

**Arrangements for the Frequency Spectrum
in the 2.5/2.6 GHz Band upon Expiry of the Existing Assignments
for the Provision of Public Mobile Services
and the Related Spectrum Utilisation Fee**

Consultation Paper

19 September 2024

PURPOSE

This consultation paper is jointly issued by the Communications Authority (“CA”) and the Secretary for Commerce and Economic Development (“SCED”) to seek views and comments of the telecommunications industry and other affected persons on the proposed arrangements for the re-assignment of a total of 50 MHz of spectrum in the 2.5/2.6 GHz band upon expiry of the existing assignments in May 2028, and the methods for setting the related spectrum utilisation fee (“SUF”).

BACKGROUND

2. A total of 50 MHz of spectrum in the 2.5/2.6 GHz band was assigned in May/June 2013 for the provision of public mobile services, with the assignments due to expire in May 2028. The spectrum has been assigned to four assignees, namely China Mobile Hong Kong Company Limited (“CMHK”), Genius Brand Limited (“GBL”)¹, Hong Kong Telecommunications (HKT) Limited (“HKT”) and SmarTone Mobile Communications Limited (“SmarTone”), with an amount of 2 x 5 MHz for each of CMHK, GBL and HKT, and of 2 x 10 MHz for SmarTone in the frequency range of 2515 – 2540 MHz

¹ GBL is a 50:50 joint venture between HKT and Hutchison Telephone Company Limited (“Hutchison”). The spectrum in the 2.5/2.6 GHz band assigned to GBL is assumed to be divided equally between HKT and Hutchison for the purpose of calculation of the spectrum holding in this consultation paper.

paired with 2635 – 2660 MHz (hereafter referred to as the “Available Spectrum”)².

3. The CA sets out in the consultation paper its proposal on the arrangements for the re-assignment of the Available Spectrum upon expiry of the existing assignments for the provision of public mobile services. SCED also sets out in the consultation paper his proposal on SUF for the use of the Available Spectrum. The CA intends to make its decision and inform the parties concerned about the re-assignment arrangements not later than May 2025 after taking into account views and comments of the industry, thus giving a notice period of three years to the incumbent assignees before expiry of the existing assignments³.

LEGAL AND REGULATORY FRAMEWORK

4. Under section 32G(1) of the Telecommunications Ordinance (Cap. 106) (“TO”), the CA has the statutory duty to promote the efficient allocation and use of the radio spectrum as a public resource of Hong Kong. Sections 32H(2) and 32I(1) of the TO empower the CA to allocate and assign radio frequencies and to designate which of them shall be subject to the payment of SUF following consultation with the telecommunications industry and other affected persons. Section 32I(2) of the TO empowers SCED to prescribe the method for determining the SUF. Before exercising the respective statutory powers conferred on them by the TO, the CA and SCED jointly conduct the present public consultation.

5. Section 4(4) of the Communications Authority Ordinance (Cap. 616) stipulates that the CA, in performing its functions, must have regard to the following matters which appear to the CA to be relevant in the circumstances: (a) the fostering of an environment that supports a vibrant communications sector to enhance Hong Kong’s position as a communications hub in the region; (b) the encouragement of innovation and investment in the

² Another 90 MHz of spectrum in the 2.5/2.6 GHz band (see the frequency ranges in paragraph 12 below) with assignment term commencing on 31 March 2024 and expiring on 30 March 2039 is outside the scope of the present consultation.

³ Please refer to the Statement issued by the former Telecommunications Authority (“TA”) in January 2008 on minimum notice periods for variation or withdrawal of spectrum assignments, which is available at:

<https://www.coms-auth.hk/filemanager/common/ta20080131.pdf>.

communications market; (c) the promotion of competition and adoption of best practices in the communications market for the benefit of the industry and consumers; and (d) acting in a manner consistent with the provisions of the Hong Kong Bill of Rights Ordinance (Cap. 383).

6. The Radio Spectrum Policy Framework promulgated by the Government in April 2007 (“Spectrum Policy Framework”)⁴ sets out the policy objectives and the guiding principle in spectrum management which the CA should take into account in discharging its spectrum management responsibilities under the TO. By a statement issued in April 2007, the former TA (now the CA) explained that, in exercising his statutory powers under the TO, he would, in addition to all relevant considerations as required by law, give due regard to the Spectrum Policy Framework to the extent that there would be no inconsistency with the objectives and provisions of the TO⁵.

7. The Spectrum Policy Framework makes it clear that there is no legitimate expectation that there will be any right of renewal or right of first refusal upon the expiry of a spectrum assignment under the TO. The CA shall inform the parties concerned about the arrangements for spectrum re-assignment within a reasonable time before expiry of the assignments as mentioned in paragraph 3 above. In addition, under the guiding principle in spectrum management, the policy inclination is that a market-based approach will be used in spectrum management wherever the CA 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.

DEMAND FOR THE AVAILABLE SPECTRUM

8. Since the launch of commercial 5G services in Hong Kong in April 2020, the demand for high performance mobile data connectivity has continued to grow rapidly owing to the extensive use of broadband services in various sectors, particularly for high speed, reliable and data-intensive applications. The

⁴ The Spectrum Policy Framework is available at:
<https://www.cedb.gov.hk/assets/resources/ccib/policies/spectrum.pdf>.

⁵ The former TA statement on the Spectrum Policy Framework is available at:
https://www.coms-auth.hk/filemanager/common/policies_regulations/ca_statements/ta20070424_en.pdf.

per capita monthly mobile data usage reached 28.7 gigabytes as of May 2024, which is about four times of that five years ago in May 2019. This growth trend is expected to continue in view of the development of innovative telecommunications services and applications adopting the fifth generation (“5G”) and beyond mobile communications technologies.

9. Whilst the Available Spectrum is currently fully deployed by the spectrum assignees for the provision of the fourth generation (“4G”) mobile services using the Long Term Evolution (“LTE”) technology, which is a mature mobile broadband technology with widely available network equipment and user devices, the 2.5/2.6 GHz band has been specified by the telecommunications standardisation body, the 3rd Generation Partnership Project (“3GPP”), as one of the frequency bands that can be used for deployment of 5G services based on the New Radio (“NR”) technology. Coupled with the technology neutral approach adopted by the CA for spectrum management, there is good potential for the Available Spectrum to be refarmed to meet the high demand for mobile broadband service and other innovative applications adopting 5G or beyond.

10. Among the spectrum suitable for the deployment of 5G services, spectrum in the 2.5/2.6 GHz band belongs to the mid-band spectrum within the 1 – 7 GHz range which provides longer range propagation than the high-band spectrum above 7 GHz and wider bandwidth than the low-band spectrum below 1 GHz. As such, the Available Spectrum supports cost effective provision of mobile broadband services in terms of coverage and capacity requirements. As a matter of fact, there was keen demand for spectrum in the 2.5/2.6 GHz band in the past auctions held in January 2009, March 2013 and October 2021 respectively. Having regard to the factors discussed above, **the CA considers that there are likely to be competing demands for the Available Spectrum.**

PROPOSED RE-ASSIGNMENT APPROACH

Considerations for a Market-Based Approach

11. In accordance with the guiding principle in spectrum management in the Spectrum Policy Framework, since the CA considers that there are likely to be competing demands for the Available Spectrum, a market-based approach should be used for re-assignment unless there are overriding public policy reasons to do otherwise. The CA has taken into account the policy objectives for spectrum re-assignment of ensuring customer service continuity, efficient spectrum utilisation, promotion of effective competition, and encouragement of investment and promotion of innovative services⁶ when evaluating whether there are any overriding public policy reasons for not adopting a market-based approach for re-assignment of the Available Spectrum. The CA's assessment is set out in the following paragraphs.

Ensuring Customer Service Continuity

12. At present, four major mobile network operators (“MNOs”) who are existing assignees of the Available Spectrum hold a total of 1 083.4 MHz of sub-7 GHz spectrum for provision of public mobile services using predominantly 4G and 5G technologies. The 50 MHz of the Available Spectrum accounts for about less than 5% of the total, or 2% to 8% of the spectrum held by the respective assignees, as shown in Table 1 below. Even assuming that the incumbent spectrum assignees (or any one of them) fail to acquire any of the Available Spectrum in this re-assignment exercise, they can still use any other spectrum they hold in the 2.5/2.6 GHz band (i.e. in the frequency ranges of 2500 – 2515 MHz paired with 2620 – 2635 MHz and 2540 – 2570 MHz paired with 2660 – 2690 MHz, hereafter referred to as the “Remaining Spectrum”), the assignments for which are due to expire in March 2039, and/or their holdings of spectrum in the other frequency bands below 7 GHz, as shown in Table 1 below, to ensure service continuity. Given that the Available Spectrum only constitutes a relatively small proportion of the total amount of assigned spectrum, the traffic currently carried by the Available Spectrum can be readily absorbed by the

⁶ These are the four policy objectives that the CA has all along adopted when evaluating the proposed options for re-assignment of the spectrum in the 1.9 – 2.2 GHz band, 900 MHz and 1800 MHz bands, 2.5/2.6 GHz band, 850/900 MHz and 2.3 GHz bands upon expiry of the assignments in 2016, 2021, 2024, 2026 and 2027 respectively.

Remaining Spectrum as well as other sub-7 GHz spectrum held by the existing assignees. Therefore, the CA considers that there should not be any concern about customer service continuity upon re-assignment of the Available Spectrum. Indeed, a number of spectrum re-assignment exercises have been successfully completed since 2016 (including the recent re-assignment of the Remaining Spectrum on 31 March 2024) demonstrating that service continuity issue is not a concern.

Table 1: Distribution of sub-7 GHz spectrum held by the four MNOs as of 31 March 2024

	<u>Sub-7 GHz spectrum</u>		<u>2.5/2.6 GHz band</u>			
	Total (MHz)	Share	Available Spectrum (MHz)		Remaining Spectrum (MHz)	Total (MHz)
CMHK	319.6	29.5%	10	(3%)	30	40
HKT	294.6	27.2%	15	(5%)	50	65
SmarTone	254.6	23.5%	20	(8%)	0	20
Hutchison	214.6	19.8%	5	(2%)	10	15
Total	1083.4	100%	50	(5%)	90	140

Note: Figures in brackets represent the shares of Available Spectrum in the overall holding of sub-7 GHz spectrum held by the respective MNOs.

Efficient Spectrum Utilisation

13. Re-assignment of the Available Spectrum by a market-based approach will put the spectrum into the hands of those MNOs and new entrants (if any) which value it the most and can be expected to put it to the most efficient use during the term of the assignment. It would also provide an opportunity for MNOs to optimise their spectrum holdings, taking into account other mid-band spectrum acquired and having regard to their own commercial and technical considerations. On the other hand, some MNOs may want to acquire more spectrum in the band to enhance their network capacity and transmission speed or to form contiguous blocks of wider bandwidth to attain higher spectral efficiency.

Promotion of Effective Competition

14. Hong Kong’s mobile telecommunications market is highly competitive, with four major MNOs serving a population of around 7.5 million. Re-assignment of the Available Spectrum by a market-based approach would encourage MNOs to value their newly acquired spectrum and make good use of it to improve network coverage, data speed and service offerings, thus promoting further competition that will benefit consumers.

Encouragement of Investment and Promotion of Innovative Services

15. Past spectrum re-assignment exercises have led to spectrum changing hands among the incumbent MNOs. MNOs which acquire more spectrum are likely to invest in network infrastructure to enable them to deploy their spectrum holdings effectively. From a more general perspective, it is expected that MNOs assigned with a right mix of spectrum through a market-based mechanism will be in a better position to introduce innovative services in the 5G era. Therefore, re-assignment of the Available Spectrum by a market-based approach is expected to encourage investment and promote the introduction of innovative services.

Re-assignment of Spectrum by Auction

16. The CA’s evaluation in paragraphs 11 – 15 above has not identified any public policy reason that would override the adoption of a market-based approach for spectrum re-assignment. On the contrary, there are economic benefits which support the adoption of a market-based approach for re-assigning the spectrum. **The CA therefore proposes to adopt a market-based approach for the re-assignment of the Available Spectrum.**

17. Of the various market-based approaches⁷, it is considered that auction is the most appropriate for the re-assignment of the Available Spectrum. Auction allows the fair value of the spectrum to be determined in an open and transparent way, and ensures that the successful bidders will be those who both value the spectrum most and are expected to put it to the most efficient use during

⁷ Footnote 1 to paragraph 3.1 of the Spectrum Policy Framework explains that a “market-based approach” refers to “methods relying on market forces to ensure the efficient use of spectrum as a public resource”.

the term of assignment. Use of an auction approach is also consistent with practices adopted by both the CA and many overseas administrations for spectrum assignment / re-assignment. **The CA therefore proposes to re-assign the Available Spectrum by way of auction.**

Question 1: Do you agree with the use of a market-based approach by way of auction for re-assignment of the Available Spectrum pursuant to the Spectrum Policy Framework?

PROPOSED RE-ASSIGNMENT ARRANGEMENTS

Band Plan

18. In Hong Kong, spectrum in the 2.5/2.6 GHz band has been deployed for 4G services based on the Frequency Division Duplex (“FDD”) mode of operation⁸ for years. In contrast, the 2515 – 2675 MHz band in the Mainland has been deployed for 5G services based on the Time Division Duplex (“TDD”) mode of operation⁹. It is anticipated that any change of the mode of operation from FDD to TDD in the 2.5/2.6 GHz band would involve substantial replacement of the existing network equipment and large-scale of engineering work. In view of the lengthy time and huge resources to be involved, it is reasonably expected that MNOs are unlikely to invest for change of mode of operation for 4G from FDD to TDD, and hence the FDD mode of operation should continue to be adopted in the whole 2.5/2.6 GHz band.

19. Taking into account the above consideration, the CA proposes that the existing FDD mode of operation, and therefore paired spectrum blocks in the band plan, should continue to be used in the re-assignment of the Available Spectrum.

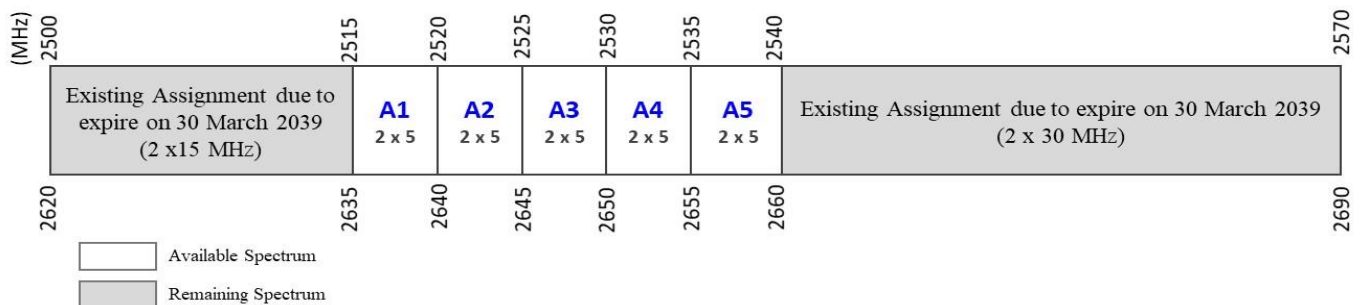
20. In order to provide flexibility for an interested party to bid for the optimal amount of spectrum to meet its business needs, the CA proposes to divide the Available Spectrum into five paired frequency blocks of 2 x 5 MHz

⁸ The FDD mode of operation means that the uplink and downlink communications are separated in the frequency domain via different frequency bands.

⁹ The TDD mode of operation means that the uplink and downlink communications are separated in the time domain via different time slots.

each, as shown in Figure 1 below, which is the minimum allowable channel bandwidth for both FDD-LTE and NR FDD as specified by 3GPP. It will promote competitive bidding and align with the block size of the Remaining Spectrum with assignments commencing on 31 March 2024. Bidders may acquire and aggregate multiple blocks to form carriers of larger bandwidths to attain higher spectral efficiency in accordance with their technical and commercial considerations. The proposal will also provide the flexibility for successful bidders to refarm the spectrum for the provision of 5G services in the future.

Figure 1: Proposed band plan for the Available Spectrum in the 2.5/2.6 GHz band



Question 2: Do you have any views on the proposal that the Available Spectrum be divided into five paired frequency blocks with a bandwidth of 2 x 5 MHz each?

Spectrum Cap

21. While the CA intends to impose minimal constraints on spectrum acquisition in an auction, in exercising its spectrum management powers, the CA is also mindful of the need to prevent an over concentration of spectrum in the hands of any single spectrum assignee which may have the effect of restricting competition. Having considered the overall spectrum holdings of four major MNOs in various frequency bands (excluding spectrum in the 26/28 GHz bands) and their holdings of mid-band spectrum as shown in Table 2 below, the CA proposes a spectrum cap for each bidder at 2 x 10 MHz out of the total 2 x 25 MHz of the Available Spectrum to be re-assigned.

22. In other words, a successful bidder may acquire up to 40% of the Available Spectrum. The proposed spectrum cap enables MNOs which provide

4G services with use of the Available Spectrum to acquire the similar amount of the spectrum they are currently using in the coming re-assignment exercise if they so wish. Such a spectrum cap should not give rise to any competition concern as each of the four major MNOs has been assigned with hundreds of megahertz of spectrum across various frequency bands, as shown in Table 2 below. Even assuming that the incumbent MNO that holds the largest amount of spectrum succeeds in acquiring up to the cap of 20 MHz of the Available Spectrum, its share in the spectrum available for the provision of public mobile services will only increase slightly from 28.7% to 29.6%, while the shares of spectrum holding by the other MNOs will be in the range of 19% – 26% after the re-assignment exercise. Furthermore, the CA has planned to release more spectrum in different frequency bands for mobile use in the coming three years¹⁰, including the assignment of 400 MHz of mid-band spectrum in the 6/7 GHz by way of auction to be conducted before the end of 2024. In view of the above, the proposed spectrum cap is not expected to give rise to over-concentration of spectrum holding in the hands of any individual market player and will unlikely risk any impact on effective competition in the mobile telecommunications market.

Table 2: Distribution of sub-7 GHz spectrum by MNOs as at 31 March 2024 (MHz)

	700 MHz	850 MHz	900 MHz	1800 MHz	1.9-2.2 GHz	2.3-2.5 GHz	2.5-2.6 GHz	3.3 GHz	3.5 GHz	4.9 GHz	Total	Share
CMHK	20		10	40	19.6	30	40	20	60	80	319.6	28.7%
HKT	20		20	40	29.6		65	30	50	40	294.6	26.5%
SmarTone	10	25	10	40	39.6		20	20	50	40	254.6	22.9%
Hutchison	20		20	30	29.6	30	15	30	40		214.6	19.3%
VNET						30					30.0	2.7%
Total	70	25	60	150	118.4	90	140	100	200	160	1113.4	100%

Question 3: Do you have any views on the proposed spectrum cap of 2 x 10 MHz to be imposed on each bidder for the re-assignment of the Available Spectrum?

¹⁰ Please refer to the Spectrum Release Plan for 2024 – 2026 issued by the CA on 28 February 2024, which is available at:

https://www.ofca.gov.hk/filemanager/ofca/en/content_144/spectrum_plan2024_en.pdf.

Eligible bidders

23. Similar to the previous auctions, the CA considers that there should only be minimal qualification requirements for registering bidders' interest and for demonstrating their capability to provide satisfactory services. The CA proposes to impose the following qualification requirements on a bidder who is interested in participating in the auction of the Available Spectrum, subject to the connected bidder restriction¹¹. In short, an eligible bidder should –

- (a) lodge a specified amount of deposit which may be forfeited if the bidder violates the auction rules and/or fails to take up the licence after winning the auction; and
- (b) demonstrate its technical and financial capability to provide services in fulfilment of the licensing obligations to the satisfaction of the CA and submit any other relevant supporting information which the CA may deem necessary.

24. Subject to fulfilment of the above qualification requirements and the connected bidder restriction, the CA proposes that all interested parties, be they existing MNOs or new entrants, may apply for participation in the auction to be conducted for the re-assignment of the Available Spectrum.

Question 4: Do you have any views on re-assigning the Available Spectrum by allowing all interested parties to apply for participation in the auction, subject to the minimum qualification requirements and the connected bidder restriction?

Auction Format

25. For the re-assignment of the Available Spectrum, the CA proposes to adopt the **simultaneous multiple-round ascending (“SMRA”)** auction format. This auction format allows bidders to bid for the specific frequency

¹¹ Spectrum auctions in Hong Kong are invariably subject to the connected bidder restriction that a bidder must not be a connected bidder in relation to another bidder. A company (“Company A”) is treated as a connected bidder with another company (“Company B”) if –

- (a) Company A holds a material interest (e.g. holding 25% or more of shares) in Company B;
- (b) Company B holds a material interest in Company A; or
- (c) a person holds a material interest in both Company A and Company B.

blocks of their choice. In fact, it has been widely used in auctions conducted for the past years including the auctions of the spectrum in the 2.5/2.6 GHz band in 2009, 2013 and 2021 respectively, and is familiarised by the industry.

Question 5: Do you have any views on the adoption of the SMRA auction format for the re-assignment of the Available Spectrum?

LICENSING ARRANGEMENTS

Licensing and Validity Period

Alignment of the Expiry Date of the Existing Assignments of the Available Spectrum

26. Of the Available Spectrum currently assigned to CMHK, GBL, HKT and SmarTone, the frequency spectrum assigned to HKT will expire on 20 May 2028, 11 days earlier than that assigned to the other three incumbent spectrum assignees expiring on 31 May 2028. To facilitate a smooth handover of the Available Spectrum among the spectrum assignees, the CA proposes to align the expiry date of the existing assignments of the Available Spectrum so that they would all commence on 1 June 2028 on the new assignment term. This will effectively involve an administrative extension of the existing assignment of frequency block A5 (i.e. 2535 – 2540 MHz paired with 2655 – 2660 MHz band) for HKT by 11 days from 21 May 2028 to 31 May 2028, subject to its agreement and payment of SUF for the use of spectrum during the extended assignment period. The proposed arrangement will simplify future administrative and licensing arrangements and facilitate smooth handover of any frequency block of the Available Spectrum.

27. SCED proposes that the SUF of the frequency block A5 for the extended period of assignment should be equal to the lump sum SUF paid by HKT for the current assignment term of 15 years of the frequency block A5 proportionate to the number of days of the extended period. As such, HKT will be offered the option to pay a SUF of about \$623,000 for the extended assignment period of the frequency block A5.

Question 6: Do you agree with the proposed arrangements for the alignment of the expiry date of the existing assignments of the Available Spectrum and the payment of SUF for the extended period of assignment of the frequency block A5?

Alignment of the Expiry Date of the New Assignments of the Available Spectrum with that of the Remaining Spectrum

28. The Available Spectrum sits between the upper band and the lower band of the Remaining Spectrum in the 2.5/2.6 GHz band (see [Figure 1](#) above). The Remaining Spectrum is assigned to the MNOs with the assignment period from 31 March 2024 to 30 March 2039. If the standard spectrum assignment period of 15 years is adopted for the Available Spectrum, the assignment period will be from 1 June 2028 to 31 May 2043. As a result, the expiry dates for the assignments of the Available Spectrum and the Remaining Spectrum in the 2.5/2.6 GHz band will continue to be different and fragmented blocks will continue to exist, perpetuating the issue of non-contiguous assignments in the band.

29. To address the above concern, the CA proposes to shorten the assignment period of the Available Spectrum to about ten years and ten months until 30 March 2039, which will be coterminous with the expiry date of the assignment term of the Remaining Spectrum. As a result, a total of 140 MHz of contiguous spectrum in the whole 2.5/2.6 GHz band will be available for re-assignment upon expiry of the assignments in March 2039, providing an opportunity for MNOs to acquire contiguous blocks of spectrum for enhancing spectral efficiency in the band and facilitating the conduct of any review on the mode of operation (i.e. FDD or TDD) for the whole 2.5/2.6 GHz band.

30. The CA will grant a new unified carrier licence (“UCL”) to each successful bidder of the Available Spectrum. According to Schedule 2 of the Telecommunications (Carrier Licences) Regulation (Cap. 106V), UCLs are issued with a period of validity of 15 years from the day on which they are issued. The assignment period of the Available Spectrum which will end on 30 March 2039 will be fully covered by these new UCLs. For incumbent licensees which successfully acquire the Available Spectrum in the proposed auction, they may apply to the CA to combine their existing UCLs with the new UCLs to be issued.

Question 7: What are your views on the proposed arrangements to shorten the new assignment term of the Available Spectrum to about ten years and ten months from 1 June 2028 to 30 March 2039?

Frequency Transfer

31. Whilst the CA acknowledges the special circumstance in which HKT became an incumbent assignee of the Available Spectrum after a merger and acquisition transaction in 2014¹², it would not be possible for both HKT and GBL, as the incumbent assignees of the Available Spectrum, to participate in the forthcoming auction according to the restriction of connected bidders set out in paragraphs 23 – 24 above. It will be up to HKT and Hutchison to decide whether both of them will participate in the forthcoming auction as separate entities or jointly through GBL as a single entity.

32. Yet, to allow a possibility for both HKT and GBL to acquire any of the Available Spectrum released in the forthcoming auction for continuity of their existing service provision, HKT and Hutchison may submit a joint application to the CA for its approval for the transfer of all or part of the Available Spectrum they successfully bid in the auction to GBL. Since the sole purpose of the proposed frequency transfer arrangement is to enable GBL to carry on with its existing scale and mode of operation if the connected parties (i.e. GBL, HKT and Hutchison) so wish, it is proposed that the CA will only consider a transfer of up to 20 MHz of the re-assigned Available Spectrum¹³ that is equally contributed by HKT and Hutchison (i.e. 10 MHz or one 2 x 5 MHz block of the Available Spectrum by each)¹⁴.

¹² The Available Spectrum was originally assigned to CMHK, CSL Limited (“CSL”), GBL and SmarTone in May/June 2013 following an auction in which HKT did not participate. HKT subsequently acquired CSL after obtaining the prior consent of the CA in 2014 pursuant to the then merger and acquisition requirements of section 7P of the TO and became a spectrum assignee of the Available Spectrum.

¹³ GBL holds 2 x 5 MHz of the Available Spectrum prior to the expiry of the existing assignment on 31 May 2028. The allowable limit for transfer by HKT and Hutchison of the rights to hold the re-assigned spectrum is set at 2 x 10 MHz in total due to the technical constraint rendered by the paired frequency block of 2 x 5 MHz each and the requirement of an equal amount of transfer by the two parties in order to mimic the existing operation of GBL.

¹⁴ On 9 November 2023, the CA approved a joint application, among others, the transfer of an equal amount of spectrum in the 2.5/2.6 GHz band from each of HKT and Hutchison to GBL for the purpose of enabling GBL to carry on with its existing scale and mode of operation after the auction of the Remaining Spectrum in October 2021.

Frequency Swap

33. As elucidated in the joint statement of the CA and SCED issued in March 2021, following the re-assignment of all the spectrum in the 2.5/2.6 GHz band including the Available Spectrum on 1 June 2028, the CA may consider any proposal of frequency swapping from MNOs provided that there are sound justifications such as enhancing spectral efficiency¹⁵. The CA therefore proposes that after the auction of the Available Spectrum, spectrum assignees of the 2.5/2.6 GHz band may submit a joint application for frequency swapping mutually agreeable to them with sound justifications for CA's consideration starting from the new assignment term of the Available Spectrum on 1 June 2028.

Technology Neutrality

34. In the assignment of spectrum for provision of public mobile services, the CA in general adopts a technology neutral approach whereby assignees are free to use whatever technology they choose based on widely recognised standards for service provision. Unless there is any overriding reason worth special consideration (such as harmful interference to other existing services), the CA will adhere to this technology neutral approach in assigning and licensing the Available Spectrum. The assignees may use the spectrum assigned for providing 4G, 5G or other generations of mobile services under their UCLs, so long as the technology to be used is a widely recognised standard. However, to avoid causing any harmful interference among spectrum assignees of the 2.5/2.6 GHz band, the use of the Available Spectrum should be in line with the band plan proposed in paragraphs 18 – 20 above, which is based on the FDD mode of operation stipulated in the relevant 3GPP standards.

¹⁵ See paragraph 41 of the joint statement of the CA and SCED entitled “Arrangements for the Frequency Spectrum in the 2.5/2.6 GHz Band upon Expiry of the Existing Assignments for the Provision of Public Mobile Services and the Related Spectrum Utilisation Fee” issued on 31 March 2021, which is available at:

https://www.coms-auth.hk/filemanager/statement/en/upload/556/2_5_2_6_ghz_statement.pdf.

Network and Service Rollout Obligations

35. In order to prevent spectrum hoarding and to ensure that the auctioned spectrum will be put into efficient use for the timely provision of advanced telecommunications services for the benefit of the general public, the CA will in general impose network and service rollout obligations on successful bidders in a spectrum auction.

36. In view of the good radio propagation characteristics of spectrum in the 2.5/2.6 GHz band which facilitates the provision of broad geographical coverage in an economic way and the extensive deployment of radio base stations using spectrum in the 2.5/2.6 GHz band, the CA proposes to require each successful bidder of the Available Spectrum to roll out its network and services with use of the assigned spectrum to provide a minimum coverage of 90% of the population of Hong Kong within five years from the date of the spectrum re-assignment.

Performance Bond for Rollout Obligations

37. To ensure compliance with the network and service rollout obligations as proposed in paragraphs 35 – 36 above, the CA proposes to require each of the successful bidders of the Available Spectrum to lodge a performance bond. The amount of performance bond will be specified by the CA in the information memorandum to be issued for the auction of the Available Spectrum.

38. All the spectrum in the 2.5/2.6 GHz band has already been fully and extensively deployed for the provision of public mobile services. If an incumbent assignee in the 2.5/2.6 GHz band successfully acquires frequency block(s) in the same band in the auction, it is likely that its mobile network will have already met the 90% minimum population coverage requirement upon the re-assignment. Therefore, the CA proposes that if any of the five frequency blocks of the Available Spectrum is acquired by an incumbent assignee of the 2.5/2.6 GHz band, the assignee may choose to provide network coverage figures demonstrating that its existing network operating in the 2.5/2.6 GHz band has already fulfilled the 90% minimum population coverage requirement, without the need to provide a performance bond for that frequency block.

Question 8: Do you have any views on the proposed licensing arrangements as specified in paragraphs 31 – 38 above?

SPECTRUM UTILISATION FEE

39. Since the CA proposes the adoption of an auction as the appropriate market-based approach for the re-assignment of the Available Spectrum, the successful bidders should pay the final bidding price of the individual frequency block as SUF for use of the spectrum. For the purpose of kick-starting the competitive bidding process, there will be a reserve price for each of the five frequency blocks which is set taking into account the shortened assignment period and at a level that represents the minimum base value of the spectrum. The auction reserve price will be specified by SCED nearer the time of the auction.

40. Regarding the method of payment of SUF, to afford greater flexibility to the spectrum assignee to make financial arrangements for the payment of SUF, SCED proposes that the spectrum assignee be given a choice to pay the SUF either by –

- (a) lump sum payment upfront, which is the lump sum amount determined in the auction; or
- (b) annual instalments, with the first instalment equivalent to the lump sum amount referred to in (a) above divided by 11 (i.e. the number of years of assignment rounded up to the nearest year¹⁶), and subsequent instalments to be increased every year by a pre-set percentage which aims to reflect the time value of money.

Question 9: Do you have any views on the proposal in relation to the setting and collection of SUF as specified in paragraphs 39 – 40 above?

¹⁶ The CA proposes to assign the Available Spectrum for an assignment period of about ten years and ten months (see paragraphs 28 – 30 above).

INVITATION OF COMMENTS

41. This consultation paper sets out preliminary views and proposals of the CA and SCED on the arrangements for the re-assignment of the Available Spectrum and the related SUF. For the avoidance of doubt, all the information provided and views expressed in this consultation paper are for the purpose of discussion and consultation only. Nothing in this consultation paper represents or constitutes any decision made by the CA or SCED. The consultation contemplated by this consultation paper is without prejudice to the exercise of the powers by the CA and SCED under the TO or any subsidiary legislation thereunder.

42. The CA and SCED will carefully consider the submissions received in this public consultation, and insofar as it is practicable in the circumstances shall endeavour to announce their respective decisions on the arrangements for the re-assignment of the Available Spectrum and the related SUF not later than May 2025, thereby giving a three-year advance notice to the incumbent spectrum assignees about the arrangements for spectrum re-assignment. This will be followed by the necessary preparatory work including the making of relevant legislative amendments.

43. Any person who would like to respond to this public consultation should do so on or before **31 October 2024**. **Late submissions would not be considered.** The CA and SCED may publish all or part of the views and comments received, and disclose the identity of the source in such manner as they see fit. Any part of the submissions considered commercially confidential should be clearly marked. The CA and SCED would take such markings into account in making the decision as to whether such information will be disclosed or not. Submissions should be sent to –

Office of the Communications Authority
29/F., Wu Chung House
213 Queen's Road East
Wan Chai
Hong Kong
(Attention: Principal Regulatory Affairs Manager (R22))

Fax: 2803 5112

E-mail: consult-2500-2600mhz@ofca.gov.hk

An electronic copy of the submission should be provided by e-mail to the e-mail address indicated above.

**Commerce and Economic Development Bureau
Office of the Communications Authority
19 September 2024**