

Summary Report on Review of Concessionary Measures to Facilitate Data Centre Development in Hong Kong

The Remit

1. The Hong Kong SAR Government seeks to establish Hong Kong as the pre-eminent data centre hub in the Asia Pacific region. In promoting Hong Kong as the prime location for data centres, the Government looks to address the needs and expectations of the data centre industry and seeks to regularly review the policies and concessionary measures to achieve the very best outcome.

2. This study looks at the data centre development status quo, analyses Hong Kong's strengths and weaknesses in the data centre industry, pinpoints the deterrents and evaluates existing concessionary measures. The study also sets out recommendations to ensure Hong Kong is positioned as the preferred regional and global data centre hub.

3. The concessionary measures to be reviewed in this study were introduced by the Government in 2012 as a time-limited scheme to encourage and facilitate the development of data centres in Hong Kong. Following a review in 2016, these concessionary measures were extended until further notice:

a. Waiver Fee Exemption for Change in Use of Parts of Existing Industrial Buildings (Waiver Fee Measure)

“to exempt the waiver fees for issuing waivers for applications made to the Lands Department for change of use in parts of industrial buildings aged 15 years or above in “Industrial”, or “Other Specified Uses” annotated “Business” or “Commercial” zones to data centres of all tiers for the life-time of the existing building or until expiry or determination of the current lease, whichever is the earlier”

b. Tailor-made Lease Modification of Industrial Lot for Data Centre Use (Lease Modification Measure)

“to accept lease modification (including land exchange) tailor-made for development of high-tier data centres, wholly or in conjunction with other uses, on existing industrial lots for the part of the development proposed for data centre use, instead of requiring modification up to the optimal uses and intensity that could possibly be allowed for the site where accordingly

the premium to be chargeable for that part of the land to be used as data centre would also be based on the specific high-tier data centre use instead of an optimal development”

c. Conditions of Sale for Dedicated Sites for Data Centre Use (Dedicated Data Centre Sites Measure)

“to continue the arrangement that the Conditions of Sale for new sites be tailor-made for high-tier data centre use with specified gross floor area, including the disposal of the remaining two dedicated sites in Tseung Kwan O”

4. To provide better context for analysis of the concessionary measures, in addition to identification of the baseline stock in the market, comprehensive desktop research with highlights of the Hong Kong’s edge on data centre development compared with its competitors was conducted. A series of interviews with stakeholders was also undertaken. The stakeholders included major data centre operators, investors, developers and quasi-government bodies and the interviews were aimed at drawing insights as to future trends. From the findings, coupled with the outcomes of our own review, we have assessed the effectiveness and overall success of the concessionary measures from different perspectives.

The Market

5. The creation of and demand for data is accelerating globally. According to the International Data Corporation (IDC), global data production will increase from 33 zettabytes¹ in 2018 to 175 zettabytes by 2025. The growing trend aligns with Cisco's projection, that there will be 29.3 billion networked devices/connections and 5.3 billion Internet users by 2023, up from 18.4 billion and 3.9 billion in 2018 respectively. With an exponential increase in online data, the demand for data centre facilities and services to process such large volume of data continues to surge. It is also expected that the split between the global volume of data stored in the cloud and data stored in traditional data servers will be roughly 50/50 by 2025, up from only 35% stored in the public cloud in 2018. According to a market forecast by Gartner in 2021, the worldwide end-user spending on public cloud services is forecast to grow 23.1% in 2021 to USD332.3

¹ A zettabyte is one trillion gigabytes.

billion and will jump from USD242.6 billion in 2019 to USD692.1 billion in 2025, attaining a 16.1% Compound Annual Growth Rate (CAGR).

6. Data centres are essential information and communications technology infrastructure to support our digital economy, our smart city development, as well as the overall economic development in Hong Kong. Given Hong Kong's position as an international financial, trading and logistics hub and home to regional headquarters and offices of many multinational corporations, high-performance, secure and reliable data centre services are crucial for business operations and the continuing growth of our pillar industries and other business sectors. The advancement of technology in recent years, including cloud computing, virtual reality, artificial intelligence, big data analytics, Internet of Things and the 5G network services is a demand driver for development of data centres in Hong Kong. The more these data-intensive technologies are used, the more data and information will be produced and require processing by data centre and cloud services providers, especially those international technology giants. In 2019, around 292,100 enterprises or 85% of enterprises in Hong Kong used cloud services, representing a 20% growth from 2017, and generated an abundance of online data. Stakeholders were of the view that cloud services will predominate and will continue to expand. The data centre market in Hong Kong is projected to be worth USD1.4 billion in 2021 and to grow at a five-year CAGR (2021 – 2026) of 11.4%² to reach USD2.46 billion by 2026.

7. Planning and building purpose-built high-tier data centres, as preferred by stakeholders, takes time, usually two to three years. Stakeholders considered that supply of data centres needs to stay ahead of demand, which accords with industrial practice whereby data centres are typically built to allow for future growth. Data centre installations, most of them high-tier, are clustered mainly in Tseung Kwan O, Kwai Chung and Tsuen Wan. Market players are mainly international and local data centre operators, local and mainland telecommunications operators, and also financial institutions. It is estimated that about 743,000 m² of data centre floor space, including in-house (e.g. financial institutions) and colocation data centres, is available in Hong Kong as at the end of 2019. The supply of data centre floor space mainly arises out of the concessionary measures, lands/sites available from the market and the two Industrial Estates in Tseung Kwan O and Tai Po. There are currently 12 data centres in the two Industrial Estates occupying a total floor space of about

² Source: Hong Kong Data Centre Report (May 2021), Structure Research

356,000 m², including 11 high-tier data centres accommodated in the Tseung Kwan O Industrial Estate forming the largest data centre cluster in Hong Kong.

Hong Kong Advantages

8. Hong Kong's inherent advantages by way of strategic geographic location, close ties with Mainland China and the Greater Bay Area, with its robust telecommunications infrastructure (i.e. 11 submarine optical fibre cables, 20 overland optical fibre cables and 11 satellites), and reliable power supply (99.995% reliability) in conjunction with its comparatively low tariffs are strong factors which render Hong Kong an ideal location for data centres. Our early and widespread adoption of new technologies, for instance the launch of 5G network services in early 2020, high international Internet connectivity and penetration rate, and 85% enterprises adoption of cloud computing services, strongly support growth in our data centre market. The impact of COVID-19 has also emphasised the importance of the use of technology to support enterprise business through wider adoption of remote and online operations, causing a surge in data creation and growing demand for data centres.

9. Hong Kong's established and well-developed international external telecommunication cable networks are widely cited by industry players as a driving factor for developing data centres here. Despite the recent politically motivated change in the Pacific Light Cable Network's plan to land in Hong Kong, industry players still regard Hong Kong as being more than adequately connected as well as being in a superior location geographically to some of its competitors such as Singapore or Japan. In fact, the existing external telecommunications total equipped capacity accounts for only a small fraction of about 11%³ of the overall designed capacity. Hong Kong's existing and planned capacity are expected to meet medium to long-term external telecommunications demand.

10. While higher land price could be a consideration, investors are still looking for opportunities in Hong Kong and capital inflow to the city's data centre industry has continued. The first eight months of 2020⁴ saw USD1.5 billion dollars invested in Hong Kong's Data Centre market, a 56% increase on 2019's total investment. Data centre investment has remained active with a site in Sha Tin sold at HKD5.6 billion in July 2020 and another site in Fanling sold at

³ Source: <https://www.info.gov.hk/gia/general/202006/18/P2020061800709.htm> (June 2020)

⁴ Source: Hong Kong Dominates with 54% of APAC Data Centre Investments in 2020, Mingtiandi

HKD812.94 million in January 2021 by open tender, and another two sites in Fanling worth HKD356 million sold on the open market. Multiple major international and local data centre, telecommunications and cloud service providers have chosen to expand their presence in Hong Kong in recent years, showing that Hong Kong's data centre market is maturing which can in turn be a catalyst to attracting even more international players.

11. With its simple and predictable tax regime, pro-business environment, proximity to the Mainland China market, free flow of information, unrestricted capital flows and the world's freest economy⁵, Hong Kong continues to thrive as a financial hub regionally and globally. Lower tax and power tariffs as compared with other cities, representing a saving on investment costs, are always attractive to data centre investors, especially for large scale investments in high-tier data centre development in Hong Kong. Hong Kong was ranked 2nd in Asia in the Cushman & Wakefield's Data Centre Competitive Index 2019, showing its strength in the regional market and continues to be a preferred location for the setting up a data centre hub in the region.

Review of the Hong Kong Data Centre Concessionary Measures

12. The Government explored relevant measures to facilitate the development of data centres in Hong Kong and commenced a number of time-limited concessionary measures in 2012. These measures have had a positive impact on the development of data centres in Hong Kong, resulting in the extension of the measures beyond March 2016, until further notice. Along with other supporting measures, they demonstrate the Government's commitment to data centre development in the city and to promoting Hong Kong as prime location for data centres in the region.

Waiver Fee Measure

13. As at the end of June 2020, the Government received a total of 41 applications since the measure's inception, of which 29 have been executed, two have been approved and are pending execution and four have been withdrawn. The remaining six applications are being processed. The 29 executed applications have contributed about 141,000 m², in terms of internal floor area, of data centre floor space.

⁵ Source: <https://www.info.gov.hk/gia/general/202009/10/P2020091000829.htm> (September 2020)

14. The nature of the Waiver Fee Measure allows for the development of data centres of all sizes. This measure provides a flexible and comparatively lower financial requirement option for establishing data centres that are not confined to the high-tier category. Landlords can convert their stock in parts of existing industrial buildings to data centres. Conversion by floors can allow flexibility and gradual expansion of their data centre businesses. New entrants to the data centre business can also benefit from this measure because it can be less costly.

15. While this may be a quick win option, there are constraints presented by existing industrial buildings which were originally built for other purposes. As data centres have more stringent requirements in terms of power supply and building structure, it may sometimes be difficult to install a data centre in an old industrial 'shell'. A further consideration is the declining space from this source in that, the more conversions to data centres that take place, the fewer the number of suitable existing industrial buildings that will remain, not to mention the possible competition from other industries competing for such floor space.

16. This market-driven measure will be most useful in the short to medium term as it continues to encourage data centre owners/operators to look for expansion either within the same building, or buildings in the same or other industrial districts, in order to accommodate their business needs. If space in existing industrial buildings becomes available, the measure is well poised to help developers to absorb this space and convert it into data centre stock.

Lease Modification Measure

17. As at the end of June 2020, six applications had been received since the measure's inception. Two out of these six applications have been approved and the premiums paid, with an expected contribution of about 42,600 m² for high-tier data centre use. For the remaining cases, one has been approved with the payment of the premium pending, one is currently being processed, and two have been withdrawn.

18. In contrast to the Waiver Fee Measure, the number of applications for lease modification is anticipated to be low considering the comparatively higher investment that will be required. Redevelopment of an entire industrial lot is a longer-term strategic decision which requires planning, considerable upfront capital investment and unified ownership of the building or lot. Extra time, effort, cost, and difficulty may be encountered in the redevelopment of an entire industrial building or lot in multiple ownership, a situation which is not uncommon in Hong

Kong. This market-driven redevelopment of an industrial site may also face competition from other eligible industries.

19. Despite the deterrents, data centres developed by means of this measure are potentially of a higher standard as the developers are not constrained by the physical limitations of an existing industrial building. Tailor made conditions under this measure can better address industry demand for purpose-built and in particular high-tier data centres and allow developers to optimise their returns from industrial assets or plots of land they hold for redevelopment.

Dedicated Data Centre Sites Measure

20. Two lots of land designated for high-tier data centre use were sold through open tender under this measure. There were five bidders for the first lot of about one hectare, which sold for HKD428 million in 2013. For the second lot of about 2.7 hectares in size sold for HKD5.456 billion in 2018, there were nine bidders. The competition between bidders including both developers and operators, and their willingness to pay for these dedicated sites are indicative of intense competition and an appetite for new land for high-tier data centre development.

21. The development on the first site has been in operation since October 2017 and contributes 44,000 m² of data centre space. The second site is expected to contribute about 112,640 m² further boosting supply, and the data centre will commence operation by phases from 2022 onwards. The two sites under this measure contribute nearly 157,000 m² of space significantly improve Hong Kong's data centre landscape.

22. Industry players are of the view that dedicated data centre sites with tailor-made conditions can better address industry demand and are much preferred. This measure is considered as the least restrictive development approach. Developers can freely plan and build high-tier data centres without needing to navigate the restrictive issues related to redevelopment of and fragmented ownership in existing buildings. In addition to the two sites discussed above, there is not yet any other upcoming dedicated greenfield site earmarked for high-tier data centre development. A continuation of provision of site under this measure will be welcomed by the industry. Meanwhile, it is observed in recent years that developers are also looking for sites with permitted use for information technology and telecommunications industries (IT&T Industries Use) through the Government's Land Sale Programme (e.g. industrial sites) as another source of supply for greenfield data centre sites. Since 2015, there have been four industrial

sites sold under the Land Sale Programme that are known to be for data centre development, including the recent two lots in Sha Tin and Fanling awarded in July 2020 and January 2021 respectively.

Other Supporting Measures

23. To facilitate development of the data centre industry in Hong Kong, the Office of the Government Chief Information Officer (OGCIO) has also implemented other measures, such as the setting up of the Data Centre Facilitation Unit (DCFU) and a thematic information portal (www.datacentre.gov.hk) to provide one-stop coordinated services to interested developers and investors. The DCFU liaises and works with the local data centre industry and relevant government departments on matters and measures to address the unique operational requirements of data centres. The DCFU has so far handled over 900 enquiries from overseas and local corporations on setting up data centres in Hong Kong.

Findings and Recommendations

24. The positive impact of the concessionary measures on the development of data centres in Hong Kong is indisputable. These measures accounted for about 26% of the total data centre stock as at the end of 2019, and more is expected with the completion of planned projects under these measures. Stakeholders considered that the concessionary measures have been effective in the evolution of the data centre market in Hong Kong.

25. Apart from the concessionary measures, site with the IT&T Industries Use through the Land Sale Programme permits the use of premises for accommodation of IT and telecommunications facilities and equipment, including data centre. This source of supply provides increased flexibility and is less restrictive than a site zoned purely for data centre use and can allow for easier redevelopment. Investors consider data centre business to be pre-eminent and are willing to acquire suitable sites either from the Government or on the open market.

26. Overall, the local information and communications technology sector is positive about the growing demand for data centres, especially for high-tier ones, in Hong Kong. In view of the positive outlook for the industry and feedback on the implementation of the concessionary measures to facilitate data centre development, we have the following recommendations:

a. Continued Support for Development of Hong Kong as a Data Centre Hub

Hong Kong is uniquely positioned and has a number of significant strategic advantages that place it in prime position to cement itself as a leading data centre hub in the Asia Pacific region. Given the nature of the ever-growing business environment in Hong Kong and our ability to capture a wide range of markets, it is crucial that Hong Kong's data centres continue to develop at a pace that will keep it ahead of increasing demand to support the accelerated growth of our digital economy, and to maintain our position as a regional and global business and technology hub.

b. Encouragement of High-tier Data Centre Development

Technology has revolutionised our world and changed our lives for the better. Providing more advanced data centre services is vital in helping new technology trends flourish and thrive in Hong Kong. Reliable and high availability of data centre services are strongly required by technology firms and our pillar industries to deliver their businesses. International technology giants, Internet and cloud service providers, data centre and telecommunication operators are looking to expand their presence in Hong Kong. Further development of data centres of higher quality, essential for offering high performance and reliable services, will be required to foster a better business environment and attract more major international players to Hong Kong.

c. Continuation of the Concessionary Measures

The concessionary measures have clearly had an effect on the development of data centres in Hong Kong. The Waiver Fee Measure, which supports data centre development across all tiers, is crucial for near-term supply. It allows flexibility to expand data centres gradually, through staged conversion of units or floors and it is a "quick-win" option for expansion. The lease modification measure aiming at facilitating larger-scale, longer-term and purpose-built high-tier data centre development will continue to be a useful market-driven measure. The dedicated data centre sites measure is the most welcomed by the industry. Identification of greenfield sites for purpose-built high-tier data centres will be desirable.

As another land supply option, the Government should continue to provide sites with permissible IT&T Industries Use under the Land Sale Programme allowing more flexible and versatile development to sit alongside the dedicated data centre sites measure as a source of data centre floor space.

d. Continuation of Other Facilitation Measures

Apart from the OGCIO, responsibility for data centre development rests with other Government departments such as the Lands Department and the Buildings Department. The relationship and communications network established between the DCFU and these departments should be maintained and strengthened to foster cooperation among the relevant parties. It is vital for the DCFU to continue to provide vital help for market players and stakeholders and to maintain strong links among relevant departments. The continuation and updating of the thematic website and handling of data centre related enquiries will continue to facilitate and support Hong Kong's data centre market development.

Conclusion and the Way Forward

27. To take full advantage of the strong and continuous demand for data and data centres, the data centre market needs to keep growing to meet its full potential. Hong Kong's undoubted growth and propensity to prosper will further drive demand. Our study has concluded that all three concessionary measures have had positive impacts on data centre development since their inception and should continue, and development of high-tier, purpose-built data centres should be encouraged.

28. From approximately 743,000 m² as at the end of 2019, it is forecast that the data centre floor space supply will rise to 1,169,000 m² by 2025. The sources of supply will arise mainly from the concessionary measures, sites with permissible IT&T Industries Use from the Land Sale Programme, and acquisition on the open market. The anticipated supply of around 426,000 m² is expected to meet near-term demand. Sources of further supply will be required for the long run, from, for instance, the New Development Area of Hung Shui Kiu and the Strategic Cavern Areas under the Cavern Master Plan where there is potential for data centre use. The Government should from time to time review the market needs and allocation of lands for high-tier data centre development where appropriate for the longer term. Market players will then be reassured and encouraged that future demand could be addressed and accommodated.

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