suggest that competition will actually be enhanced by implementing Option 2 or Option 3. The TA has emphasized throughout the Consultation Paper that competition in the Hong Kong market is already highly intense and consumers are seeing the benefits. Why put at risk these global best consumer benefits?
- Investment and innovation would be curtailed in the run up to the spectrum auction as operators face uncertainty over their ability to successfully re-acquire their spectrum holding. This chilling effect is not conducive to a healthy environment for investment or innovation. In the post-auction environment, the chilling effect will likely continue for some operators. As a result, consumer benefits will likely decline (or not increase as they might otherwise). The TA has recognized the weakness of Options 2 and 3 in promoting investment in paragraphs 36 and 48 of the Consultation Paper.

96. Accordingly, both Options 2 and 3 should be rejected as they and are inconsistent with stated policy objectives.

97. The following table summarizes how each of the options stacks up against the criteria stated in the Consultation Paper:

[34] Paragraph 16 of the Consultation Paper.

Impact	Option 1	Option 2	Option 3
Customer Service Continuity	Ensures customer service continuity. ✓	Serious disruption to all fixed line and mobile subscribers when calls are made between networks. Resulting increase in user complaints.	Serious disruption to all fixed line and mobile subscribers when calls are made between networks. Resulting increase in user complaints.
Efficient Spectrum Utilization	Makes the most efficient use of the spectrum. ✓	Causes a fragmentation of the spectrum bands and hence reduces spectrum efficiency.	Causes a fragmentation of the spectrum bands and hence reduces spectrum efficiency.
Promotion of Effective Competition	Maintains the current hyper levels of competition in the market. ✓	Possibility of competition lessening if one or more of the incumbents lose spectrum and another incumbent acquires additional spectrum.	Even if this results in an increase in the number of players, fragmentation of the spectrum would negate any incremental benefits derived from the increase in competition.
Encouragement of Investment & Promotion of Innovative Services	Operators incentivized to continue investing and making service innovations. ✓	Operators will stop investing given the prospect of losing all or part of their 3G spectrum, or at the very least, investment will slow down. This will adversely affect the progress of future innovation. Existing investment is wasted/stranded if incumbent loses its frequency band or if its band is reduced from (15 MHz x 2) to (10 MHz x 2). Further fragmentation of the spectrum bands is not conducive to future technological developments such as LTE-Advanced	

98. It is clear from the table that Option 1is the only option that satisfies the stated criteria in the Consultation Paper and the CAO, and hence should be adopted. These criteria provide the required public policy reasons to allow the TA to depart from an auction approach for renewal of the 3G Spectrum.

99. In the rest of this submission, HKT provides its response to each of the detailed questions raised by the TA in the Consultation Paper concerning the three proposed options.

OPTION 1: OFFERING THE RIGHT OF FIRST REFUSAL TO THE INCUMBENT 3G OPERATORS

100. Under this option, the Incumbent 3G Operators are offered the right of first refusal to acquire the paired bands[35] under their originally assigned frequency at a Spectrum Utilization Fee ("**SUF**") to be specified by the Secretary for Commerce and Economic Development ("**SCED**") upon expiry of the assignment term.

101. If the operator exercises its right then it will be able to continue using its originally assigned spectrum after the current term ends. If the operator does not exercise its right, however, then the frequency bands concerned will be auctioned off along with any other blocks of spectrum within the 3G Spectrum range which have not been taken up. Regardless of whether or not an operator exercises its right, it is entitled to take part in any subsequent auction of the remaining spectrum.

102. HKT supports the adoption of Option 1 as described in the sections above. Additional information is provided below.

The Australia experience

103. As mentioned in the Consultation Paper, Option 1 has been adopted in Australia for its 2G and 3G spectrum licences[36] which are due to expire in the period 2013 to 2017. In March 2010, the Minister for Broadband, Communications and the Digital Economy announced that the existing licences (originally awarded for fifteen years via spectrum auctions) would be re-offered to those mobile operators[37] for another fifteen years provided they were already using their licences to provide services to a significant number of Australian consumers, or they had in place networks capable of providing services to a significant number of consumers.[38] The Minister was permitted to re-assign the spectrum to the incumbent spectrum holders because the legislation[39] allowed him to do so if it were in the *public interest*. In this regard, as long as the mobile operators in question were able to show that they had met certain public interest criteria they would qualify for re-assignment of their spectrum.

104. The same approach can be adopted in Hong Kong via Option 1. Australia has successfully set a precedent in the treatment of its expiring 2G/3G spectrum, and the existing Hong Kong framework readily provides for such an approach to be undertaken. Even under the SPF, the TA is permitted to directly assign spectrum to operators without going through an auction process as long as there are public policy reasons to do so.

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[35] The three options put forward in the Consultation Paper only deal with the four blocks of *paired* spectrum within the 3G Spectrum range. The remaining four blocks of *unpaired* spectrum (5 MHz each) are separately dealt with in the last section of the Consultation Paper.

[36] The spectrum bands in question were: 800 MHz, 1800 MHz, 2 GHz, 2.3 GHz, 3.4 GHz and 27 GHz.

[37] Namely, Telstra Corporation, SingTel Optus, Vodafone Hutchison Australia and vividwireless.

[38] The Spectrum Access Charges payable by the incumbent spectrum holders was set based on valuations prepared by external consultants.

[39] The Radiocommunications Act 1992.

105. The criteria adopted in Australia essentially mirror the criteria found in this consultation paper and were as follows:

(i) Promoting the highest value use for spectrum (equivalent to OFTA's "efficient spectrum utilization" objective);

(ii) Investment and innovation (equivalent to OFTA's "encouragement of investment and promotion of innovative services" objective);

(iii) Competition (equivalent to OFTA's "promotion of effective competition" objective);

(iv) Consumer convenience (equivalent to OFTA's "customer service continuity" objective); and

(v) Determining an appropriate rate of return to the community (equivalent to OFTA's objective to determine an appropriate level of SUF for the frequency bands).

106. Under the Australian and matching Hong Kong criteria, it is clear that there are strong public interest grounds to re-assign the 3G Spectrum to the Incumbent 3G Operators. First, re-assigning the frequency bands to the existing spectrum holders allows the greatest value to be derived from the 3G Spectrum for the benefit of consumers because its continued and uninterrupted use leverages on the significant network investment that has already been made by the Incumbent 3G Operators and ensures the continued efficient use of spectrum. Second, certainty over the re-assignment of the 3G Spectrum will encourage the Incumbent 3G Operators to continue investing in their networks and rolling out innovative services for the benefit of consumers. Third, there is no guarantee that competition will be enhanced if the 3G Spectrum is re-auctioned. On the contrary, competition could just as easily be adversely affected if spectrum is fragmented and/or the competitive balance is substantially shifted. A re-assignment of the frequency bands to the existing spectrum holders ensures that the existing (very high) levels of competition can be maintained or even increased further. Fourth, consumers would not be inconvenienced by any potential service congestion, service degradation, dropped/blocked calls, low data speeds, etc. which would necessarily occur if a spectrum re-auction were to result in one or more of the Incumbent 3G Operators having to relinquish their block of 3G Spectrum in full or in part. Fifth, the pricing for the spectrum re-assigned to the Incumbent 3G Operators could reflect an appropriate rate of return to the community taking into account the positive effect of mobile use to both the economy and the personal lives of users.

107. As to the pricing of the spectrum, the Minister had regard to advice received from: his department; the Evaluation Committee which was set up to evaluate proposals from the affected operators; consultants engaged on this exercise (Plum Consulting); and the affected operators who were asked to state the amount they would be willing to pay as spectrum access charges for reissue of their spectrum licences. One-off payment of the calculated spectrum access charge was to be settled two years before expiry of the licence, but not before 1 June 2013.

The Canada experience

108. The Canadian Government has adopted a policy whereby spectrum licensees will have their licences renewed at the end of the spectrum term unless they have breached their

licence, or a fundamental reallocation of spectrum needs to be made to accommodate a new service, or an overriding policy need arises. The Canadian Government will only reallocate the spectrum to another party under exceptional circumstances as it recognizes that a spectrum holder who has complied with its licence conditions has already made substantial network investment and has built up a customer base:

> *At the end of the licence term, licensees will normally have their licences renewed at the end of the term unless a breach of a licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises. […] It is important to note that the Minister, pursuant to this regulation, would reallocate spectrum only under certain circumstances, taking into consideration that licensees have complied with the conditions of service, made large investments in infrastructure, and are serving an established client base. […]*[40]

109. This approach was duly applied by the Canadian Government when dealing with the cellular and Personal Communications Services ("**PCS**") licences that were to expire on 31 March 2011.[41] These licences were to be renewed for a term of twenty years. In section 3.1 of the decision published by Industry Canada in March 2011 concerning *Renewal Process for Cellular and Personal Communications Services (PCS) Spectrum Licences* ("**Industry Canada Spectrum Renewal Decision**"), it stated:

> *Industry Canada recognizes that significant investments have been made by licensees to establish networks and the importance of long-term certainty to provide a stable investment climate. As a result, these long-term spectrum licences have a high expectation of renewal unless a breach of licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises. In the case of the cellular and PCS bands, the Department recommended in the renewal consultation that, as no fundamental reallocation was anticipated and no overriding policy need been identified, unless a licensee was found to be in non-compliance with its conditions of licence, current cellular and PCS licences would be renewed.*
>
> *[…]*
>
> *As mentioned above, if a licensee is found to be in compliance with all of its conditions of licence, licences will be issued for a full subsequent term. Where compliance can be achieved in the near term, the Department may consider issuing short-term interim licences on a case-by-case basis.*

110. It is also relevant to note that in the conditions attached to the new spectrum licences, there is express recognition that licensees have a legitimate expectation that their licence would be further renewed upon expiry as long as: they do not breach any of their licence conditions; there is no fundamental reallocation of spectrum to a new service; and there are

[40] Section 5.3 of CPC-2-1-23 on Licensing Procedure for Spectrum Licences for Terrestrial Services issued by Industry Canada.

[41] The cellular band refers to 824-849 MHz/869-894 MHz, whereas the PCS band refers to 1850-1910 MHz/1930-1990 MHz.

no overriding policy reasons. It is recognized that this explicit language will have a positive impact on investment, innovation, competition, efficiency and (most importantly) consumers:

> *At the end of this term, the licensee will have a high expectation that a new licence will be issued for a subsequent term through a renewal process unless a breach of licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises.*[42]

111. As to the licence fees payable, the rate per MHz per population was previously determined via public consultation. The licence fees were to be paid on an annual basis upon renewal of the licence.

112. The treatment adopted in Canada for the renewal of spectrum licences takes into consideration the substantial investment that has been made by the licensee in making use of the frequency blocks, and recognizes that there is no reason to stop the incumbent spectrum holder from continuing to use the spectrum unless it has infringed its licence. This is a practical and common sense approach and is Option 1, which should be adopted in Hong Kong.

The UK experience

113. In the UK, 3G spectrum in the 2100 MHz band was assigned via auction in April 2000 to five operators.[43] The spectrum was assigned to the operators up to 31 December 2021. In 2011, however, following an industry consultation to make certain variations to the 3G licences, Ofcom decided to allow the incumbent 3G licensees to continue using their assigned spectrum bands indefinitely, even after expiry of the original assignment period, as long as there were no technical spectrum management reasons to take back the spectrum, and the licensee did not breach its licence conditions. Thus, Ofcom decided to automatically re-assign the spectrum to the incumbent licensees upon expiry of the original term of assignment without imposing a new term limit or going through an auction.[44]

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[42] Annex A re Conditions of Licence for Cellular and PCS Licences Issued Through the Renewal Process (Effective April 2011) attached to the Industry Canada Spectrum Renewal Decision.

[43] The five successful bidders were: TIW; Vodafone; BT3G; One2One; and Orange.

[44] In Ofcom's Statement issued on 20 June 2011 regarding *Variation of 2100 MHz Third Generation Mobile Wireless Telegraphy Act Licences*, the following changes (amongst others) were made by Ofcom to the Third Generation Mobile Licence:

Licence Term

2. This Licence shall continue in force until revoked by Ofcom or surrendered by the Licensee.

Licence Variation and Revocation

3. (1) Pursuant to Schedule 1(8) of the Wireless Telegraphy Act 2006 ("the 2006 Act"), Ofcom may not revoke this Licence under Schedule 1(6) of the 2006 Act save at the request or with the consent of the Licensee except:

(a) […]

(b) […]

(c) for reasons related to the management of the radio spectrum, provided that in such a case the power to revoke may only be exercised after five years' notice is given in writing and after Ofcom has considered any pertinent factors (such notice not to be given before 31 December 2016);

(d) […]

114. The UK approach embraces and maximizes the use of market forces. Spectrum is auctioned when initially introduced. Thereafter, the spectrum is held under indefinite licences. The risks and uncertainties of a renewal process are avoided. Spectrum trading then allows the spectrum to be most efficiently used. The market flexibly and quickly "decides". The regulator is not involved except at the initial spectrum release stage and thereafter as a monitor of the market.

115. On this basis, clearly strong precedent has already been established in developed markets such as Australia, Canada and the UK to re-assign spectrum back to the incumbent spectrum holders on public policy grounds without the need for an auction. Under the existing law and policy, OFCA and the CEDB can (and should) adopt the same approach in Hong Kong when dealing with expiry of the 3G Spectrum in October 2016. The next steps would be to follow the UK approach: indefinite licences and spectrum trading.

Question 1: Given there is clear indication of competing demand for the 3G spectrum, are there good public policy reasons for the TA to adopt Option 1, instead of the market-based approach as stipulated in the Framework, when the current 3G frequency assignments expire in October 2016?

116. The consistent policy approach in Hong Kong is that spectrum licences will be renewed as long as the incumbent licensee has made appropriate investments, provided satisfactory services and consumer benefits have been realized. Efficient spectrum use and continuity of service are also factors. This was the approach in the 1990's with the migration from analogue to digital mobile services. This was continued in 2004 with the 2G spectrum renewals and is embedded in the 2007 SPF public policy language. Whether this approach is couched in terms of legitimate expectations, right of first refusal or the SPF is immaterial. The policy and Hong Kong precedent (as well as international precedent) are clear. The consumer protection and fundamental fairness consideration of the policy are equally clear.[45]

117. As to the 3G Spectrum, there are clear overriding public policy reasons why it should be re-assigned to the Incumbent 3G Operators. In fact, this is exactly why the TA re-assigned the 2G spectrum to the existing spectrum holders when their licensed term expired.[46] Indeed, the 2G spectrum renewal criteria and analysis should equally be applied to the 3G Spectrum, particularly since it was envisaged that the 800/900 MHz frequency bands which formed part of the 2G spectrum renewal would be refarmed for use in offering 3G mobile services and this has, in fact, today already happened. Accordingly, given that there is essentially little difference between the 3G Spectrum and the 2G spectrum that the TA decided to re-assign back to the incumbent holders in 2004, the 3G Spectrum with which we are currently concerned should be treated in the same way. In fact, holders of the 3G Spectrum who do not possess 2G 800/900 MHz band spectrum will be discriminated against in the renewal process if their 3G Spectrum is not renewed on a right of first refusal basis.

(e) if there has been a material breach of any of the terms of this Licence or the schedule(s) hereto […]

[45] HKT rejects the premise of Question 1 that Option 1 is not market-based or in any way inconsistent with the SPF.

[46] The licences had expiry dates ranging from July 2005 to September 2006.

118. Such an approach is, in fact, also consistent with that adopted by the Hong Kong Post Office in the early 1990's when dealing with the mobile licence renewals to support the migration of analogue to digital mobile services.

119. In the 2G Spectrum Renewal Statement, the factors which the TA took into consideration before deciding to re-assign the 2G spectrum to the incumbent licensees were: (i) the operators had been making efficient use of the frequency spectrum; (ii) the importance of providing a stable investment environment; (iii) the need to ensure continuity of customer service; and (iv) the operators had been providing satisfactory service to their subscribers with continuous investments and improvements. Indeed, these are essentially the five criteria noted by OFTA in the Consultation Paper and under the SPF's public policy language. All of these, as explained before, have clearly been satisfied by the Incumbent 3G Operators in respect of the 3G Spectrum.

120. By giving the Incumbent 3G Operators certainty in reclaiming their frequency bands after expiry of the assignment term, a stable environment will be ensured that promotes continuity in investment, innovation, the provision of services and competition. If not, the uncertainty created by the prospect of holding a spectrum auction, in which the Incumbent 3G Operators may or may not retain their assigned frequency bands, will lead to a disruptive slowdown in network investment, innovation, competition and user benefits well before the date the operator is due to relinquish use of its spectrum band. The relationship between stability and investment, innovation, competition and user benefits is both direct and substantial. There can be no doubt that the Incumbent 3G Operators have made substantial investments, use spectrum efficiently, provide innovative and satisfactory services to over 15 million customers[47], compete vigorously, and provide unparalleled benefits to consumers.

121. In support of Hong Kong adopting Option 1, it is relevant to note that in Australia, reissuance of the spectrum licences to the incumbent operators was heavily influenced by the need for certainty and to maintain continuity of service; factors which are equally important to Hong Kong:

> *Reissue of licences will provide certainty about the continuity and operation of mobile and wireless communication networks. This decision has involved a careful evaluation of how the public interest is served by allowing renewal of current licences, […]*[48]

Accordingly, in view of the importance of ensuring that consumers suffer no disruption to the high level of service which they are currently enjoying, the most sensible solution would be to allow the Incumbent 3G Operators to continue using their assigned frequency bands.

[47] Per the figure as at April 2012 in the *Key Statistics for Telecommunications in Hong Kong – Wireless Services* published on OFCA's website.

[48] Media release on 10 February 2012 by Senator the Hon Stephen Conroy, Minister for Broadband, Communications and the Digital Economy.

Question 2: *In offering the right of first refusal to the incumbent 3G operators to acquire the 1.9 – 2.2 GHz spectrum under Option 1, what would be the preferred method for setting the SUF so that it may reflect the full market value of the spectrum?*

122. In the Consultation Paper, OFTA has essentially suggested three different methods of setting the SUF for the 3G Spectrum:

(i) *Least Cost Alternative ("**LCA**") method*. Under this method, the SUF is calculated by reference to the additional cost that a mobile operator would incur in enhancing its network to continue providing mobile services of the same quantity and quality if a small block of spectrum it currently uses were to be taken away from the operator.

(ii) *Market benchmarks*. Here, the SUF is set with reference to market information such as prices which have been determined recently in similar spectrum auctions or spectrum trades which have taken place, etc. In this regard, OFTA has suggested that the SUF which is determined in the auction of the 2.5/2.6 GHz band which is expected to be conducted in the first quarter of 2013 would provide a useful reference.

(iii) *Other alternative approach*. This approach requires an auction of the 3G Spectrum to be conducted in the usual manner to determine the SUF payable for each of the four frequency blocks. This auction will be open to all parties, including the Incumbent 3G Operators. The only difference from a normal auction is that the Incumbent 3G Operators will then have right of first refusal on their relevant frequency blocks by paying the SUF that has been determined for their block regardless of whether or not they were the highest bidder on that block. If, however, the operator decides not to exercise its right of first refusal then its deposit will be forfeited and the highest bidder will be awarded the spectrum.

123. HKT would suggest two further approaches for consideration. Given that the 2G spectrum is being used interchangeably with the 3G spectrum, the fourth approach would be for 3G spectrum holders to pay the same SUF rate as that currently imposed on the holders of 2G spectrum. The fifth approach would be to set a very minimal SUF (i.e. free but for a small administrative charge). All five of these approaches are discussed below.

124. First, the LCA method is fairly subjective as it is based on assumptions made regarding technologies, network, customer base, traffic and costs on an operator by operator basis which all differ between operators. It would also vary depending on the amount of spectrum assumed to be lost. Any LCA computation exercise would involve data input from the Incumbent 3G Operators in order to ensure that an accurate cost (which reflects the actual costs of a feasible alternative) is derived which in itself will be difficult to do on a consistent basis. This method has the most variables, would be the most difficult to administer and would involve the most time-consuming exercise. It is also not clear that this approach is actually market-based. It is theoretical and prone to errors of judgment. On this basis, it should be rejected.

125. Second, the market benchmarks approach is objective and possibly the easiest in terms of getting data and performing the required calculations. If the TA is minded to base

the calculation purely on past Hong Kong spectrum auctions then he could consider taking an average of the auction prices over the last six auctions[49] after eliminating the highest and lowest price as these may distort the outcome. The results of the forthcoming spectrum auction planned for the first quarter of 2013 could also be taken into account. This approach is easy to implement, fully transparent and would employ 'market-based' inputs.

126. Third, HKT would not recommend conducting an open auction simply to determine the SUF. This is because entities could compete in the auction for speculative purposes or as spoilers to "force" the Incumbent 3G Operator to pay an excessive amount to regain its frequency band (or at least face a substantial business risk). Such an outcome does not promote investment, innovation or competition, nor does it benefit consumers of a service which is part of Hong Kong's core infrastructure and has a multiplier effect on the economy. Indeed, all such fees are simply passed on to users as higher costs. While an auction may maximize revenues, that is not a primary consideration under the law. All the other criteria (and the law) point toward a more modest and predictable outcome, which takes into account the needs of users, the industry and the economy.

127. Fourth, as to basing the SUF on that which is currently being paid under 2G, this is supported by the fact that 2G and 3G spectrum can be used interchangeably. In paragraph 2.1.2.2 of the *Hong Kong Third Generation Mobile Services Licensing Information Memorandum* issued by OFTA in July 2001, OFTA clarifies that the existing 2G spectrum may be treated on the same basis as the 3G spectrum being auctioned:

> *[…] Under the technology-neutral regime adopted by the TA, the existing 2G Operators are free to use any technology, regardless of whether it is 2G or 3G, in the spectrum under their 2G Licences. In line with this regime, existing 2G Operators will be allowed to re-farm the spectrum for 3G, if they so wish, under the current terms and conditions of their existing 2G Licences for the remaining period of validity.*

128. This was further confirmed in paragraph 8 of the consultation paper issued by OFTA in August 2003 regarding *Licensing of Mobile Services on Expiry of Existing Licences for Second Generation Mobile Services*:

> *[…] 3G mobile services can also be deployed in the 2G spectrum as the operating frequency ranges for the 3G radio interface standards have been extended to cover the frequencies in the 900 MHz and 1800 MHz bands.*

As with the market benchmarks approach, using the 2G model is simple and transparent, and creates no chilling effects. HKT does not support a continuation of the annual SUF regime for 3G Spectrum.

129. Fifth, mobile services are used by every person (200% penetration rate) and every business in Hong Kong. It has a multiplier effect on 'happiness' and the economy. Mobile services (i.e. spectrum) should not been seen as something only to be sold to the highest

[49] These spectrum auctions are: (i) CDMA2000 spectrum in October 2007; (ii) LTE spectrum in January 2009; (iii) 2G spectrum in June 2009; (iv) Mobile TV spectrum in June 2010; (v) 3G spectrum in February 2011; and (vi) LTE spectrum in February 2012.

bidder. Indeed, the CAO would make such an approach problematic. The spectrum therefore should be offered for renewal with no significant SUF.

130. A parallel exists to valuable spectrum used by TVB and ATV, essentially given away for free because of the services provided and enjoyed by millions (but less than 200% of the population). Accordingly, a strong case exists (with precedents) that the spectrum be re-issued at no price.[50]

[50] HKT is uncertain why, at paragraph 32 of the Consultation Paper, OFTA would propose that a deposit be forfeited by an Incumbent 3G Operator who opts not to match a high bid. Why 'punish' the mobile operator twice?

OPTION 2: RE-AUCTION ALL THE SPECTRUM

131. In this option, the 3G Spectrum is re-auctioned in full. The Incumbent 3G Operators, other operators and new entrants are all welcomed to participate in the auction. As a result, some of the Incumbent 3G Operators may not be able to regain their originally assigned spectrum blocks, or they may get more or less spectrum than before, or they may lose out altogether.

132. As noted in the early sections, HKT is opposed to this approach as it creates the most uncertainty among the three choices presented. The outcome of any auction is uncertain so between now and the auction there will be a chilling effect on network investment, innovation, levels of competition and user benefits. After the auction, these same negatives will likely continue for the unsuccessful licensees. OFTA explicitly recognizes the drawbacks of Option 2 in terms of the disruptive impact on 3G operators and consumers, investment, innovation incentives, etc.[51] These drawbacks also apply to Option 3.

133. Holding an auction for spectrum which is already being used and relied upon by the incumbent operators also opens up the opportunity for 'gaming' by other entities (mobile operators or not). The goal of these entities would be to force up spectrum prices which would distort the market, artificially affect both inter-modal and intra-modal competition, and harm users. Such 'gamers' add no value. Their sole aim is to render more cost effective the utilization of their own networks in other frequency bands and/or other technologies.

134. In Australia, re-auctioning the spectrum only occurs if the frequency bands in question have been under-used, which is clearly not the case in Hong Kong:

> *Arguably where there is an extensive and efficient service being provided there is less incentive to let a licence expire and create uncertainty for the incumbent through a reallocation process. Reallocating in this circumstance could result in lower investment and innovation and affect consumer services.*
>
> *Where there has been low or little use of a licence there is a stronger argument for price based reallocation.*[52]

135. The same position generally applies in Canada and is reiterated by CEG in the CEG Report for GSMA. CEG advises against re-auctioning spectrum except under very limited circumstances, such as where there has not been a substantial amount of network investment undertaken or where an incumbent spectrum holder decides not to take up its right of first refusal. These circumstances obviously do not apply to the situation currently experienced in Hong Kong:

> *Recommendation 11 – Re-auctioning spectrum at the end of the licence should be limited to situations where there has not been evidence of substantial investment and*

[51] See paragraphs 36 and 38 in the Consultation Paper.

[52] Section 4.2 of the Discussion Paper issued by the Australian Department of Broadband, Communications and the Digital Economy in April 2009 regarding the public interest criteria for re-issuance of the 2G/3G spectrum licences.

there is a reasonable prospect that spectrum will be re-assigned between operators (or where additional, alternative spectrum is being made available), or situations where an existing licensee decides to reject a licence renewal offer. In most cases, the existing operators would be expected to re-acquire the licence with the consequence that an auction only creates unnecessary uncertainty and costs.

The Netherlands experience

136. In the Consultation Paper, the Netherlands is referenced as an example whereby the Government has decided not to offer the incumbent spectrum holders a right of first refusal but to re-auction their 900 MHz and 1800 MHz spectrum. However, the circumstances in the Netherlands are very different to those in Hong Kong:

- In recent years, the Dutch mobile market has suffered a decline in growth rates. Retail voice and messaging revenues for the mobile incumbents have dropped. The market has consolidated from five major operators in 2007 to just three today.[53]
- This prompted the regulatory authority in the Netherlands, OPTA, to conduct an analysis of the mobile market. Its study came to the conclusion that, while there was no collective dominance, there was a risk of *tacit collusion*. As a result, collective significant market power could arise. OPTA therefore decided that its spectrum policy should be specifically geared towards facilitating new entrants. One way of achieving this is to re-auction the spectrum currently being held by the existing mobile operators.
- Further, to facilitate the entrance of fresh competitors, in the design of the spectrum auction which is scheduled to take place in October of this year, the Dutch Government has reserved two spectrum blocks in the 800 MHz band and one block in the 900 MHz band for *new entrants*. Under the auction laws, therefore, at least two new operators will have the opportunity to acquire spectrum in these bands.

137. Clearly, in the case of the Netherlands, the Government's objective in re-auctioning the spectrum is to attract new competitors into a market that is not competitive (i.e. a market failure exists with investment, innovation and competition at below desired levels). This was done in order to stimulate the market and minimize the risk of tacit collusion between the incumbent operators. This is the polar opposite of the Hong Kong situation which has five major mobile operators, competition is already intense[54] and the market is producing global best consumer benefits. The Netherlands example is therefore not relevant to Hong Kong.

Question 3: How would the prospect to re-auction the entire 120 MHz of spectrum in the 1.9 – 2.2 GHz band impact on the investment plan and network planning of the incumbent 3G operators, and how would that further impact on their mobile network capacity?

138. If OFCA were to re-auction the entire 3G Spectrum, this would immediately have a chilling effect lasting three years on network and service investment with a direct impact on

[53] These are KPN, T-Mobile and Vodafone.

[54] In fact, in a recent auction, a sixth operator has acquired spectrum.

innovation, competition and user benefits. Indeed, just raising the possibility of an auction (per Options 2 and 3) would already produce such an effect. Any further investment to expand capacity or enhance coverage during these last three years would unlikely be recouped by the outgoing operator and this would not occur.

139. For instance, operators may refrain from upgrading their existing network capacity from 42 Mbps to 84 Mbps MIMO DC-HSPA+. Similarly, it is unlikely that operators will extend service coverage to new development areas such as the MTR line extensions (West Island Line, South Island Line, Kwun Tong Line), the West Kowloon Cultural District, the Hong Kong-Zhuhai-Macau Bridge, etc. This would be the result under both Options 2 and 3.

140. Given the two to three-fold increase in data traffic each year and the pace of construction in new development areas, putting a halt on network investment will inevitably lead to a degradation of service lasting two to three years and an increase in customer complaints, jeopardizing Hong Kong's reputation as a telecommunications and business hub. This is a situation which the HKSAR Government should do its utmost to avoid.

Question 4: The number of players in the mobile telecommunications market may or may not remain unchanged after the auction. Would competition in the mobile market be enhanced if the entire 120 MHz of spectrum in the 1.9 -2.2 GHz band is to be re-auctioned under Option 2?

141. It is stated throughout the Consultation Paper that the mobile market in Hong Kong is already intensely competitive. Penetration rates exceed 200%, benefits are global bests and charges are amongst the lowest around the world. This is the result of natural market forces which has pushed the Incumbent 3G Operators to constantly invest, to extend coverage of their networks, and to develop new and innovative services. This has not been achieved by any form of direct Government involvement or intervention. On this basis, it is difficult to understand why the TA now considers it necessary to intervene in the market by conducting a spectrum auction. Such an action would more likely than not lessen competition which has naturally evolved over the years since the 3G Spectrum was assigned via auction back in October 2001 and which is producing global best consumer benefits.

142. In paragraph 49 of the Consultation Paper, the TA states:

> *It has been said time and again in this consultation paper that the Hong Kong mobile telecommunications market is already keenly competitive. The idea underlying both Options 2 and 3 is to explore the possibility of facilitating even more effective competition, by assigning through auction the spectrum to the more efficient market players.*

143. In view of the range of possible outcomes and the high level of competition and consumer benefits which now exist, it is more likely than not that competition would decrease as a result of an auction (along with investment, innovation, spectrum efficiency and user benefits). In advancing this option, OFTA has not given due consideration to the real harm that it could do to the market. Surely, OFCA has a basic threshold to overcome in that it must not do harm to the industry it is charged with promoting and developing – likewise, the protection of consumer interests.

144. Requiring the Incumbent 3G Operators to bid again for the right to use spectrum in which they have already been investing and using to develop innovative services, and which today serves millions of customers who are enjoying global best benefits, is an unjustified consumer tax and is not an economically efficient outcome for consumers. Neither is it appropriate for the CA to apply what are essentially high level theoretical economic principles in deciding to re-auction the spectrum without any detailed analysis of the actual operational and financial consequences to both operators and consumers. This criticism applies equally to Options 2 and 3.

145. As stated by the CEG:

> *Recommendation 14 – Licensing Authorities should aim to ensure effective competition in the downstream markets for mobile services. Many sector regulators and competition authorities have accepted that three to four national operators are likely to be sufficient to achieve effective competition.*
>
> *Recommendation 15 – Specific measures to promote competition should only be imposed in markets where there is market failure and competition would otherwise be ineffective and where those measures are assessed as being likely to result in greater benefits than costs […].*

146. On any basis, it is hard to see how competition could be "enhanced" via an auction although the cost to the mobile operators and consumers would be high. In fact, if re-auctioning all the spectrum leads to fewer 3G mobile service providers than before and simply allows one or more of the Incumbent 3G Operators to increase their spectrum holding, consumers could have less choice and competition would be adversely affected. OFCA could then be faced with the situation that OPTA in the Netherlands is now trying to remedy.

147. In any case, there has been ample scope for new competitors to enter the market via the past spectrum auctions that have been conducted by the TA, and under the existing regulatory framework whereby new competitors may join the fray either via merger/acquisition involving existing operators or under an MVNO/resale licence. In fact, the Open Network Access licence requirement which was imposed when the 3G Spectrum was awarded back in 2001 was specifically introduced to allow operators who are not able to get hold of any of the 3G Spectrum to compete equally with the Incumbent 3G Operators under an MVNO basis.[55] In addition, accelerating the timetable for the introduction of spectrum trading in Hong Kong would provide a further means for operators to acquire spectrum in order to compete in the market.

[55] Along with the MVNO spectrum set aside per Special Condition 12 of the Mobile Carrier Licence (under which the 3G Spectrum was awarded), the use of merger and acquisition activities to compensate for the lack of spectrum was also envisaged when the 2G spectrum was re-assigned to the incumbent operators back in 2004. See paragraph 14 of the 2G Spectrum Renewal Consultation Paper.

Question 5: What would be the transitional plans for an incumbent 3G operator if under Option 2: (a) it cannot retain any of its original frequency assignment; (b) it can retain only part of its original frequency assignment; and (c) it gets spectrum in a different sub-frequency band?

148. Any plan under Options 2 or 3 involving the migration of existing customers to a new/different frequency band will be very challenging from both a technical and customer service perspective. All three scenarios specified in the question would involve one operator handing over the use of its existing spectrum to one or more other operators (presumably overnight). This is without doubt operationally a very difficult task, requiring flawless coordination. Given the number of networks, their coverage and the number of customers affected, the chance for error and discord is huge. The risk of gaps in service coverage as the exiting operator hands over use of its spectrum (in part or in whole) to the new operator is very high, with the inevitable loss of service and a barrage of customer complaints. Multiply that by four and the situation which has never been undertaken before can only be described as one that should be avoided. Service continuity will be lost; service quality will decrease; competition will be lessened; and customer complaints will rise substantially.

149. In addition, as can be seen from the following, none of the plans can fully replace the existing service enjoyed by the 3G subscribers. In effect, there are no effective transitional plans that can deal with the loss of 3G Spectrum, either in whole or in part.

(a) *Operator cannot retain any of its original frequency band*. Under the existing frequency assignment, each of the Incumbent 3G Operators has (2 x 14.8 MHz) of spectrum, each serving over one million subscribers. In 2016, this number will be higher. If the operator cannot retain any of its 3G Spectrum, the only option would be to migrate its subscribers over to its 2G band (i.e. 800 MHz or 900 MHz). This, however, is not a satisfactory solution as existing 3G subscribers will no longer have access to 3G mobile broadband services, and will be restricted to the use of voice services only. Further, the 2G spectrum band is unlikely to be able to accommodate such a large number of subscribers or, even if the migration is successful, the spectrum band will immediately become overloaded, causing deterioration in network quality. In the event that the operator does not have suitable spectrum to accommodate migration of its existing 3G subscribers, the service provided to these subscribers will have to be terminated. None of these outcomes are satisfactory and the inevitable result will be a decrease in consumer welfare and an increase in customer complaints.

(b) *Operator can retain only part of its original frequency band*. At present, each of the Incumbent 3G Operators are using three carriers in their (2 x 14.8 MHz) band. If the operator is forced to give up one carrier, this is tantamount to a loss of 33% in capacity. The operator will therefore need to squeeze its existing subscriber base into the remaining two carriers. Service congestion and degradation are predictable outcomes. This will cause deterioration in network quality and result in inferior voice and data services, and hence give rise to customer complaints. Further, the blocks of spectrum that have been relinquished by each operator will be fragmented. This makes their subsequent use inefficient and hence contrary to the spectrum management principles that are meant to be adopted by OFCA.

(c) *Operator gets spectrum in a different sub-frequency band*. There are tremendous technical difficulties associated with the migration of the existing network to another frequency band. The operators concerned will need to replace the Point-of-Interconnect ("**POI**") equipment of all their IRS for several hundred buildings (including office towers, hospitals, hotels and shopping malls) and MTR stations since these POI equipment are specifically tailor made to fit each operator's existing frequency assignment. This exercise is costly and will require re-working or re-tuning the POI equipment, resulting in indoor coverage blackout for potentially many months while the frequency re-assignment process is going on. Again, this will adversely affect service continuity and quality, and will generate customer complaints. These outcomes apply equally to Options 2 and 3.

Question 6: What are the estimated costs and the areas of investment for implementing the transitional plans for tackling the three scenarios mentioned in Question 5?

150. There are no effective transitional plans that can deal with the loss of any part or all of a mobile operator's 3G Spectrum. Under scenario (a) above, the migration of all of HKT's existing 3G subscribers to its 2G spectrum band would result in loss of certain service functionality and congestion and hence is not an acceptable solution. Similarly, under scenario (b) above, if HKT were forced to accommodate all of its 3G subscribers on only two-thirds of its existing 3G Spectrum, this would cause a significant deterioration in its service quality and hence is equally unacceptable. On this basis, attempting to estimate the costs involved in implementing these two plans and their consequences would be almost impossible, and would likely understate the harm to the enterprise.

151. In the case where HKT is awarded the same amount of 3G spectrum but in a different frequency band per scenario (c) above, it is difficult to estimate the costs required as this exercise would still involve a significant amount of very labour intensive network activity even though there is effectively no reduction in the amount of spectrum allocated to the operator. Nevertheless, to give an idea of the extent of the costs involved, HKT lists out below the major tasks required to be undertaken:

- As the frequency band acquired is unlikely to fit perfectly within the operator's existing spectrum portfolio, there is expected to be a substantial degree of inter-network interference. This requires considerable ongoing network optimization work to be undertaken by the operator.
- POI equipment would need to be swapped out at all IRS and MTR stations, involving on-site work at hundreds of locations around Hong Kong.
- All affected mobile operators would need to plan and coordinate overnight switch-over to their newly assigned frequency block. This requires substantial work to be undertaken at thousands of sites to retune equipment to the new spectrum band.
- All existing Remote Radio Units would need to be replaced in order to cover the new frequency band.

As can be seen above, a substantial amount of time and cost are required to be expended in order to cater for a swap in spectrum bands if the mobile operators are unable to re-acquire

their original frequency blocks at the auction. This is a total waste of resources and a nuisance to consumers and operators alike given that, at the end of the day, there is no increase in network capacity nor any incremental benefit to mobile customers.

Question 7: If an incumbent 3G operator is unable to obtain any of the 3G spectrum or if it manages to obtain less spectrum than what it currently has, to what extent the spectrum that it currently holds in other frequency bands could act as effective substitute for the spectrum foregone?

152. As previously explained, if the operator is unable to re-acquire its original assignment of 3G spectrum in full, it will have to migrate its subscribers to its 2G band. This band, however, may not be able to accommodate all of the subscribers involved. Out of a total 15.3 million mobile customers (as at March 2012) in Hong Kong, around 7.9 million are 3G customers, and this is expected to continue growing given the take-up of data hungry smartphones. All of the 3G Spectrum will therefore be critically needed to provide mobile services to customers in Hong Kong. Overloading the 2G frequency band will cause a deterioration in the service quality and hence will generate a lot of customer complaints. Using this spectrum band cannot therefore be considered as an acceptable substitute for the 3G Spectrum foregone.

153. At this juncture, forcing the Incumbent 3G Operators to make use of their other spectrum bands would disadvantage HKT in particular, as can be seen from the Annex to the Consultation Paper.[56]

154. As an alternative, OFTA suggests in the Consultation Paper that it may be possible for an operator to make use of its 4G LTE spectrum band to serve the data needs of its 3G subscribers in the event that the operator loses its assignment of 3G Spectrum. In this manner, OFTA suggests that the amount of service interruption to the 3G subscribers would be limited. It is erroneous, however, to believe that the 4G LTE spectrum can easily be used to accommodate the existing 3G subscribers. As the 4G LTE band is tied to specific handsets and equipment the frequency band cannot be used by 3G subscribers unless they change their handsets. This would be a costly and impractical process. While an operator can use 4G LTE spectrum to effectively compete and acquire new customers, an operator taking such a course would no doubt lose customers who were otherwise happy to continue using the mobile services they were already enjoying.

155. In addition, 4G mobile services may not be available in certain key areas of Hong Kong by the time the term of assignment of the 3G Spectrum expires. For instance, as the MTR is proposing excessively high fees to construct systems within its network of tunnels and stations to enable the delivery of 4G mobile services, this may not be ready by October 2016. Another example would be 4G mobile service coverage in indoor areas. Substitution of 3G with 4G mobile services may therefore not be technically or commercially viable within the required timeframe.

[56] SmarTone would also be disadvantaged, but can deploy its 900 MHz spectrum. HKT has no 900 MHz spectrum.

156. In any case, even though Hong Kong has already rolled out 4G LTE services, the demand for 3G services from comfortably satisfied Hong Kong consumers is still expected to be very significant for years to come and hence must continue to be supported by the Incumbent 3G Operators. This is evident from the fact that, 2G services have only started to be phased out in Hong Kong in the last couple of years even though 3G services have been introduced for around ten years.

157. In fact, the implication of OFTA's suggestion is that by using a combination of 2G spectrum (for voice services) and 4G LTE spectrum (for data services), an operator would be able to substitute for the lack of 3G spectrum and hence be able to compete just as effectively as an operator possessing 3G spectrum. But if this were truly the case, then an operator who already has access to 2G and 4G LTE spectrum would have no legitimate reason to acquire 3G spectrum and such a request (perhaps from the fifth mobile operator) should be turned down. Indeed, why facilitate a mobile operator in obtaining 3G spectrum if the result is to simply strip one or more other mobile operators of 3G spectrum? If this occurred, then one of the Incumbent 3G Operators who lost 3G spectrum would end up in exactly the same position as the fifth mobile operator without 3G spectrum, asking OFCA to tilt the playing field. And, of course, the fifth mobile operator already has the most 4G LTE spectrum, and with its deep pockets, it could literally buy up the whole 3G market.

Question 8: How effective would be the application of alternative technologies (e.g. Wi-Fi, femtocell, etc.) help economise on the use of radio spectrum through offloading the mobile data traffic?

158. In the development of the small cell strategy using Heterogeneous Networks (or HetNets, as defined in 3GPP Rel-11 LTE-Advanced), Low Power Nodes such as femtocells, microcells and Wi-Fi are already being deployed to address capacity problems in targeted confined areas. However, such HetNets still rely on an integrated macro, micro, femto and Wi-Fi network for overall coverage. Alternative technologies such as Wi-Fi and femtocells can therefore only serve as supplementary capacity to offload mobile data traffic. These technologies will not replace the traditional mobile network.

159. While Option 2 is the full auction option, the criticisms of Option 2 above apply (in many cases, equally) to Option 3.

OPTION 3: A HYBRID OPTION – RIGHT OF FIRST REFUSAL TO THE INCUMBENT 3G OPERATORS CUM SPECTRUM RE-AUCTION

160. Option 3 is essentially a hybrid of Option 1 and Option 2. The Incumbent 3G Operators will be given right of first refusal on part of the frequency blocks they currently hold. The remaining spectrum will then be pooled together and auctioned. The auction will be open to all parties including the Incumbent 3G Operators.

161. In the Consultation Paper, OFTA asks a series of questions regarding the technical and practical arrangements for implementing Option 2. The substantial disadvantages of Option 2 have been discussed above. OFTA, however, does not appear to have considered the technical and practical problems surrounding the implementation of Option 3 which render it as difficult and unfeasible to adopt as Option 2. The failure of OFTA to ask the same questions is of great concern to HKT. Further, Option 3 fails to capture all the benefits of Option 1, yet at the same time, fails to eliminate all the detriments of Option 2. The Consultation Paper appears to be structured in its comments and limited analysis to ultimately adopt Option 3. This tilt is clearly unacceptable.

162. There is a fundamental problem with the Incumbent 3G Operators losing part of their spectrum. It is erroneous to think the operators can make do with less 3G Spectrum or that mobile data services are able to run on other frequency bands, i.e. LTE. The technical issues, costs and disruption to users are substantial. Further, inexpensive handsets which are still used by millions of subscribers are tied to specific bands and this limits the type of service that can be run using different blocks of spectrum. It is therefore wrong to assume that migration is easily accomplished or that there will automatically be efficiency gains if part of the spectrum is taken away from one or more mobile operators. In 2016, these problems will only be greater.

163. One cost example relates to additional cell site requirements by an operator who loses spectrum. This will dramatically raise the cost of providing the same service coverage as before since more cell sites will need to be established. Clearly, this adds no real value to the service provided and is not a cost efficient outcome. Option 3 has substantial drawbacks as to service continuity, efficiency, investment, innovation, competition and customer benefits.

Question 9: *Do you have any comment on the preliminary proposal of the TA to offer each of the incumbent 3G operators the right of first refusal to a frequency assignment of 2 x 10 MHz of 3G spectrum post October 2016 under Option 3?*

164. Without prejudice to HKT's position that Option 3 produces adverse outcomes which are just as damaging as those described under Option 2, splitting the 3G Spectrum in the suggested manner is the lesser of two evils. However, there is a resulting trade-off in terms of performance since, by removing 2 x 5 MHz of spectrum, OFCA would effectively reduce each operator's capacity by 33%. This would result in a significant degradation of data speed and a deterioration in network performance, and hence have a serious impact on the user's experience. With only 2 x 10 MHz available, it is almost impossible to maintain the current data speeds of 42 Mbps using DC-HSPA+ in practice due to part of the capacity being

required to serve voice traffic. In the future this proposed narrowing of spectrum bands will create additional efficiency and service issues for licensees, to the detriment of users.

165. The TA's proposal fundamentally goes against the stated policy for managing the use of spectrum in an efficient manner as this option results in a forced fragmentation of the spectrum, resulting in reduced spectral efficiency and interference. The already congested 3G Spectrum band would be forcibly squashed with reduced capacity resulting in an immediate and significant adverse impact on the quality of service experienced by users. In an attempt to resolve this problem, the existing operators would be obliged to install more cell sites to compensate for the shortage of spectrum. On the other hand, new entrants who successfully acquire the spectrum that has been released by the incumbent operators would also need to look for cell sites. But, in an already crowded landscape, both existing and new operators would find it difficult to locate appropriate cell sites. In fact, even today, operators have already been forced to scale down to picocells and femtocells due to the severe shortage of space in Hong Kong. Coupled with this, the installation of more and more cell sites in heavily populated areas raises concerns from the public and environmental groups which must be addressed by the Government. The only beneficiaries from this state of affairs would be the landlords who would command an even higher premium for use of their (limited) building space to install radiocommunications equipment.

166. From a financial standpoint, forcing the operators to give up 2 x 5 MHz of spectrum has adverse implications on the past investments made by the operators for their 3G equipment. As the equipment has been designed to work with 2 x 20 MHz of spectrum, shrinking the spectrum bands down to 2 x 10 MHz will result in wasted investment and produce a higher unit cost per MHz of spectrum. This is not an economically efficient outcome.

167. Further, leaving the Incumbent 3G Operators with only 2 x 10 MHz of spectrum would result in technical limitations when the operator refarms its 3G spectrum in the future. As a safeguard, the operator would need to retain 2 x 5 MHz of spectrum for its 3G service during the transitional period, so this would only effectively leave 2 x 5 MHz of spectrum which it can refarm.

168. Such an approach would also be entirely inconsistent with the current technological developments for the use of the 3G Spectrum. As optimum performance for LTE-Advanced services can only be offered when 2 x 20 MHz spectrum is available, shrinking an operator's spectrum holding from its existing 2 x 15 MHz down to 2 x 10 MHz would deprive Hong Kong consumers of the best LTE-Advanced services in Hong Kong. On this basis, if the Incumbent 3G Operators' spectrum is shrunk down to 2 x 10 MHz, this could ultimately destroy the competitiveness of our mobile broadband services in the region. The substantial (and self inflicted) harm to users should be obvious.

Question 10: Similar to Question 1, given there is clear indication of competing demand for the 3G spectrum, are there good public policy reasons for the TA to offer Spectrum RFR to the incumbent 3G operators, instead of assigning it through the market-based approach as stipulated in the Framework, when the current 3G frequency assignments expire in October 2016?

169. Similar to HKT's response to Question 1, HKT considers that the only way to ensure that investment, innovation, competition, user benefits and service continuity occur at the highest possible level is to allow the Incumbent 3G Operators an opportunity upfront to retain all of their existing 3G Spectrum holdings. It is not sufficient for the TA to only offer part of the spectrum holding (i.e. 2 x 10 MHz) to each Incumbent 3G Operator. The resulting adverse impact on investment plans, continuity of service and development of future services should provide sufficient grounds for concluding that there are sound public policy reasons for OFCA to offer the Incumbent 3G Operators right of first refusal not just on part of their existing 3G Spectrum holdings, but on all of their spectrum assignments. Indeed, all the negatives inherent in Option 2 also exist in Option 3. The possibility that there might be marginal differences in levels of negative consequences between Options 2 and 3 does not negate the fact that both options are sub-optimal and contrary to the interests of both the industry and consumers.

170. Indeed, the reasons the TA puts forward to re-assign part of the 3G Spectrum to the existing spectrum holders actually justify re-assigning the entire block of 3G Spectrum back to the Incumbent 3G Operators. The principles behind the right of first refusal for the incumbent 3G Operators in Option 3 fully support and are best met via the adoption of Option 1.

Question 11: Do you have any comment on the preliminary proposal of the TA under Option 3 to devise an arrangement so that all interested parties will have the opportunity to get hold of at least a contiguous band of 2 x 10 MHz of paired 3G spectrum?

171. If OFCA is to make sure that each operator (the Incumbent 3G Operators and any new entrants) have access to a contiguous band of 2 x 10 MHz of spectrum within the 3G Spectrum range, this can only be achieved if OFCA is responsible for deciding which frequency bands are re-assigned to the Incumbent 3G Operators and which blocks are released for re-auctioning. This, however, has technical and cost implications. As the re-assignment exercise necessarily involves each of the Incumbent 3G Operators giving up part of their spectrum, the POI equipment of all IRS including the MTR, office towers, hospitals, hotels and shopping malls will need to be replaced. The cost of placing all such equipment will be significant, not to mention the impact on the operator's mobile service when the equipment is switched over and the potential interference, resulting in customer confusion, service problems and complaints. One has to ask why OFCA would adopt an option that would be so clearly detrimental and would involve such a high level of operational interference in the market?

Question 12: Taking into account the merits of having contiguous spectrum of 2 x 10 MHz paired spectrum and the investment in capital equipment that the incumbent operators have already put in the 3G spectrum, should the TA draw up the band plan as described in paragraph 46?

172. This question identifies the folly of this option since it would require OFCA to become intrusive with the market's proper functioning and to become involved in issues such as band planning. On this basis, it would be better to simply reject Option 3. The correct objective is network efficiency, investment and innovation, competition and user benefits, and hence, consistent with the CAO, precedent and the SPF, Option 1 is the best approach.

Question 13: What are your views and comments on the proposed arrangement discussed in paragraph 54?

173. In paragraph 54 of the Consultation Paper, the TA proposes to determine and publicly announce the reserve price for the spectrum to be re-auctioned at the same time the Incumbent 3G Operators are being offered right of first refusal on their 2 x 10 MHz block. The TA intends to set the auction reserve price for the spectrum at <u>below</u> the price for the spectrum that is offered to the Incumbent 3G Operators under right of first refusal.

174. The methods to be adopted for pricing that part of the spectrum offered under right of first refusal are the same as those discussed under Option 1 in paragraphs 25 to 32 of the Consultation Paper. HKT's previous comments in relation to the five pricing methods discussed under Option 1 also apply here to Option 3. HKT prefers a zero price for the SUF as the public policy goal is not to enrich the Treasury but to benefit consumers and the economy. The CAO supports a more modest approach, i.e. not necessarily an auction (See Section 4 of the CAO).

175. As for the reserve price for the frequency bands to be auctioned, HKT considers that it would be fair to set a zero reserve price. Thereafter, the market (i.e. the auction) will determine the price. The advantage of adopting this approach is that it best benefits users. It also avoids having to work out how much of a discount to apply to the price paid by the Incumbent 3G Operators (for the 'partial' spectrum they acquired under right of first refusal) in order to determine the auction reserve price. Further, as noted above, maximum enrichment of the Treasury is not a statutory or policy requirement.

Question 14: What are our views and comments on the proposal to benchmark the SUF of Spectrum RFR with the Spectrum Re-auctioned as proposed in paragraphs 55 – 58 above?

176. In paragraphs 55 to 58 of the Consultation Paper, the TA suggests an alternative approach to setting the price for the spectrum offered to the Incumbent 3G Operators under the right of first refusal. In this case, the price is set according to the average SUF of the spectrum to be determined via the future auction. The Incumbent 3G Operators need to commit upfront whether they will take up their rights BEFORE the auction price is determined. Should they opt not to commit, their allotted 2 x 10 MHz spectrum will be

included in the auction and they may participate in the auction to try and win back their frequency band.[57]

177. Asking the Incumbent 3G Operators to decide whether or not to take up their spectrum rights and then make a commitment without telling them the price creates (to say the least) a great deal of uncertainty. This would be totally unfair to the Incumbent 3G Operators (or any participant in any auction). The price of the spectrum is the most important factor when considering whether or not it is worthwhile retaining use of the frequency band, as operators will be gauging whether or not they can use the money to provide service using an alternative solution instead of re-acquiring the spectrum. On this basis, the method suggested by the TA in paragraphs 55 to 58 is simply too harsh and should be a non-starter.

178. Notwithstanding HKT's responses to each of the foregoing questions, it must re-emphasize that there are substantial technical and implementation difficulties and significant cost issues associated with Option 3, and that Option 3 suffers from most of the shortcomings described under Option 2. On this basis, it cannot be considered as a feasible option and must be rejected.

[57] It is not clear from the Consultation Paper whether the Incumbent 3G Operators are still allowed to take part in the auction even if they have taken up their spectrum rights, nor is it clear if any funds/deposits are forfeited. However, HKT can see no reason why they should not be permitted to do so and hence will assume that this is the case.

PROPOSALS FOR THE UNPAIRED SPECTRUM

179. Besides the four blocks of (2 x 14.8 MHz) spectrum in the 1.9 GHz to 2.2 GHz frequency range that were assigned to the Incumbent 3G Operators via auction in October 2001, each operator was also assigned 5 MHz of spectrum (unpaired TDD block) in the same range. Up until now, none of the operators have made use of their 5 MHz block.

180. On this basis, the TA proposes to put these four blocks of 5 MHz each into reserve. He will then monitor the market and technology development before releasing the spectrum back into the market in accordance with the SPF.

Question 15: What are your views on the proposal to put the unpaired 3G spectrum to reserve?

181. The reason for the 5 MHz blocks not being used by the Incumbent 3G Operators is because, for the past ten years, there has been no TDD technology defined in the 3GPP Standard which would enable the 5 MHz block to be deployed. However, this is now changing. In 2009, a mobile TV technology called Integrated Mobile Broadcast ("**IMB**") was endorsed by the GSMA. Although IMB-enabled handsets are not yet widely available to create the required ecosystem for full service launch, this is expected to change in the future.

182. In addition, with the latest Carrier Aggregation ("**CAG**") technology now defined under LTE-Advanced in the 3GPP Standard, the unpaired 5 MHz TDD blocks can be aggregated with paired FDD bands to provide additional capacity on the downlink. CAG between TDD and FDD bands is expected to be ready in the 2015-16 timeframe.

183. With these developments in the pipeline, the Incumbent 3G Operators will finally have an opportunity to make use of the 5 MHz blocks which were assigned to them back in 2001. It would therefore be unfair if these blocks were to be put back into reserve by the TA. They should be re-assigned back to the existing Incumbent 3G Operators along with their paired spectrum blocks. This is particularly important given that FDD spectrum is already saturated, meaning that the TDD blocks represent the only remaining 3G spectrum available to meet the growing mobile data traffic.

CONCLUSION

184. In paragraph 16 of the Consultation Paper, OFTA states that the SCED and the TA will need to choose the option that best meets the following objectives:

(i) Customer service continuity;

(ii) Efficient spectrum utilization;

(iii) Promotion of effective competition;

(iv) Encouragement of investment; and

(v) Promotion of innovative services.

Only Option 1 meets these policy criteria

185. First, customer service continuity is assured as there is no risk of any of the Incumbent 3G Operators having to stop service because it has not been able to regain its spectrum via auction. OFTA acknowledges that customer service continuity is best preserved under Option 1 per paragraphs 24, 38, 39 and 50 in the Consultation Paper.

186. Second, the Incumbent 3G Operators have made efficient use of the spectrum through full use of their allotted frequency bands and the refarming initiatives undertaken by them to make even greater use of the limited spectral resources. The reality is that the paired bands within the block of 3G Spectrum have been fully utilized today, and all of the Incumbent 3G Operators are adopting the latest version of the 3G technology with a performance level comparable to that of LTE services. OFTA acknowledges in paragraph 19 of the Consultation Paper that Option 1 best contributes to efficient spectrum utilization through continuous capital investment and more certain spectrum planning.

187. Third, as OFTA states in the introduction to the Consultation Paper (and repeated in other parts of the document, e.g. paragraphs 1, 23, 27, 37 and 49), the Hong Kong mobile market is already fiercely competitive, with all five mobile operators providing 3G mobile services either using their own network or via an MVNO arrangement, so it cannot be said that the current arrangements have in any way hindered the promotion of effective competition. Also, a sixth operator has recently entered the market (having acquired spectrum in a recent auction) and it too is pursuing 3G MVNO opportunities.

188. Fourth, stability best promotes investment, innovation, efficiency, competition and user benefits. The Incumbent 3G Operators will not need to put their investment plans on hold for up to three years for fear of having to stop or limit service in the event that they are unable to retain their spectrum holdings.

189. Fifth, the development of innovative services will naturally flow from stability and investment being made in the network by the Incumbent 3G Operators. OFTA states that both investment and innovation will be best encouraged by Option 1 per paragraphs 19, 36 and 48 in the Consultation Paper.

Options 2 and 3 should be rejected

190. Option 2, on the other hand, provides the greatest uncertainty and risk as the outcome of any auction cannot be predicted. Any one or more of the Incumbent 3G Operators could end up with no spectrum (in which case customer service continuity will be disrupted) or the Incumbent 3G Operators could end up with different frequency bands (in which case a lot of expensive network configuration would be required and service being disrupted in the meantime). This would not be an efficient use of the spectrum. Similarly, Option 3 is flawed as there are significant and substantial technical difficulties brought about by each operator relinquishing part of its spectrum as discussed earlier. It is not the case that Option 3 is a 'compromise' between Options 1 and 2. It is fundamentally flawed and should be rejected.

191. Options 2 and 3 will adversely affect service continuity, efficiency, investment and innovation. This will have a direct and substantial negative impact on competition and user benefits. Options 2 and 3 also do not encourage a business friendly environment for investment and do not assist Hong Kong in maintaining its status as a communications hub or a digital city.

192. It is clear that both Option 2 and Option 3 will involve widespread customer disruption, not only to the subscribers of the mobile operator whose frequency band has been directly affected, but also to subscribers of other fixed line and mobile networks when they make calls to the affected subscribers. Both options will also involve huge re-engineering costs in addition to the complex and highly risky coordination exercise that will be required between operators as they switch over use of frequency bands.

193. As each operator's spectrum plan has been built and developed over a number of years, any re-engineering plan would be enormous and could not happen seamlessly. Taking away all or even part of the frequency currently held by the Incumbent 3G Operators will require wholesale shifts in spectrum. This is a very frightening prospect indeed.

194. From an economic perspective, while both Option 2 and Option 3 would require substantial investment to be undertaken by each operator (existing and new) to set up/ reconfigure their systems and networks in order to effect the changeover in spectrum, none of this investment results in any effective increase in capacity or improvement in service level. In short, significant amounts of money will have been spent by operators under Option 2 and Option 3 just to preserve the existing level of network capacity and service coverage which Hong Kong already enjoys today. On this basis, it is difficult to identify any benefits to the operators or the consumer under either of these two options. In fact, under Option 2 and Option 3, if there are new entrants, in the initial period following take up of the spectrum, it is likely that there will be a drop in network capacity as the new entrants will need time to roll out their networks.

195. In conclusion, it is clear that Option 1is the only option that satisfies the stated criteria in the Consultation Paper and the CAO, and hence should be adopted. These criteria provide the required public policy reasons to allow the TA to depart from an auction approach for renewal of the 3G Spectrum.

196. Finally, and more pressingly, OFCA should turn its efforts to establishing a spectrum trading regime. There is no disagreement on this matter. OFTA and the Government said that it is needed – all operators agree. Other countries have introduced it, but Hong Kong still only talks about it and is being left behind. OFCA should place a high priority on this matter and introduce it well before 2016. This, together with the adoption of Option 1 for the 3G Spectrum, would allow the market mechanism to determine both the best use of spectrum and its price.

Submitted by
Hong Kong Telecommunications (HKT) Limited
15 July 2012