

TASK FORCE ON LAND SUPPLY

Relocation of and Topside Development over Kwai Tsing Container Terminals

PURPOSE

The Task Force on Land Supply, vide Paper No. 03/2017, has summarised a list of ideas on increasing land supply put forward by various stakeholders or sectors of the community. The ideas proposed include relocating the Kwai Tsing Container Terminals (KTCTs) or building residential units atop the existing terminals. This paper identifies factors that need to be taken into account when exploring the practicability and desirability of increasing land supply by relocating the KTCTs or having topside development at KTCTs.

BACKGROUND

Kwai Tsing Container Terminals

2. Located at the waterfront of Kwai Chung, Tsing Yi and Stonecutters Island facing the Rambler Channel, KTCTs comprise nine terminals which are being run commercially by five private operators under separate land leases. The nine terminals provide 24 ocean berths and altogether take up 279 hectares (ha) of land.

3. KTCTs were designed and constructed in phases. The first berth of KTCTs has been in operation since 1972. In tandem with the growth of Hong Kong's imports and exports, KTCTs continued to expand over the years. The last terminal – Container Terminal (CT) 9 – began operation in 2003.

4. Outside the terminal boundaries and in the immediate vicinity of KTCTs, there are around 100 ha of land¹ primarily used for port

¹ This excludes areas planned for port back-up uses but have already been developed into other uses such as road infrastructure and government facilities.

back-up purposes. The land is now mainly being let out by short term tenancies (STTs) to operators majorly for container vehicle parking and container storage/cargo handling to support terminal operations. A location map illustrating KTCTs and the surrounding port back-up land is at **Annex A** and the particulars of KTCTs are summarised at **Annex B**.

Throughput of KTCTs

5. As the fifth busiest container port in the world, the Hong Kong Port (HKP) comprises various port facilities including KTCTs, the River Trade Terminal (RTT) in Tuen Mun², six Public Cargo Working Areas (PCWAs)³, mid-stream sites (MSS)⁴, buoys and anchorages and private wharves. HKP handled 19.8 million twenty-foot equivalent units (TEUs) of container throughput in 2016, among which about 77%, or 15.2 million TEUs, were handled by KTCTs⁵.

6. Due to its location, KTCTs conveniently serve cargo from the west and middle part of the Pearl River Delta (PRD) region by barge connections, and from the east of the PRD region by truck deliveries. KTCTs also operate as an international transshipment hub, and are competitive in serving shipping lines focusing on China trade and intra-Asia trade. KTCTs serve more than 60 shipping liners, providing 330 liner services per week to over 470 destinations worldwide (including the Mainland).

7. Hong Kong's economy is outward-oriented, relying heavily on international trade. In 2016, our trade-to-Gross-Domestic-Product (GDP) ratio⁶ was about 305% (vis-à-vis the world average at 30%). Waterborne trade comprised 18.8% of Hong Kong's international trade by value (equivalent to HK\$1,429 billion) and 83.2% by volume. The port

² RTT is located near Pillar Point in Tuen Mun and is operated by the River Trade Terminal Company Limited. The operation involves consolidation of containerised, break bulk and bulk cargo shipped between HKP and the ports in the Pearl River Delta Region.

³ There are six PCWAs in Hong Kong. The operation of PCWAs involves loading and unloading bulk and containerised cargo to and from barges.

⁴ The operation of MSS involves the loading and unloading of ocean and river cargo from barges to trucks/lorries and vice versa.

⁵ Due to the limited berth depth and lack of equipment in other port facilities, most cargo handling activities especially the handling of transshipment cargo which involves large ocean-going vessels, could only take place in KTCTs.

⁶ It refers to trade in goods to GDP ratio.

sector contributes 1.1% to our GDP and employs 2.2% of our working population, and underpins the trading and logistics sector, which accounts for 22% of our GDP and 20% of our total employment.

DEVELOPMENT CONSIDERATIONS

Relocation of KTCTs

8. To maintain the competitiveness of KTCTs in the long term, there has been suggestion in recent years to relocate the terminals from Kwai Tsing to another part of the city, such that an opportunity can be given to modernise and upgrade the port infrastructure, to reconfigure the layout of the terminals to achieve greater efficiency, and to accommodate enough berths and yard space for receiving mega-vessels and handling transshipment cargo.

9. In fact, the Government reviews the cargo forecast of HKP periodically, with a view to mapping out the development strategy of HKP. In view of the fast growth of port cargo throughput in late 1990s, the Government started looking into ways to meet the increasing port cargo throughput in early 2000s. It was agreed in 2004 that the HKP would need to be expanded by developing Container Terminal (CT) 10 to cope with the increasing demand. The Government subsequently commissioned two studies in 2011, one to examine the technical feasibility, and the other to study the economic and financial viability of port expansion by developing CT 10⁷. The studies, completed in 2014, found that while in-situ expansion of KTCTs by developing CT 10 was technically feasible, it was not economically and financially viable.

10. Given the constraints of in-situ port expansion, relocation of KTCTs may be an alternative which would present an opportunity to sustain the long-term growth of our port, and to upgrade our port infrastructure. The relocation proposal, if pursued to address operational needs of our port, would at the same time free up some 380 ha of land

⁷ In the Study on Hong Kong Port-Master Plan 2020 completed in 2004, two potential sites were recommended for new container terminal expansion, i.e. Northwest Lantau and Southwest Tsing Yi. In the Study on Hong Kong Port Cargo Forecasts conducted in 2005/06, it was suggested that the throughput of KTCTs would continue to grow in the years ahead and it was expected that CT10 will be needed by 2015 the earliest. Subsequent to the financial crisis in 2008, HKP's throughput dropped. The Government therefore re-visited the need to develop CT10 and commissioned the two studies in 2011.

(including about 100 ha of port back-up land) at a central location for other uses to meet Hong Kong's development needs. That said, if the option of relocating KTCTs is to be pursued, some inherent challenges as set out below would need to be duly considered and suitably addressed.

(i) Land ownership

11. The 279 ha of land occupied by KTCTs is private land under separate land leases. If we were to relocate and redevelop KTCTs before the expiry of the land leases, there is a need to secure the agreement of the land owners concerned on a relocation proposal, including, among others, the value of the 279 ha of land. The viability of the proposal is also contingent on the location of the new port (subject to identification of a feasible relocation site) and the options for meeting the costs of relocation.

12. The some 100 ha of port back-up land outside the boundaries of KTCTs are currently let out under STTs, each having a term of not more than seven years. The Government has right to terminate these STTs by giving requisite notice without any liability on compensation. It should be noted that port back-up land is an integral part of port operations and the sites concerned can serve their purpose only if they are located in close proximity to the container terminals. The 279 ha of land within the terminal boundaries and the some 100 ha of port back-up land should therefore be considered in a holistic manner when planning for relocation of KTCTs.

(ii) Location of the new terminal

13. While relocation of port is not unheard-of in other countries, its practicability to a large extent is subject to the viability of the replacement site. The location and supporting infrastructure of the new terminal would be crucial to land owners' willingness and agreement to, and in turn the viability of, the relocation proposal.

14. A study on port cargo forecast has to be conducted to determine the optimal number of terminals and berths to be constructed at the new location and whether land should be reserved to allow future port expansion. The new terminal must be sizeable enough to meet the industry needs and evolving mode of operations, including the adoption of automation, the installation of container handling equipment (taller cranes) and quay furniture, as well as berthing requirements of

mega-vessels. With reference to international port planning parameters, the replacement site must meet a few prerequisites. The site has to be surrounded by waters deep enough to allow mega-vessels to berth (a minimum of 17.5 metres below Chart Datum) and has good access to deep marine channel. Based on today's size of container vessels, the berths should have a length of no less than 400 metres. According to international port planning standard, 25 ha of yard space should be provided for each berth to support terminal operations⁸. Sufficient yard space and efficient layout of operational facilities within the terminals should also be planned to satisfy the prompt accommodation of ships with minimum waiting time in port and maximum use of berth facilities. In the light of the above requirements for the replacement site, the relocation of KTCTs might necessitate reclamation, and the planning of which will be a long process entailing detailed assessments and extensive public consultation for meeting the statutory requirements under the Foreshore and Sea-bed (Reclamations) Ordinance, the Environmental Impact Assessment Ordinance and the Town Planning Ordinance.

15. The new port should also have good connectivity to our hinterland, such that direct cargo can be transported from land to sea (or vice versa) efficiently. It should therefore be linked with strategic transportation network by road and by sea. If the replacement site is on a reclaimed island, a bridge or tunnel connecting the island with other major transport networks in Hong Kong will have to be built to ensure connectivity of the relocated port. The issue of provision of contingency access should also be considered. Preferably, the new location should be in the vicinity of port-related activities (e.g. godown facilities) in order to achieve good synergy.

16. In any case, once a piece of land (or land to be reclaimed) is identified as a possible site for the relocation proposal, various assessments have to be conducted to establish the feasibility of the potential site for port relocation in broad terms, taking into account the port planning, land requirements, land use compatibility, environmental issues, engineering issues (including road access, marine transit and other infrastructure requirements), as well as the sustainability impact. Potential benefits and impacts arising from the new port including economic benefits, the city's overall planning, water quality, ecology, fisheries, air quality, noise, land contamination, waste management, hazards, visual, glare, etc., will have to be examined. As for the site to

⁸ A commonly-used port planning parameter internationally is to provide 25 ha yard area per berth. The current "yard-to-berth" ratio for the land-scarce KTCTs is 11.6.

be vacated by KTCTs, separate assessments would be required having regard to the intended future use.

(iii) Seamless transition

17. Currently KTCTs operate round-the-clock all year round. It is of paramount importance to ensure that there is a seamless transition in port relocation such that port operations would not be paralysed. While relocation – if proven to be a practicable option – is likely to be done by phases to minimise impact on port operations – a suitable relocation site and its connecting infrastructure will have to be ready for use in time to tie in with the overall relocation programme before the existing terminals and the surrounding STT sites can be vacated and released for urban development. Taking into account the time required to identify and form such a large piece of land, to provide all the necessary accessibility and other infrastructure to support port operations, to build/construct the terminal facilities before the relocated port can commence operation, it may be more realistic to categorise the relocation proposal as a possible land supply measure only for the long-term.

18. Seen from another angle, if an area large enough for the relocation and well supported by transport network could be made available, one may argue why the land could not be used directly to support residential and/or economic developments, thereby meeting the demand for housing and commercial land in a more expeditious manner and avoiding the complications arising from relocation of a massive container port.

(iv) Economic and financial viability

19. Since the establishment of the first container terminal in 1972, container port in Hong Kong has been developed under the arrangement that the Government would fund the necessary public infrastructural works such as provision of access roads and drains; and that private developers would build, equip and operate the terminals based on commercial principles.

20. Over the years, the Government's decisions on expansion of KTCTs have been determined based on port cargo forecast and industry outlook. The existing container terminals were built and expanded in-situ in phases, after the Government was satisfied that the then prevailing capacity would soon be fully utilised and that the construction

of a new terminal would be technically feasible, as well as economically and financially viable. The merits of a Government-initiated proposal to relocate KTCTs from a land supply perspective have not been examined in detail before. Compared with in-situ port expansion, assessment on the economic and financial viability of a relocation proposal is a lot more complicated.

21. Based on the results of the technical feasibility study on port relocation, the Government will have to assess the economic viability of the proposal, including capital investment for possible land resumption/reclamation/site formation and supporting infrastructure, the value of the vacated land, the costs in relocating KTCTs, as well as the impact of relocation on HKP's competitiveness in the long term.

22. Of utmost importance to potential terminal operator(s) is the financial viability of the proposal. The potential operators would need to consider the costs and benefits of relocation based on a list of factors including the lease conditions, business revenue, operating and labour costs, market situation, overall business environment, neighbouring competitions and the prospects of the container shipping and port industries.

23. Factors determining the economic and financial viability, which would in turn affect the public acceptability of the proposal are interdependent. It is only with such information that members of the public can determine whether ultimately the proposal would bring net benefits to the community.

Topside Development

24. Relocation of KTCTs aside, another idea which has been raised by individuals in the community is to build housing units on elevated platforms above KTCTs such that the existing port operations could be maintained while the land occupied by KTCTs could be utilised more optimally. It has been suggested that the topside development proposal is a more straightforward way to increase land supply when compared with the port relocation proposal. According to that idea being mooted in the community, instead of taking a long time to reclaim land and relocate the terminal facilities, an elevated platform would be constructed 60 to 80 metres from the crane-studded waterfront and above the terminal facilities. The proposal has assumed that space underneath the platform would continue to be used as container storage, while

residential units could be built on the platform at about 20 to 30 metres above the terminal storage area⁹. However, it is expected that the complex technical requirement of such a topside development will make it extremely costly and technically formidable. Moreover, the topside development must be of a reasonable scale in order to justify the high cost. Key issues for consideration are set out below.

(i) Development rights

25. Since the land of KTCTs is privately owned, the consent of land owners concerned must be sought before topside development can be proceeded. This also entails a negotiation on whether the existing land owners would have the right to participate in the development, as well as on the ownership and lease conditions of the topside development. Rezoning is required to develop residential units atop KTCTs¹⁰ and the statutory process normally lasts for about one and a half year, and it will be longer if there are strong public and local objections. The development model must be agreed by the existing land owners and supported by the general public.

26. Arguably, taking back the some 100 ha of port back-up land should be easier as the Government, being the landlord, would have the development rights of the land after terminating the current STTs. However, as the port back-up land, most of which is currently used for container vehicle parking and container storage/cargo handling, provides fundamental support for the terminal operation, it should be cautioned that sole development of the some 100 ha of port back-up land into other uses is detrimental, if not fatal, to terminal operations, and ultimately would undermine the competitiveness of HKP. The port sector has repeatedly raised that more back-up land is required to support the current level of cargo throughput and utilisation of terminal space. As such, partial or full development of the 100 ha of port back-up land into other uses is likely to be objected by the sector.

⁹ Near the waterfront, there are quay gantry cranes (about 70 metre-high) for loading and unloading intermodal containers from container vessels. Near container storage areas, mobile rubber tyred gantry cranes (around 20 metre-high) support transportation and stacking of containers.

¹⁰ The KTCTs area is mainly zoned “Other Specified Uses” annotated “Container Terminal” with development restrictions on building height some ranging from 70mPD to 110mPD, as well as that on gross floor area and/or non-building area for some sites.

(ii) Terminal operations

27. As in the case of the relocation proposal, any topside development has to be proceeded on the condition that terminal operations will not be affected. KTCTs are currently highly utilised, with throughput level standing at over 15 million TEUs a year. It should be noted that about 64% of throughput being handled at KTCTs is transshipment cargo. Efficient transshipment handling requires sufficient yard space to cope with large number of shipping calls and efficient transfers of containers between terminals. It is therefore highly challenging to spare enough yard space within the terminal boundaries for carrying out the necessary foundation and construction works without affecting terminal operation. The feasibility and costs of temporarily relocating part of the port's operations will need to be ascertained. If topside construction works impede terminal operations, the handling capacity of KTCTs will be lowered and the throughput will plunge. Any disruption in terminal service will have serious adverse effect on users' confidence in the reliability and certainty of HKP. The consequence is an irreversible drop of frequency and coverage of liner services, resulting in a downward spiral of KTCTs' overall competitiveness.

(iii) Technical viability of the proposal

28. An elevated platform and supporting structures including columns and piled foundation would have to be constructed to cater for varying scales of vertical development above the platform, while allowing the space underneath continue to be used for port operations without interruption. As the port has to remain in operation during the construction stage of the topside development, further studies would need to be conducted by the interested project proponent, if any, to assess the possible impacts of piling operation (e.g. construction induced vibration and ground movement, etc.) on the port operations and ageing port structures, and whether the existing port structures could withstand large-scale construction work to be carried out on the top. The level of difficulty involved in building housing units on elevated platforms will also need to be assessed in such study. An engineering solution must be worked out to ensure that the topside development can be proceeded with minimal disruption to terminal operations.

(iv) Compatibility with neighbourhood

29. The current KTCTs site is not planned for residential use. For the co-location of container terminals and residential units to work, comprehensive feasibility studies on various fronts must be carried out and necessary mitigation measures must be put in place to ensure that the development would be compatible with the neighbouring environment.

30. A detailed environmental impact study has to be conducted by the project proponent to assess the potential impacts, including air quality, noise (both from traffic and terminal operations), water quality, glare from the floodlight system of the container terminals, air ventilation, and waste management to the neighbourhood, as well as to residents living on top of the terminals.

31. CT 9 and part of its surrounding port back-up area fall within the consultation zone¹¹ of the potentially hazardous installations (PHIs) including Liquefied Petroleum Gas and Volatile Organic Compounds. Hazard assessment is required for development within the consultation zone.

(v) Development capacity

32. Topside residential development will generate additional traffic and its traffic patterns and demand would be different from those of the existing container terminals. Significant traffic trips would be generated from the development during the critical morning and evening peak periods. Traffic impact assessment needs to be carried out to assess the additional traffic demand and to identify the necessary traffic enhancement to disperse the potentially high traffic flow. The capacity of the existing major roads connecting KTCTs¹² should be reviewed.

¹¹ It is one of the Government's risk management strategies to limit the population living or working near PHIs such as oil depots. This is achieved by setting up consultation zones surrounding PHIs. Quantitative Risk and Potentially Hazardous Installations Assessment would be required for developments within the consultation zone to ensure that the risks to the public are confined to acceptable limit.

¹² These include Route 3 (Tsing Kwai Highway and West Kowloon Highway), Route 5 (Kwai Chung Road and Tsuen Wan Road), Route 8 (Stonecutters Bridge and Nam Wan Tunnel), Kwai Tsing Road/Tsing Yi Bridge, and Route 7 (Ching Cheung Road).

33. Apart from traffic impact assessment, relevant environmental impact study for each road improvement project would need to be conducted. Other related issues that require examination include geotechnical conditions along the alignment of the proposed strategic route (e.g. tunnel construction) and the disposal arrangement of excavated materials.

34. It is anticipated that a significant scale of proposed residential development will overload the existing railway network and there is therefore a need to review the new railway services demand to examine whether major expansions and modifications would be required at some stations such as Tsing Yi Station, Kwai Fong Station and Lai King Station to address the change in service demand.

VIEWS FROM STAKEHOLDERS/COMMUNITY

General Public

35. So far, it does not appear that a mainstream view has been formed on either option. In fact, whether the proposed relocation or topside development would deliver net community benefit is subject to a lot of factors, including negotiation with existing land owners and operators, as well as the assessment of overall social cost, economic and financial viability of the proposed options. In particular, it would not be appropriate to come to a conclusion before detailed assessments are conducted by the relevant parties. At this early stage, the general public may at most be apprised of the considerations and constraints attached to the two options, such that they may conduct informed discussions as to whether either one or both options should be seriously examined and accorded priority as possible land supply measures.

The Port Sector

36. Since the existing container terminals are privately run, the practicability of any relocation or topside development proposal is contingent on whether it would make commercial sense to potential operators. Among the two options, we expect that terminal operators would have more concern over the proposed topside development, as it is more likely to cause disruption to existing terminal operations.

37. As regards the idea of relocation, the terminal operators and other operators of port-related services (e.g. truck drivers, operators providing cargo consolidation services, logistics service providers, etc.) would have concern over the accessibility of the new port, and whether it would incur additional time and cost in their operations should the relocation option be pursued.

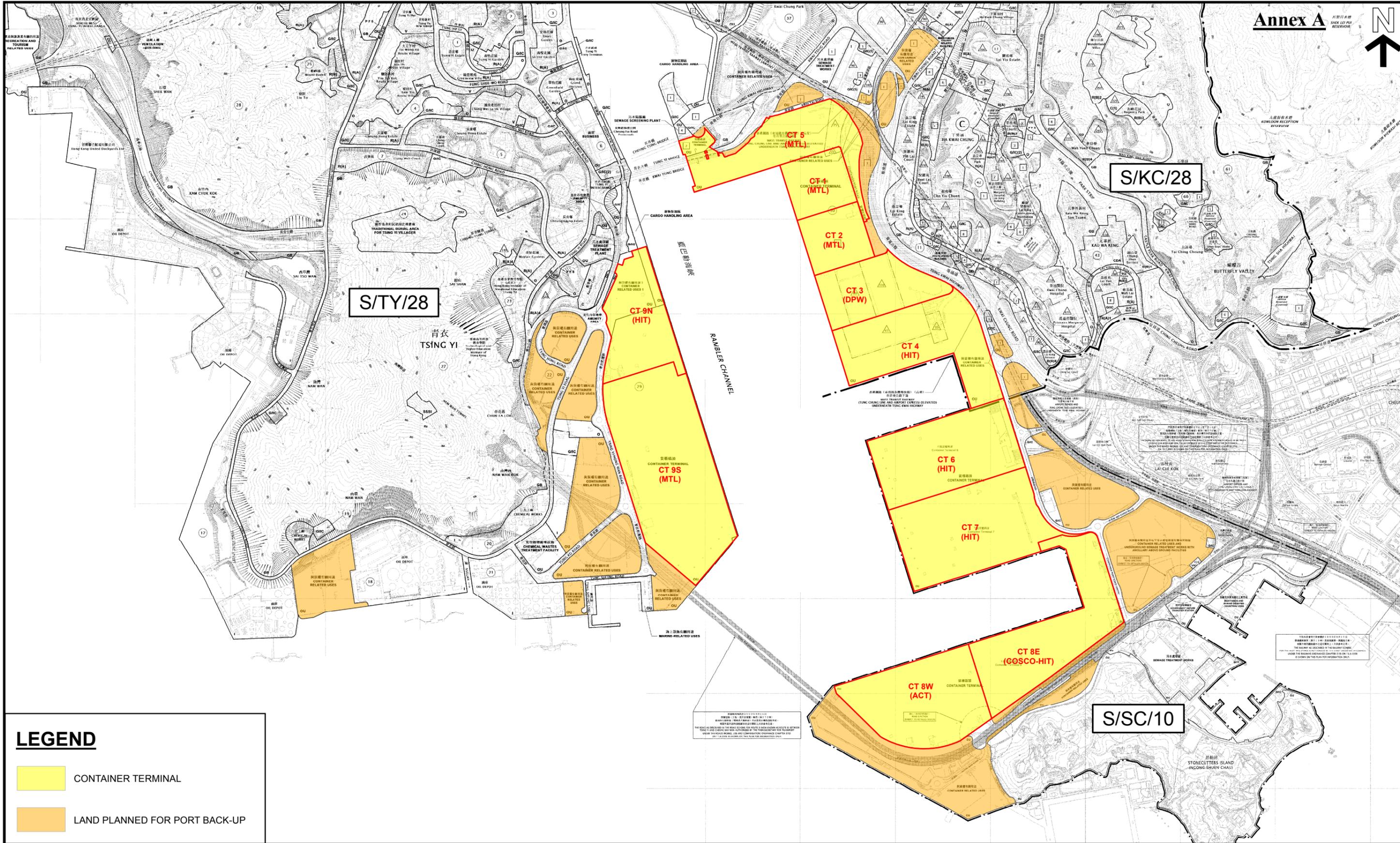
Neighbourhood in Kwai Tsing

38. Subject to the results of various feasibility studies, neighbouring residents in Kwai Tsing would likely be concerned about the additional burden the proposed topside development would bring in respect of traffic, noise and air quality. As regards the relocation proposal, they would likely focus on whether the after-use of the land vacated by KTCTs is compatible with the neighbouring environment.

ADVICE SOUGHT

39. Members are invited to comment on the two options of increasing land supply in Kwai Tsing area having regard to the development considerations identified in the paper.

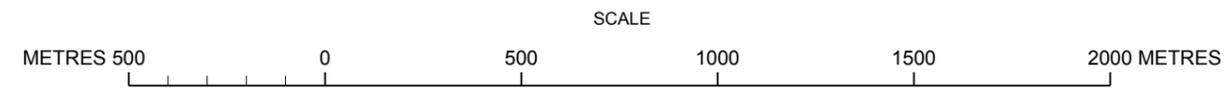
**Transport and Housing Bureau
Development Bureau
14 November 2017**



LEGEND

- CONTAINER TERMINAL
- LAND PLANNED FOR PORT BACK-UP

CONTAINER TERMINALS AND LAND PLANNED FOR PORT BACK-UP USES IN KWAI TSING AREA



Plan No. : M/SP/17/237

Date : 07/11/2017

Particulars of Kwai Tsing Container Terminals

<i>Terminal</i>	<i>Operator</i>	<i>Area (ha)* (Approx.)</i>	<i>Length of Main Berths (m)</i>	<i>Year of Commencement</i>
CT1	MTL	43	305	1972
CT2			305	1973
CT5			472	1975
CT3	DPW	17	305	1972
CT4	HIT	92	881	1976
CT6			956	1988
CT7			1 150	1991
CT8E	COSCO-HIT	30	640	1994
CT8W	ACT	29	740	1993
CT9N	HIT	19	700	2003
CT9S	MTL	49	1 240	2003
Total		279	7 694	

* Total land area in accordance with the respective lease, round to the nearest hectare.

MTL – Modern Terminals Limited, **DPW** – Goodman DP World, **HIT** – Hongkong International Terminals Limited, **COSCO-HIT** – COSCO-HIT Terminals (Hong Kong) Limited, **ACT** – Asia Container Terminals Limited