

**Agreement No. TD 118/2010
Traffic Impact Assessment for
Long-term Logistics Development
in Kwai Tsing Area**

Executive Summary (Final)

Project No.	C2915100
Version No.	3
Prepared for	Transport Department
File Ref.	g:\mva\2915100\report\final executive summary\executive summary(english final).doc

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1. INTRODUCTION

1.1 Background

1.1.1 Transport Department (TD) – Transport Planning Division (TPD) have initiated a traffic study to assess the traffic impacts, formulate practicable traffic improvement measures and design requirements for proposed logistics sites in Kwai Chung (**Sites A1, A2, A3 and C**) and Tsing Yi (**Sites B1 and B2**), and a potential logistics **Site B3** in Tsing Yi. MVA Hong Kong Limited (the Consultant) has been appointed by TD to undertake *Agreement No. TD 118/2008- Traffic Impact Assessment for Long-term Logistics Development in Kwai Tsing Area* (the Study). The Study was commenced on the 6th December 2010.

1.1.2 **Figure 1.1** illustrates the Sites' locations and the Study Area graphically.

1.2 Objectives of the Assignment

1.2.1 The main objectives of the Assignment are as follows:

- a. to carry out a comprehensive Traffic Impact Assessment (TIA) to assess the existing traffic conditions and identify traffic problems within the Study Area;
- b. to carry out a comprehensive TIA to assess the traffic conditions and identify traffic problems within the study area for the design years 2016, 2021 and 2026;
- c. to identify and develop practicable traffic improvement schemes for the existing year and each of the three design years described in (b) above including but not limited to transport infrastructure and traffic management schemes to address the traffic demands and problems in the Study Area;
- d. to review and recommend the optimum development intensity for the remaining potential logistics development sites which would be sustainable in terms of transport network and junction capacity taking due account of traffic impact arisen from future developments at all container back-up sites at Kwai Tsing Container Terminals (KTCT) area;
- e. to assess public transport demand, pedestrian accessibility and traffic noise impact arising from the proposed logistics developments at KTCT area; and
- f. to assess the impact of the proposed developments on supply and demand of goods vehicles and container trucks parking/stacking spaces at KTCT area.

2. TRAFFIC ASSESSMENT OVERVIEW

2.1 Survey Packages

2.1.1 In order to ascertain the existing traffic conditions and to identify any particular patterns, the following series of surveys were carried out:

- Peak Hour Identification Surveys – to find out the representative peak hours to be adopted in this study;
- Road Performance Surveys – to establish the baseline traffic conditions and form the basis for projections into future years using the local transport model;
- Trip Generation Surveys – to derive appropriate trip generation rates to be applied to the proposed developments, by means of surveys at logistics developments currently in operation that are similar in terms of location and nature to the proposed developments and then deriving the rates as per unit of gross floor area (GFA);
- Public Transport and Pedestrian Surveys – to obtain the modal choice for workers in existing logistics centres and pedestrian habit in the container terminal area;
- Parking Demand Surveys – to find out the demand for port back-up uses under short term tenancies (S.T.T.) and kerbside parking in the container terminal area; and
- Origin-Destination Interview Survey – to collect data for projecting the directional splits for the potential logistics centres.

2.2 Local Transport Model

2.2.1 A local transport model (LTM) was developed to produce the traffic forecast for 2010 Base Year, 2016/2021/2026 Design Years, and 2031 Design Year for the Noise Review, with the aforementioned survey results establishing the baseline traffic conditions and form the basis for projections into future year.

2.2.2 Seasonal peak factor was applied to the goods vehicle flows in the model to project the traffic conditions during the seasonal peak.

2.3 Establishment of Reference Scenario

2.3.1 A tentative development programme in the Kwai Tsing District has been assumed for the designated sites and is summarized in **Table 2.1**.

Table 2.1 Programme of Designated Sites Completion

Site	Tentative Development Programme
A1 (KCTL 507)	Site awarded for a term of 50 years commencing from June 2008. The site will commence to operate the latest by June 2014 according to lease requirements. Development on site was completed and Occupation Permit was issued in May 2011.
A2	The site is earmarked for the development of a logistics centre in the long run.
A3	The site is earmarked for the development of a logistics centre in the long run.
B1 (TYTL 180)	Site awarded for a term of 50 years commencing from January 2011. The site will commence to operate the latest by early 2018 according to lease requirement.
B2 (TYTL 181)	The site was put up for tender in Q4 2011, and subsequently awarded for a term of 50 years commencing from March 2012. The site will commence to operate by early 2019 the latest according to the lease condition.
B3	Currently part of the site is a fee-paying public car park held under STT and the remaining part is a temporary works area of Highways Department. It is a potential site for logistics development in Tsing Yi.
C	The site is earmarked for logistics development and other port back-up uses in the long run subject to the Harbour Area Treatment Scheme (HATS) Stage 2 project.

- 2.3.2 Sites A1 and B1 have already been sold for logistics development at the commencement of this Study, and as such the "Reference" scenarios for design years 2016, 2021 and 2026 would include these sites as completed to consider their land uses and the associated traffic generation.
- 2.3.3 Sites A2, A3, B2, B3 and C had not been put up for tender at the commencement of this Study, and as such for the Reference scenario, traffic from new logistics development for these sites will be zero. However, as the sites would likely continue their existing or other similar short-term uses as permitted under the current zoning for "Other Specified Uses (OU) (Container Related Uses)" on the OZP, the current trip ends from these sites are assumed to remain status quo.
- 2.3.4 For the purpose of the current study, the Harbour Area Treatment Scheme (HATS) Stage 2B at Site C is assumed to be a committed use. The traffic generation from that is understood to be only very minor at 6 Passenger Car Units per hour (pcu/hr) (as there is no sludge transport on land), from the Environmental Protection Department (EPD) study.
- 2.3.5 The potential barging sites at Tsing Yi South and Stonecutters Island West are also considered in the assessments of this Study.
- 2.3.6 **Table 2.2** summarizes the assumed land uses for the Reference scenario.

Table 2.2 Assumed Land Uses in Reference Scenario

Site	Land Use in Reference Scenario
A1 (KCTL 507)	Committed logistics development completed
A2	Land use as per existing
A3	Land use as per existing
B1 (TYTL 180)	Committed Logistics development completed
B2	Landuse as per existing
B3	Landuse as per existing
C	HATS 2B (biological treatment plant underground) completed, plus above-ground land use as per existing

2.3.7 For the road network, Highways Department (HyD) have proposed two road improvement schemes in the container port area which is assumed to be completed by 2016:

- At Container Port Road South (CPRS) between Container Port Roundabout (CP R/A) 6 and CP R/A 7, the southbound (SB) carriageway will be widened by two traffic lanes; and
- At Roundabout 6, a free-flow lane will be constructed for the approach from CPRS eastbound (EB) to Mei Ching Road eastbound (EB). A reserve for a priority junction formed by the future access road coming out of the Sites A2/A3 at the Mei Ching Road exit arm.

2.3.8 Under the “Tsuen Wan Bypass, Widening of Tsuen Wan Road between Tsuen Tsing Interchange and Kwai Tsing Interchange and Associated Junction Improvement Works” by Civil Engineering and Development Department, the junction of Tsuen Wan Road/Kwai Tsing Road/Hing Fong Road will also be improved by means of small-scaled local widening.

2.3.9 The base alignment for the local access road between Sites A2 and A3 are also adopted. In this base alignment, the road is planned as a local 7.3m-wide single carriageway, solely serving as the access road to Sites A2 and A3. It will have a one-way SB connection with CP R/A 6 for quicker egress to Mei Ching Road and Tsing Kwai Highway/West Kowloon Highway (the road will be referred to as “Road A” hereafter in this Study).

2.4 Junction Capacity Assessment

2.4.1 Based on the junction capacity assessment results, capacity issues will be present at the following junctions in the Reference case as early as 2016, before any new logistics development are introduced at Sites A2, A3, B2 or C:

- CP R/A 2, starting on 2016;
- CP R/A 3, starting on 2016;
- CP R/A 5, starting on 2016; and
- Tsing Yi Roundabout (TY R/A) 2, starting on 2016.

2.4.2 **Figure 2.1** illustrates the assessed junctions.

2.5 Noise Review

- 2.5.1 Environmental impact during construction and operation of the project derived within the subject site is not anticipated to be significant with proper mitigations in place. This study preliminarily reviewed off-site road traffic noise impact due to the operation of the proposed logistics development.
- 2.5.2 Onsite road traffic noise survey was carried out at a number of measurement locations in Tsing Yi and Kwai Chung. The noise contribution due to off-site traffic generated by the proposed logistic development has been evaluated, which accounted for change of traffic flow and heavy vehicle percentage of the major road affecting the measurement locations.
- 2.5.3 Having considered the nature of the project, it is preliminarily identified that if the logistics development consists of any container backup, handling and packing area more than 5 hectares (ha) and within 300m of existing/planned residential area/place of worship/educational institution/health care institution, it will be regarded as a designated project under Cat. B5 in Part 1, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO).
- 2.5.4 Within the scope of the current study, the off-site road traffic noise impacts have been subject to preliminary review. Should any of the potential logistics development sites be evaluated in accordance with the EIAO and are found to qualify as a designated project in due course upon when such development sites are scheduled to proceed, the necessary detailed environmental assessments (e.g. construction phase environmental impact / operational phase traffic emission impact covering noise, air quality and hazard issues, etc) would be carried out at an appropriate time in compliance with the EIAO.

3. TSING YI SITE B2

3.1 Proposed Short-term Road Improvement Schemes

3.1.1 Site B2 is located on Tsing Yi Hong Wan Road, south of Site B1 and north of TY R/A 4. As stated in **Para.2.4.1**, capacity issues are expected to be present in TY R/A 2 in Tsing Yi by 2016 before Site B2 is developed, due to general traffic growth in the overall background condition. Therefore, short-term improvement schemes will be required in the area disregard the developing status of Site B2.

3.1.2 The distribution patterns of logistics traffic from and to Site B2 are illustrated in **Figure 3.1-3.2**.

3.1.3 The short-term schemes derived would be focusing on local junction widening which could be implemented in the short run (i.e. by the year 2016). Large-scale modification or construction works for highway structures are not considered.

Proposed Improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2

3.1.4 With the critical movement being Tsing Yi Road SB to Tsing Yi Hong Wan Road SB, an exclusive free-flow left-turn lane will ensure the heavy traffic will not be hindered by the other major movement at the roundabout, namely the right-turn traffic coming from Stonecutters Bridge slip road off to Tsing Yi Hong Wan Road SB or Tsing Yi Road SB.

3.1.5 An overview of the proposed road improvement scheme in Tsing Yi is illustrated in **Figure 3.3**, and a more detailed look of the proposed improvement scheme A can be found in **Appendix A (A4)**.

3.2 Proposed Long-term Road Improvement Schemes

3.2.1 Assessment results indicate that, if the short-term improvement Scheme A is implemented, then the junctions in the Tsing Yi container terminal area will have satisfying performances up to the year 2026, even with the new logistics developments at Site B2 and the potential Tsing Yi Barging Site. Therefore, no long-term road improvement schemes will be necessary in Tsing Yi besides Scheme A.

3.3 Recommended Plot Size and Plot Ratio

3.3.1 From the junction capacity assessment results, the maximum allowable development intensity at Site B2 with the recommended improvement scheme is estimated. In view of concerns raised during the study that logistics developments in the future may have different traffic characteristics than the existing facilities, to provide additional buffer capacity at the junctions for flexibility in catering for any additional traffic which may arise in the future, an agreed safety factor of 15% is to be applied to the gross floor area (GFA) derived to come up with the final GFA proposed.

3.3.2 For the scenario with proposed development at Site B2 in 2026 and assuming a design road network comprising Scheme A, the junction capacity assessment results indicate that the maximum GFA sustainable is 97,200m², after applying the agreed safety factor.

- 3.3.3 Plot ratios of similar sites in the vicinity are adopted for the proposed development. The plot ratio of 4.05, similar to that of Site B1, is adopted for Site B2. With a recommended maximum GFA of 97,200m² and a plot ratio of 4.05, the recommended plot size for the proposed development at Site B2 is 24,000m².

3.4 Proposed Pedestrian Schemes

- 3.4.1 A review of the Tsing Yi container port area has identified some shortcomings in pedestrian accessibility in connections with the public transport interchanges in terms of distance and connectivity.

- 3.4.2 Although Tsing Yi Road is served by green minibus (GMB) Route no. 88M, at present there is no “short-cut” walkway or stair that cut across the land between Tsing Yi Hong Wan Road and Tsing Yi Road to shorten the distance for pedestrian from Tsing Yi Hong Wan Road to reach public transportation. A pedestrian scheme is therefore proposed for Site B2.

“Short-cut” Pedestrian Link between Tsing Yi Hong Wan Road and Tsing Yi Road

- 3.4.3 This scheme targets the proposed new logistics development at Site B2. Since Site B2 would have frontage and access at Tsing Yi Hong Wan Road, pedestrians to GMB services along Tsing Yi Road and possible further access to the bus and GMB stops at Mayfair Gardens/Hong Kong Institute of Vocational Education (HKIVE) need to walk along Tsing Yi Hong Wan Road via TY R/A 2 to Tsing Yi Road and turn south again towards Tsing Hung Road. This walking distance could be greatly reduced if a dedicated pedestrian link north of the site boundary of Site B1 could be provided as a “short-cut”. The land area is part of two existing S.T.T.s and may be excised from the S.T.T.s for public passageway use upon expiry of the tenancy.

- 3.4.4 An overview of the proposed pedestrian scheme in Tsing Yi is illustrated in **Figure 3.3**.

3.5 Public Transport Measures

- 3.5.1 There are currently no franchised bus services running within the container port area in Tsing Yi. Public transport serving the Tsing Yi container port area is mainly reliant on the Green Minibus (GMB) route no. 88M running along and with on-street stops at Tsing Yi Road. There are no public transport services along Tsing Yi Hong Wan Road. The other locations in proximity with public transport services are at Mayfair Gardens (one GMB route, with two franchised bus routes terminating on the nearby Sai Shan Road) and at Rambler Crest (two GMB routes).

- 3.5.2 The access mode choice results from the generation surveys indicate that shuttle bus, GMB, franchised bus and MTR are the major access mode to and from the container port area, when disregarding the last walking trip of the journeys by people who reach the area perimeter by franchised bus and MTR. The total demand for connecting public transport trips generated by the proposed development at Site B2 in the peak hour is about 632 ped/hr.

- 3.5.3 Assessment results show that it will not be feasible if only GMB will be provided to cater for the additional workers and visitors due to its low capacity; instead, these demands were deemed more capably and flexibly served by shuttle bus services or a combination

of shuttle bus/GMB services, due to shuttle bus's higher capacity per vehicle and could be arranged by the development operator/management company in adapting to on/off work demands. Franchised buses, with their higher vehicle capacity than typical shuttle buses, would also be a practical option for discharging public transport demands from the proposed new logistics developments but they have not had a significant presence in the container port area, and it remains to be seen whether franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area.

3.6 Re-provision of Displaced Sites

3.6.1 Site B2 was vacant at the commencement of this Study, and therefore no re-provision of displaced sites would be necessary when Site B2 is developed.

3.7 Noise Review

3.7.1 According to the estimate, the road traffic noise contribution during AM peak, PM peak and logistic peak operation period at the measurement locations on major roads and at noise sensitive receivers (NSRs), which is sited further away from major roads, would be less than 1dB(A). Therefore, no noise mitigation measures are considered necessary in this study.

3.8 Summary

3.8.1 Recommendation for the proposed logistics development at Site B2 includes:

- Maximum GFA of 97,200m² and a plot ratio of 4.05;
- Proposed road improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2; and
- Proposed pedestrian scheme: "Short-cut" Pedestrian Link between Tsing Yi Hong Wan Road and Tsing Yi Road

4. TSING YI SITE B3

4.1 Proposed Short-term Road Improvement Schemes

- 4.1.1 Site B3 was not originally included in the Study Brief as the designated proposed logistics sites. The site was later included in the study for review as a potential logistics site and to investigate its feasibility from a traffic perspective.
- 4.1.2 Site B3 is located at the corner of Tsing Yi Road and Tsing Hung Road. For the purpose of this Study, Site B2 is assumed to be developed with the plot ratio and GFA recommended in **Para. 3.3.3** by the time Site B3 is developed. As stated in **Para.2.4.1**, capacity issues are expected to be present in TY R/A 2 in Tsing Yi by 2016 before Site B2 and Site B3 are proposed to be developed, due to general traffic growth in the overall background condition. Therefore, short-term improvement schemes will be required in the area disregard the developing status of Site B2 and Site B3.
- 4.1.3 The distribution patterns of logistics traffic from and to Site B3 are illustrated in **Figure 4.1-4.2**.
- 4.1.4 The short-term schemes derived would be focusing on local junction widening which could be implemented in the short run (i.e. by the year 2016). Large-scale modification or construction works for highway structures are not considered.

Proposed Improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2

- 4.1.5 As aforementioned in **Para 3.1.4**, Scheme A proposed for an exclusive free-flow left-turn lane from Tsing Yi Road SB to Tsing Yi Hong Wan Road SB.
- 4.1.6 An overview of the proposed road improvement scheme in Tsing Yi is illustrated in **Figure 4.3**, and a more detailed look of proposed improvement scheme A can be found in **Appendix A (A4)**.

4.2 Proposed Long-term Road Improvement Schemes

- 4.2.1 Assessment results indicate that, if the short-term improvement Scheme A is implemented, then the junctions in the Tsing Yi container port area will have satisfying performances up to the year 2026, even with the new logistics developments at Site B2 and Site B3 along with the potential Tsing Yi Barging Site. Therefore, no long-term road improvement schemes will be necessary in Tsing Yi besides Scheme A.

4.3 Recommended Plot Size and Plot Ratio

- 4.3.1 From the junction capacity assessment results, the maximum allowable development intensity at Site B3 with the recommended improvement scheme is estimated. As stated in **Para.3.3.1**, an agreed safety factor of 15% is to be applied to the GFA derived to come up with the final GFA proposed.
- 4.3.2 For the scenario with proposed development at Site B2 and potential development at Site B3 in 2026 and assuming a design road network comprising Scheme A, the junction

capacity assessment results indicate that the maximum GFA sustainable at Site B3 is 85,000m², after applying the agreed safety factor.

- 4.3.3 Plot ratios of similar sites in the vicinity are adopted for the proposed development. The plot ratio of 4.05, similar to that of Site B1, is adopted for Site B3. With a recommended maximum GFA of 85,000m² and a plot ratio of 4.05, the recommended plot size for the potential development at Site B3 is 21,000m². The remaining area will be released for other port back-up uses.

4.4 Additional Parking at Sites on Tsing Yi

- 4.4.1 Logistics operators in Tsing Yi area had requested to raise the rate of goods vehicle parking provision in the past, and as a result this Study has also assessed the scenario where the upper limit of goods vehicle parking provision was to be raised to 1 space per 1,160 square metres of GFA from the standard provisions of 1 space per 1,800 square metres of GFA.

- 4.4.2 If Site B2 and Site B3 are fully developed with GFA as recommended in **Section 3.3** and **Section 4.3**, and the abovementioned rate of goods vehicle parking provision is applied to Sites B1, B2 and B3, then new improvement schemes (in addition to short-term improvement Scheme A) will be necessary for the junction of Tsing Yi Road / Tsing Hung Road, and TY R/A 2.

Proposed Improvement Scheme H – Method-of-Control (MOC) Modification for the Junction of Tsing Yi Road / Tsing Hung Road

- 4.4.3 The forecasted capacity issue at the junction of Tsing Yi Road / Tsing Hung Road is due to Tsing Yi Road SB traffic making right turns to Tsing Hung Road conflicts with Tsing Yi Road NB traffic going straight ahead. In this improvement scheme, it is proposed to split the right-turning movement and straight ahead movement on Tsing Yi Road SB traffic from the same phase. The scheme will require slight set back of the planters along Tsing Yi Road.

Proposed Improvement Scheme I – Exclusive Bypass Left-turn Lanes at Tsing Yi R/A 2

- 4.4.4 An exclusive bypass left-turn lane for traffic going from Tsing Yi Hong Wan Road NB to Tsing Yi Road SB, and another bypass lane from Tsing Yi Road NB to Tsing Sha Highway Slip Road WB, are proposed at TY R/A 2 as Scheme I. The practicality of implementation and the cost of construction have been considered when conceiving this improvement scheme.

- 4.4.5 With both Schemes H and I being relatively easy to implement and the scale of construction work is small, it is possible that the need for implementing these improvement schemes can be reviewed at a later time, after the development sites with higher parking provision have reached full and mature occupancy.

- 4.4.6 An overview of the proposed road improvement scheme in Tsing Yi, for the scenario which the higher rate of goods vehicle parking provision is applied, is illustrated in **Figure 4.4**. A more detailed look of the proposed improvement schemes H and I can be found in **Appendix A (A11 and A12)**.

4.5 Proposed Pedestrian Schemes

- 4.5.1 There are currently adequate pedestrian facilities which connect Site B3 with the public transport services in the area. Site B3 is located at the corner of Tsing Hung Road and Tsing Yi Road, which is served by GMB Route no. 88M. In addition, there is currently a pedestrian path at the northern end of Tsing Hung Road that connects to Tsing Yi Road near Mayfair Garden, which is in proximity with other GMB and franchised bus services. Therefore, no additional pedestrian scheme is proposed for Site B3.

4.6 Public Transport Measures

- 4.6.1 The access mode choice results from the generation surveys indicate that shuttle bus, GMB, franchised bus and MTR are the major access mode to and from the container port area, when disregarding the last walking trip of the journeys by people who reach the area perimeter by franchised bus and MTR. The total demand for connecting public transport trips generated by the potential development at Site B3 in the peak hour is about 553 ped/hr.
- 4.6.2 Similar to the discussion in **Para 3.5.3**, the demand for public transport was deemed more capably and flexibly served by shuttle bus services or a combination of shuttle bus/GMB services. Franchised buses would also be a practical option but it remains to be seen whether franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area.

4.7 Re-provision of Displaced Sites

- 4.7.1 Site B3 is currently an S.T.T. site for goods vehicle parking, but will be displaced from the current location if Site B3 were to be used for the proposed logistics development. Their re-provision in the container port area will be essential, as based on the understanding of the operator and user characteristics for these land uses, their proximity to the container port area is very important.
- 4.7.2 On-street parking has been observed on the roads of the Tsing Yi container port area. These on-street parking would be included in the planning of re-provision of goods vehicle parking sites in the container port area as well.
- 4.7.3 It is proposed that temporary government sites, such as the HyD's works area at Tsing Hung Road, may be used for re-provision after the return of the site by HyD. Other government land in the Tsing Yi area may also be used as re-provision sites, subject to availability and status by the time when the development takes place.

4.8 Noise Review

- 4.8.1 According to the estimate, the road traffic noise contribution during AM peak, PM peak and logistic peak operation period at the measurement locations on major roads and at noise sensitive receivers (NSRs), which is sited further away from major roads, would be less than 1dB(A). Therefore, no noise mitigation measures are considered necessary in this study.

4.9 Summary

4.9.1 Recommendation for the potential logistics development at Site B3 includes:

- Maximum GFA of 85,000m² and a plot ratio of 4.05; and
- Proposed road improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2.

4.9.2 Improvement schemes recommended for the Tsing Yi area for raising the rate of goods vehicle parking provision for the proposed logistics developments at Sites B1 and B2 and potential logistics development at B3 includes:

- Proposed road improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2;
- Proposed road improvement Scheme H – MOC Modification for the Junction of Tsing Yi Road / Tsing Hung Road; and
- Proposed road improvement Scheme I – Exclusive Bypass Left-turn Lanes at Tsing Yi R/A 2.

5. KWAI CHUNG SITES A2/A3

5.1 Short-term Road Improvement Schemes

5.1.1 Sites A2 and A3 are located north of CP R/A 6 in Kwai Chung, with Road A serves as the access road for both of the sites. As stated in **Para.2.4.1**, capacity issues are expected to be present in some of the junctions in Kwai Chung by 2016 before Sites A2/A3 are proposed to be developed, due to general traffic growth in the overall background condition. Therefore, some short-term improvement schemes will be required in the area disregard the developing status of Sites A2/A3.

5.1.2 The distribution patterns of logistics traffic from and to Sites A2/A3 are illustrated in **Figure 5.1-5.2**.

5.1.3 The short-term schemes derived would be focusing on local junction widening which could be implemented in the short run (i.e. by the year 2016). Large-scale modification or construction works for highway structures are not considered.

Proposed Improvement Scheme B – Construction of free-flow lane at CP R/A 4, and construction of new exit slip road and merging taper to Kwai Chung Road

5.1.4 This scheme, although comprising modifications and roundabout widening at CP R/A 4, is in fact an improvement scheme for CP R/A 3 as CP R/A 3 is severely constrained by columns of Tsing Kwai Highway and MTR Tung Chung Line/Airport Express Line tracks.

5.1.5 The capacity issues at CP R/A 3 is partly due to the turn from CPRS northbound (NB) approach arm to exit slip road to Kwai Chung Road, thus hindering the heavy CPRS SB approach arm, as aforementioned. Thus, the principle is to provide earlier exit to Kwai Chung Road for CPRS NB traffic.

5.1.6 The scheme comprises the construction of a new exit slip road with merging taper to Kwai Chung Road from CP R/A 4 to allow CPRS NB traffic to exit to Kwai Chung Road earlier and relieve CP R/A 3. Kwai Chung Road-bound traffic will be re-distributed from CP R/A 3 to CP R/A 4. This traffic stream originally appears at CP R/A 4 as a straight-ahead and can utilize the free-flow lane, but would then be changed to a right-turning movement at CP R/A 4. Due to less physical constraints at CP R/A 4 than at CP R/A 3, CP R/A 4 can be improved by means of a free-flow lane from CPRS SB approach arm to Kwai Chung Interchange to cater for the change in traffic patterns. The entry slip roads from Lai Chi Kok Bridge and Ching Cheung Road to Kwai Chung Interchange will be realigned to allow priority for Kwai Chung Road-bound traffic.

Proposed Improvement Scheme C – Construction of free-flow lane at CP R/A 5

5.1.7 This scheme comprises the construction of a free-flow lane at CP R/A 5 for the movement from CPRS southbound approach arm to Ching Cheung Road EB exit arm. The scheme will increase the handling capacity of CP R/A 5 by keeping the traffic towards Ching Cheung Road from entering the roundabout.

5.2 Proposed Long-term Road Improvement Schemes

5.2.1 The focus on the long-term improvement schemes for Sites A2/A3, which are targeted to be completed after 2016, would be on CP R/A 5 and 6 and the roads in proximity, which are expected to be most directly affected by any potential new traffic from the logistics development at the designated sites. CP R/A 2-4 are only very lightly affected by any potential new traffic from the designated sites, as shown in **Figures 5.1-5.2**, and their traffic issues are attributed to the background conditions even before any new developments are added.

5.2.2 Assessment results indicate that CP R/A 5 and CP R/A 6 will have unsatisfying and close-to-unsatisfying performances beyond the year 2016, even without any new logistics development. Therefore, these two junctions must be improved before any new development in Sites A2/A3 can proceed as the sites are located in the proximity of the junctions.

Proposed Improvement Scheme E – New Flyover at CP R/A 5

5.2.3 As the short-term Scheme C will have limited capability to accommodate longer-term traffic flows, a larger-scale scheme has to be considered for CP R/A 5.

5.2.4 The capacity issue at CP R/A 5 is primarily due to heavy CPRS SB approach arm meeting right turn traffic from Ching Cheung Road westbound (WB) approach arm to CPRS NB exit arm and CPRS NB approach arm to Ching Cheung Road EB exit arm.

5.2.5 For any potential new traffic coming from the north, a one-way flyover from CPRS SB would minimize any additional two heavy traffic conflicting points (CPRS SB and Ching Cheung Road WB, CPRS NB right turn and CPRS SB) at CP R/A 5. The flyover will come down at Tat Mei Road. The at-grade free-flow lane of the short-term improvement Scheme C can be re-aligned and shifted to the east slightly to allow for the flyover to be built.

Proposed Improvement Scheme F – New Southbound Flyover at CP R/A 6

5.2.6 To make better use of Scheme E, it is proposed to have an additional flyover connection above CP R/A 6 running southbound, such that a continuous route is available for traffic along CPRS and traffic is effectively diverted away from the roundabouts on the at-grade level. With this scheme, the route towards Tsing Sha Highway and Stonecutters Bridge can bypass both CP R/A 5 and 6. The right-turning traffic from CPRS EB approach arm at CP R/A 6 to CPRS SB exit arm can be reduced, thus improving the situation at the roundabout.

5.2.7 The flyover will come down at CPRS south of CP R/A 6. In the set-up of having both Schemes E and F, Road A will receive additional through traffic and as such at its widest section it will have two SB lanes and one NB lanes.

5.2.8 Even with the addition of Schemes E and F above and the planned improved CP R/A 6 layout from HyD, traffic from Tsing Kwai Highway/West Kowloon Highway/Stonecutters Bridge will still have to loop around CP R/A 6, CPRS NB, then U-turn around CP R/A 5, back to the newly opened Tat Mei Road next to Site A1 in order to access Road A to reach Sites A2/A3.

- 5.2.9 In order to minimize the aforesaid turning movements at roundabouts (in particular the U-turns at CP R/A 5) and the flows along CPRS, an improvement scheme should be included to direct the traffic of the new development away from CP R/A 5.

Proposed Improvement Scheme D – New Slip Road from Mei Foo Roundabout to Future Road (Road A) between Sites A2 and A3

- 5.2.10 It is proposed to construct a one-way direct slip road branching off from Mei Foo Roundabout to join Road A and therefore creating a new route for incoming traffic towards Sites A2/A3.
- 5.2.11 In conclusion, the package of road improvement schemes that is necessary to sustain the new logistics development at Sites A2/A3 and the potential Stonecutters Island barging site in the long term will be Schemes B, C, D, E, and F.
- 5.2.12 An overview of the abovementioned proposed road improvement scheme is illustrated in **Figure 5.3**, and a more detailed look of the proposed improvement schemes B, C, D, E and F can be found in **Appendix A (A5-A9)**.

5.3 Recommended Plot Size and Plot Ratio

- 5.3.1 From the junction capacity assessment results, the maximum allowable development intensity at Sites A2/A3 with the recommended improvement scheme is estimated. As stated in **Para.3.3.1**, an agreed safety factor of 15% is to be applied to the GFA derived to come up with the final GFA proposed.
- 5.3.2 For the scenario with proposed development at Sites A2/A3 in 2026 and assuming a design road network comprising Schemes B, C, D, E and F, the junction capacity assessment results indicate that the maximum GFA sustainable is 106,250m², after applying the agreed safety factor.
- 5.3.3 As Site A2 and Site A3 share the same access road (Road A), the recommended GFA of 106,250 m² can be developed at either Site A2 or Site A3, or a combination of the two. That is the top end of the development scale that the package of road improvement schemes can accommodate, and there is no extra development scale at Site C that can be accommodated. In other words, developments on Sites A2/A3 and Site C are mutually exclusive, which means that if Sites A2/A3 are developed, Site C would remain as its existing use, and vice versa.
- 5.3.4 Plot ratios of similar sites in the vicinity are adopted for the proposed development. The plot ratio of 2.76, similar to that of KCTL 507 (Site A1), is adopted for Sites A2/A3. With a recommended maximum GFA of 106,250m² and a plot ratio of 2.76, the recommended plot size for the proposed development at Sites A2/A3 is 38,500m². The remaining area will be released for other port back-up uses.

5.4 Proposed Pedestrian Schemes

- 5.4.1 A review of the Kwai Chung container port area has identified some shortcomings in pedestrian accessibility in connections with the urban areas and public transport interchanges such as Mei Foo in terms of distance and connectivity.

- 5.4.2 For Kwai Chung container port area, the closest MTR station is at Mei Foo, and there is also a major bus terminus at Mei Foo with a variety of bus and GMB routes to/from other parts of Hong Kong. The proper pedestrian route with proper footpaths is via CP R/A 5 and then along the footpath of Lai Chi Kok Bridge and then down the ramp towards Mei Foo Sun Chuen near Mei Lai Road. This route, while feasible and is currently used by some pedestrians from the port area, may be considered as less convenient as it incurs a long detour distance.

Footbridge between Mei Ching Road and Lai Chi Kok Park

- 5.4.3 This scheme is a Government's proposal which mostly targets existing jaywalking found in the area but can also enhance pedestrian connectivity between the container terminals area to Mei Foo. Currently, jaywalking on Mei Ching Road and Mei Foo Roundabout can be observed on a regular basis as pedestrian seeks a shortcut route to and from Mei Foo via Lai Chi Kok Park. The scheme would provide staircase and lifts at the landing points north and south of Mei Ching Road, as well as within Lai Chi Kok Park. Lai Chi Kok Park at present opens 24-hours daily, and so this link is also technically operable on a round-the-clock basis. Pedestrians to Mei Foo bus terminus and MTR station could then use the internal walkways in the park for onward access.

Pedestrian Link between Lai Chi Kok Bridge and Lai Chi Kok Park

- 5.4.4 This scheme targets the proposed new logistics development at Sites A2/A3. Currently there is a footpath on the southern side of Lai Chi Kok Bridge that runs along the vehicular bridge down to the at-grade level via the slip road down to near the Mei Foo bus terminus. For bus users this link is convenient, but MTR users would need to loop back via walkways within Mei Foo Sun Chuen and under the Lai Chi Kok Bridge to reach the MTR station.
- 5.4.5 As a short-cut from the bridge-level footpath to the MTR station, this scheme would include a stairs and lift combination from the bridge level down to the footpath of Lai Wan Road, where access to the MTR station can be taken via Lai Chi Kok Park. This is particularly convenient for passengers using the West Rail Line. There is only an approximately 7m level difference between the two levels so the stair and lift structure should be relatively small scale.
- 5.4.6 An alternative to the above proposal is to utilize the MTR restricted area on top of Mei Foo Station to reach the Lai Chi Kok Park. The currently fenced-off area contains the venting shafts and other facilities of the MTR, and the area's accessibility is subject to permission of access rights by MTRC. This alternative will involve minimum cost and no additional structures to be built, as they have minimal level difference.
- 5.4.7 A "branch-off" scheme from this is an at-grade pedestrian connection between the existing footpath along the Ching Cheung Road flyover and Tat Mei Road, passing through the open space under the MTR and Kwai Tsing Highway viaducts. However, this connection may encroach upon the MTR Protection Boundary and is subjected to permission of access rights by MTRC. This connection will shorten the distance for pedestrian between the future Sites A2/A3 and Mei Foo.
- 5.4.8 An overview of the proposed pedestrian scheme in Kwai Chung for Sites A2/A3 is illustrated in **Figure 5.3**.

5.5 Public Transport Measures

- 5.5.1 Public transport serving the entire Kwai Chung container port area is mostly reliant on the GMB route no. 87A (Kwai Fong MTR Station to Container Terminal 8) and 87M (Kwai Fong MTR Station to Container Terminal 4) running along and with stops at CPRS. The closest MTR station is at Mei Foo, and there is also a major bus terminus at Mei Foo with a variety of bus and GMB routes to/from other parts of Hong Kong.
- 5.5.2 The access mode choice results from the generation surveys indicate that shuttle bus, GMB, franchised bus and MTR are the major access mode to and from the container port area, when disregarding the last walking trip of the journeys by people who reach the area perimeter by franchised bus and MTR. The total demand for connecting public transport trips generated by the proposed development at Sites A2/A3 in the peak hour is about 408 ped/hr.
- 5.5.3 Similar to the discussion in **Para 3.5.3**, the demand for public transport was deemed more capably and flexibly served by shuttle bus services or a combination of shuttle bus/GMB services. Franchised buses would also be a practical option but it remains to be seen whether franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area.

5.6 Re-provision of Displaced Sites

- 5.6.1 Part of Sites A2/A3 is currently S.T.T. sites for goods vehicle parking and container consolidation uses, but will be displaced from the current location if Sites A2/A3 were to be used for the proposed logistics development. Their re-provision in the container port area will be essential, as based on the understanding of the operator and user characteristics for these land uses, their proximity to the container port area is very important.
- 5.6.2 On-street parking has been observed on the roads of the Kwai Chung container port area. These on-street parking would be included in the planning of re-provision of goods vehicle parking sites in the container port area as well.
- 5.6.3 Utilization of existing goods vehicle parking sites and container consolidation sites at selected S.T.T. sites had been surveyed. The survey results indicate that these S.T.T. sites have utilized about 60 – 95% of their site area. Therefore, some of the re-provision of existing goods vehicle parking and container consolidation sites in the long-term may be able to achieve by raising the utilization rate of the other S.T.T. sites in the container port area.
- 5.6.4 When the potential barging site at Stonecutters Island was first considered in this traffic study, an area of 85,500m² was planned for the development. The potential barging site has since then recommended to have an area of 67,500m² only, and therefore the area of 18,000m² remaining is available for the re-provision of goods vehicle parking and container storage uses in Kwai Chung.
- 5.6.5 In conclusion, by raising the utilization rate of the other S.T.T. sites and utilizing the remaining area at Stonecutters Island, there should be adequate remaining capacity in the port area that could be used for re-provisioning of the goods vehicle parking and container storage uses displaced by the proposed development at Sites A2/A3.

5.7 Noise Review

5.7.1 According to the estimate, the road traffic noise contribution during AM peak, PM peak and logistic peak operation period at the measurement locations on major roads and at noise sensitive receivers (NSRs), which is sited further away from major roads, would be less than 1dB(A). Therefore, no noise mitigation measures are considered necessary in this study.

5.8 Summary

5.8.1 Recommendation for the proposed logistics development at Sites A2/A3 includes:

- Maximum GFA of 106,250m² and a plot ratio of 2.76;
- Proposed road improvement Scheme B – Construction of free-flow lane at CP R/A 4, and construction of new exit slip road and merging taper to Kwai Chung Road;
- Proposed road improvement Scheme C – Construction of free-flow lane at CP R/A 5;
- Proposed road improvement Scheme D – New Slip Road from Mei Foo Roundabout to Future Road (Road A) between Sites A2 and A3;
- Proposed road improvement Scheme E – New Flyover at CP R/A 5;
- Proposed road improvement Scheme F – New Southbound Flyover at CP R/A 6;
- Proposed pedestrian scheme: Footbridge between Mei Ching Road and Lai Chi Kok Park;
- Proposed pedestrian scheme: Pedestrian Link between Lai Chi Kok Bridge and Lai Chi Kok Park;
- Additional public transport demands to be provided in the form of shuttle buses (by operator or property management of the future logistics development), GMB and/or franchised buses); and
- Goods vehicle parking and container storage uses displaced by development to be re-provisioned in sites within KTCT by raising utilization rates at other S.T.T. sites and utilizing other sites.

6. KWAI CHUNG SITE C

6.1 Short-term Road Improvement Schemes

6.1.1 Site C is located north of Stonecutters Island and bounded by Mei Ching Road, Container Port Road South, Hing Wah Street West and the West Kowloon Highway. As stated in **Para.2.4.1**, capacity issues are expected to be present in some of the junctions in Kwai Chung by 2016 before Site C are proposed to be developed, due to general traffic growth in the overall background condition. Therefore, some short-term improvement schemes will be required in the area disregard the developing status of Site C.

6.1.2 The distribution patterns of logistics traffic from and to Site C are illustrated in **Figure 6.1-6.2**.

6.1.3 The short-term schemes derived would be focusing on local junction widening which could be implemented in the short run (i.e. by the year 2016). Large-scale modification or construction works for highway structures are not considered.

Proposed Improvement Scheme B – Construction of free-flow lane at CP R/A 4, and construction of new exit slip road and merging taper to Kwai Chung Road

6.1.4 As aforementioned in **Para 5.1.4 to 5.1.6**, the new exit slip road proposed for Scheme B will divert the Kwai Chung Road-bound traffic away to CP R/A 4, in order to relieve the traffic condition at CP R/A 3.

Proposed Improvement Scheme C – Construction of free-flow lane at CP R/A 5

6.1.5 As aforementioned in **Para 5.1.7**, Scheme C proposed for a free-flow left-turn lane at CP R/A 5 from CPRS SB to Ching Cheung Road EB.

6.2 Proposed Long-term Road Improvement Schemes

6.2.1 Similar to the long-term improvement schemes for Sites A2/A3 as discussed in **Section 5.2**, the focus on the long-term improvement schemes for Site C would be on CP R/A 5 and 6 and the roads in proximity.

*Proposed Improvement Scheme E – New Flyover at CP R/A 5 and
Proposed Improvement Scheme F – New Southbound Flyover at CP R/A 6*

6.2.2 As aforementioned in **Para 5.2.3 to 5.2.9**, Scheme E and F proposed for a new flyover at CP R/A 5 and CP R/A 6, respectively, to create a continuous route for southbound traffic along CPRS and therefore allow traffic coming from the north to bypass the busy roundabouts.

Proposed Improvement Scheme G – Distributor Road in Site C connecting Mei Ching Road and CP R/A 7A

6.2.3 Due to the sheer size of Site C, any development to be proposed on Site C is not likely to be a single standalone development, and therefore the vehicular accesses for the future developments in Site C will need an additional local collector/distributor road,

instead of directly accessed from/off CPRS, Mei Ching Road or Hing Wah Street West. This road, named Scheme G in this Study, is primarily oriented to providing accessibility and capacity specifically for the potential traffic to Site C.

- 6.2.4 This scheme adopts the alignment of the proposed road within Site C connecting Mei Ching Road on the north and CP R/A 7A on the south, as proposed in the HATS Stage 2B study. There is no assigned name for this road under HATS Stage 2B study, and it is named Road B here.
- 6.2.5 At CP R/A 7A, a free-flow left-turn lane will be provided for Hing Wah Street West EB approach to Road B NB approach. The free-flow lane will facilitate the turning in of any future development traffic into Site C, and lessen the impacts on CP R/A 7A. The connection of Road B at Mei Ching Road will be left-in/left-out.
- 6.2.6 In conclusion, the package of road improvement schemes that is necessary to sustain the new logistics development at Site C and the potential Stonecutters Island barging site in the long term will be Schemes B, C, E, F and G.
- 6.2.7 An overview of the abovementioned proposed road improvement scheme is illustrated in **Figure 6.3**, and a more detailed look of the proposed improvement schemes B, C, E, F and G can be found in **Appendix A (A5, A6, A8, A9, A10)**.

6.3 Recommended Plot Size and Plot Ratio

- 6.3.1 From the junction capacity assessment results, the maximum allowable development intensity at Site C with the recommended improvement scheme is estimated. As stated in **Para.3.3.1**, an agreed safety factor of 15% is to be applied to the GFA derived to come up with the final GFA proposed.
- 6.3.2 For the scenario with proposed development at Site C in 2026 and assuming a design road network comprising Schemes B, C, E, F and G, the junction capacity assessment results indicate that the maximum GFA sustainable is 170,000m², after applying the agreed safety factor. That is the top end of the development scale that the package of road improvement schemes can accommodate, and there is no extra development scale at Site A2/A3 that can be accommodated. In other words, developments on Site C and Sites A2/A3 are mutually exclusive, which means that if Site C is developed, Sites A2/A3 would remain as its existing use, and vice versa.
- 6.3.3 Plot ratios of similar sites in the vicinity are adopted for the proposed development. The plot ratio of 2.76, similar to that of Site A1, is adopted for Site C. With a recommended maximum GFA of 170,000m² and a plot ratio of 2.76, the recommended plot size for the proposed development at Site C is 61,600m². The remaining area will be released for other port back-up uses.

6.4 Proposed Pedestrian Schemes

- 6.4.1 As discussed in **Section 5.4**, shortcomings in pedestrian accessibility in connections with the urban areas and public transport interchanges such as Mei Foo in terms of distance and connectivity has been identified in the KTCT.

Footbridge between Mei Ching Road and Lai Chi Kok Park

- 6.4.2 As aforementioned in **Para 5.4.3**, this government's proposal sought to create a shortcut route to and from Mei Foo via Lai Chi Kok Park.

At-grade pedestrian crossing across Hing Wah Street West/Lai Po Road

- 6.4.3 This scheme targets the proposed new logistics development at Site C. The southern boundary of Site C is on Lai Po Road across from the KMB Depot. At this section of the road, the EB and WB carriageways of Lai Po Road are separated by a wide central reserve where the Tsing Sha Highway's structural supports sit on. There is scope to provide pedestrian cautionary crossings across this road as Lai Po Road is much less trafficked as compared with CPRS further north in the port area so there should be very little traffic/pedestrian conflict. Pedestrians could then use Hing Wah Street West towards the footbridge under West Kowloon Highway for accessing developments and public transport services near Hoi Lai Estate, Lai Chi Kok and Cheung Sha Wan.
- 6.4.4 An overview of the proposed pedestrian scheme in Kwai Chung for Site C is illustrated in **Figure 6.3**.

6.5 Public Transport Measures

- 6.5.1 Public transport serving the entire Kwai Chung container port area is mostly reliant on the GMB route no. 87A (Kwai Fong MTR Station to Container Terminal 8) and 87M (Kwai Fong MTR Station to Container Terminal 4) running along and with stops at CPRS. The closest MTR station is at Mei Foo, and there is also a major bus terminus at Mei Foo with a variety of bus and GMB routes to/from other parts of Hong Kong.
- 6.5.2 The access mode choice results from the generation surveys indicate that shuttle bus, GMB, franchised bus and MTR are the major access mode to and from the container port area, when disregarding the last walking trip of the journeys by people who reach the area perimeter by franchised bus and MTR. The total demand for connecting public transport trips generated by the proposed development at Sites A2/A3 in the peak hour is about 652 ped/hr.
- 6.5.3 Similar to the discussion in **Para 3.5.3**, the demand for public transport was deemed more capably and flexibly served by shuttle bus services or a combination of shuttle bus/GMB services. Franchised buses would also be a practical option but it remains to be seen whether franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area.

6.6 Re-provision of Displaced Sites

- 6.6.1 Part of Site C is currently S.T.T. sites for goods vehicle parking and container consolidation uses, but will be displaced from the current location if Site C were to be used for the proposed logistics development. Their re-provision in the container port area will be essential, as based on the understanding of the operator and user characteristics for these land uses, their proximity to the container port area is very important.

- 6.6.2 On-street parking has been observed on the roads of the Kwai Chung container port area. These on-street parking would be included in the planning of re-provision of goods vehicle parking sites in the container port area as well.
- 6.6.3 Utilization of existing goods vehicle parking sites and container consolidation sites at selected S.T.T. sites had been surveyed. The survey results indicate that these S.T.T. sites have utilized about 60 – 95% of their site area. Therefore, some of the re-provision of existing goods vehicle parking and container consolidation sites in the long-term may be able to achieve by raising the utilization rate of the other S.T.T. sites in the container port area. This should provide sufficient remaining capacity in the port area that could be used for re-provisioning of the goods vehicle parking and container storage uses displaced by the proposed development at Site C.
- 6.6.4 When the potential barging site at Stonecutters Island was first considered in this traffic study, an area of 85,500m² was planned for the development. The potential barging site has since then recommended to have an area of 67,500m² only, and therefore the area of 18,000m² remaining is available for the re-provision of goods vehicle parking and container storage uses in Kwai Chung.
- 6.6.5 In the shorter term, during construction of the underground biological treatment plant (BTP) under HATS Stage 2B, the goods vehicle parking and container consolidation sites currently on Site C would be displaced on a temporary basis. Given the limited land supply and availability in the KTCT, there will likely be a shortfall of land in Kwai Chung based on the existing land usage for the re-provision of the entire Site C. Therefore, it is suggested that the HATS construction programme should be suitably worked out, such as by introducing and splitting the construction works by phases in the programme, in order to minimize the impact it has to the parking and container consolidation operation on the existing site.

6.7 Noise Review

- 6.7.1 According to the estimate, the road traffic noise contribution during AM peak, PM peak and logistic peak operation period at the measurement locations on major roads and at noise sensitive receivers (NSRs), which is sited further away from major roads, would be less than 1dB(A). Therefore, no noise mitigation measures are considered necessary in this study.

6.8 Summary

- 6.8.1 Recommendation for the proposed logistics development at Site C includes:
- Maximum GFA of 170,000m² and a plot ratio of 2.76;
 - Proposed road improvement Scheme B – Construction of free-flow lane at CP R/A 4, and construction of new exit slip road and merging taper to Kwai Chung Road;
 - Proposed road improvement Scheme C – Construction of free-flow lane at CP R/A 5;
 - Proposed road improvement Scheme E – New Flyover at CP R/A 5;
 - Proposed road improvement Scheme F – New Southbound Flyover at CP R/A 6;

- Proposed road improvement Scheme G – Distributor Road in Site C connecting Mei Ching Road and CP R/A 7A;
- Proposed pedestrian scheme: Footbridge between Mei Ching Road and Lai Chi Kok Park; and
- Proposed pedestrian scheme: At-grade Pedestrian Crossing across Hing Wah Street West / Lai Po Road.
- Additional public transport demands to be provided in the form of shuttle buses (by operator or property management of the future logistics development), GMB and/or franchised buses); and
- Goods vehicle parking and container storage uses displaced by development to be re-provisioned in sites within KTCT by raising utilization rates at other S.T.T. sites and utilizing other sites.

7. BARGING SITES DEVELOPMENT

7.1 Background

7.1.1 In addition to the logistics sites, two potential barging sites in the KTCT area are also assessed under this traffic study for feasibility from traffic perspective. The barging sites are planned to be located at Stonecutters Island West and Tsing Yi South, respectively. While the barging sites are already included in the LTM for the junction assessments in the previous chapters, the junctions in the vicinity of the barging sites will be focused in this chapter. The locations of the potential barging sites are illustrated in **Figure 1.1**.

7.2 Tsing Yi Barging Site

7.2.1 Junctions in the vicinity of the potential Tsing Yi barging site were assessed with the potential barging site assumed to be in operation by 2026. In addition, it is assumed that TYTL 181 (Site B2) will be fully developed by 2026, along with a design road network which comprises the short-term Improvement Scheme A. The junction capacity assessment result shows that the junctions are in satisfactory performance.

7.2.2 It is concluded that with the implementation of Improvement Scheme A, the addition of the potential Tsing Yi barging site and new logistics development at TYTL 181 (Site B2) will not bring any adverse impact to the surrounding road network from traffic point of view up to the year 2026.

7.3 Stonecutters Island Barging Site

7.3.1 Assuming 106,000m² allowable GFA of logistics development will be built on Sites A2/A3 with a design road network which comprise the package of short-term improvement schemes B and C, along with the long-term Improvement Scheme D, E and F, junctions in the vicinity of the potential Stonecutters Island barging site were assessed with the potential barging site assumed to be in operation by 2026. The junction capacity assessment result shows that the junctions are in satisfactory performance.

7.3.2 In an alternative scenario assuming 170,000m² allowable GFA of logistics development will be built on Site C with a design road network which comprises the package of short-term improvement schemes B and C, along with the long-term Improvement Scheme E, F and G, junctions in the vicinity of the potential Stonecutters Island barging site were assessed with the potential barging site assumed to be in operation by 2026. The junction capacity assessment result shows that the junctions are in satisfactory performance.

7.3.3 It is concluded that with the implementation of the package of improvement schemes, the addition of the potential Stonecutters Island barging site and new logistics development at Sites A2/A3 or Site C will not bring any adverse impact to the surrounding road network from traffic point of view up to the year 2026.

7.3.4 In view of the potential barging sites can be assumed for operation as early as 2016, the long-term improvement schemes in Kwai Chung are not likely to be implemented in time as no new logistics developments are expected to be presented yet by then. The

junctions in the vicinity of the potential Stonecutters Island barging site is re-assessed for the year 2016 with only the short-term improvement schemes of B and C in place, and the results of the junction assessment shows that CP R/A 5 (logistics peak) will be close to capacity at the year 2016.

- 7.3.5 The main contributor causing the traffic capacity issues at CP R/A 5 is traffic from other sources and activities in the port area. The potential barging site-related traffic contribution at CP R/A 5 is minimal and indeed only very lightly affected the performance of that junction.
- 7.3.6 It is concluded that with the implementation of the short-term improvement schemes, the potential barging site in Stonecutters Island will not bring any additional adverse impact to the surrounding road network from traffic point of view up to the year 2016.

8. SUMMARY AND CONCLUSION

8.1 Summary

8.1.1 Transport Department – Transport Planning Division has initiated a traffic study to assess the traffic impacts, formulate practicable traffic improvement measures and design requirements for the proposed long-term logistics sites. MVA Hong Kong Limited (the Consultant) has been appointed by TD to undertake **Agreement No. TD 118/2008 – Traffic Impact Assessment for Long-term Logistics Development in Kwai Tsing Area.**

8.1.2 A series of surveys were carried out in order to ascertain the existing traffic conditions and to identify the traffic patterns. These surveys include the Peak Hour Identification Surveys, the Road Performance Surveys, the Trip Generation Surveys, the Public Transport and Pedestrian Surveys, the Parking Demand Surveys, and an interview survey with logistics vehicle drivers to identify the origin / destination and directional split of the logistics related traffic flows.

8.1.3 The LTM was developed for 2010 (base year), 2016, 2021, 2026 and 2031 (future years).

8.1.4 Based on the traffic forecast of the Reference Scenario, a number of roundabouts in the Kwai Tsing port area (CP R/A 2, CP R/A 3, CP R/A 5 and TY R/A 2) would be overcapacity even before any new logistics developments are introduced.

8.1.5 The following is a summary of the recommendation and findings for the proposed logistics development at Site B2:

- Maximum GFA of 97,200m² and a plot ratio of 4.05;
- Proposed road improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2;
- Proposed pedestrian scheme: “Short-cut” Pedestrian Link between Tsing Yi Hong Wan Road and Tsing Yi Road;
- Demand for public transport was deemed more capably and flexibly served by shuttle bus services or a combination of shuttle bus/GMB services. Franchised buses would also be a practical option but it remains to be seen whether franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area;
- No re-provision of displaced sites needed; and
- No noise mitigation measures are considered necessary in this Study.

8.1.6 The following is a summary of the recommendation and findings for the potential logistics development at Site B3:

- Maximum GFA of 85,000m² and a plot ratio of 4.05;
- Proposed road improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2;
- No additional pedestrian scheme is considered necessary;
- Demand for public transport was deemed more capably and flexibly served by shuttle bus services or a combination of shuttle bus/GMB services. Franchised buses would also be a practical option but it remains to be seen whether

franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area;

- Re-provision of displaced sites may be satisfied by utilizing temporary government sites and other government land to be released in the Tsing Yi area; and
- No noise mitigation measures are considered necessary in this Study.

8.1.7 In addition, improvement schemes recommended for the Tsing Yi area for raising the rate of goods vehicle parking provision for the committed logistics developments at TYTL 180 (Site B1) and TYTL 181 (Site B2), and potential site of B3 are summarized below:

- Proposed road improvement Scheme A – Exclusive free-flow left-turn lane at Tsing Yi R/A 2;
- Proposed road improvement Scheme H – MOC Modification for the Junction of Tsing Yi Road / Tsing Hung Road; and
- Proposed road improvement Scheme I – Exclusive Bypass Left-turn Lanes at Tsing Yi R/A 2.

8.1.8 The following is a summary of the recommendation and findings for the proposed logistics development at Sites A2/A3:

- Maximum GFA of 106,250m² and a plot ratio of 2.76;
- Developments on Sites A2/A3 and Site C are mutually exclusive, which means that if Sites A2/A3 are developed, Site C would remain as its existing use, and vice versa;
- Proposed road improvement Scheme B – Construction of free-flow lane at CP R/A 4, and construction of new exit slip road and merging taper to Kwai Chung Road;
- Proposed road improvement Scheme C – Construction of free-flow lane at CP R/A 5;
- Proposed road improvement Scheme D – New Slip Road from Mei Foo Roundabout to Future Road (Road A) between Sites A2 and A3;
- Proposed road improvement Scheme E – New Flyover at CP R/A 5;
- Proposed road improvement Scheme F – New Southbound Flyover at CP R/A 6;
- Proposed pedestrian scheme: Footbridge between Mei Ching Road and Lai Chi Kok Park;
- Proposed pedestrian scheme: Pedestrian Link between Lai Chi Kok Bridge and Lai Chi Kok Park;
- Demand for public transport was deemed more capably and flexibly served by shuttle bus services or a combination of shuttle bus/GMB services. Franchised buses would also be a practical option but it remains to be seen whether franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area;
- Re-provision of displaced sites may be satisfied by raising the utilization rate of the other S.T.T. sites in the area and utilizing the land originally planned for the Stonecutters Island barging site; and
- No noise mitigation measures are considered necessary in this Study.

8.1.9 The following is a summary of the recommendation and findings for the proposed logistics development at Site C:

- Maximum GFA of 170,000m² and a plot ratio of 2.76;
- Developments on Site C and Sites A2/A3 are mutually exclusive, which means that if Site C is developed, Sites A2/A3 would remain as its existing use, and vice versa;
- Proposed road improvement Scheme B – Construction of free-flow lane at CP R/A 4, and construction of new exit slip road and merging taper to Kwai Chung Road;
- Proposed road improvement Scheme C – Construction of free-flow lane at CP R/A 5;
- Proposed road improvement Scheme E – New Flyover at CP R/A 5;
- Proposed road improvement Scheme F – New Southbound Flyover at CP R/A 6;
- Proposed road improvement Scheme G – Distributor Road in Site C connecting Mei Ching Road and CP R/A 7A;
- Proposed pedestrian scheme: Footbridge between Mei Ching Road and Lai Chi Kok Park;
- Proposed pedestrian scheme: At-grade Pedestrian Crossing across Hing Wah Street West / Lai Po Road;
- Demand for public transport was deemed more capably and flexibly served by shuttle bus services or a combination of shuttle bus/GMB services. Franchised buses would also be a practical option but it remains to be seen whether franchised bus service providers are willing to take on any significant role for providing public transport services in the container port area;
- Re-provision of displaced sites may be satisfied by raising the utilization rate of the other S.T.T. sites in the area and utilizing the land originally planned for the Stonecutters Island barging site;
- The HATS construction programme should be suitably worked out, such as by splitting into phases, in order to minimize the impact it has to the operation on the existing S.T.T. at Site C; and
- No noise mitigation measures are considered necessary in this Study.

8.1.10 Assessment result shows that if improvement Scheme A is implemented at TY R/A 2, then all junctions in the vicinity of the potential Tsing Yi barging site will have satisfactory performances up to the year 2026.

8.1.11 If all short and long-term improvement schemes are implemented in Kwai Chung, all junctions in the vicinity of the potential Stonecutters Island barging site will have satisfactory performances up to the year 2026. If the potential barging site is to be opened by 2016 and only the short-term improvement Schemes B and C are in place, the junctions will have satisfactory performances except the logistics peak of CP R/A 5. The main contributor causing the traffic capacity issues at CP R/A 5 is traffic from other sources and activities in the port area. The potential barging site-related traffic contribution at CP R/A 5 is minimal and indeed only very lightly affected the performance of that junction.

8.1.12 A summary of all proposed improvement schemes for the various development scenarios is shown in **Table 8.1**.

Table 8.1 Potential Logistics Development Requirements Summary

Scenario	New Logistics Development GFA & Plot Ratio (m ²)	Required Road Improvement Scheme #		Proposed Pedestrian Scheme#	Public Transport Requirements	Re-provisioning of Displaced Goods Vehicle Parking/Container Storage
TSING YI						
TYTL 181 (Site B2) ⁽¹⁾	97,200 m ² (Plot Ratio 4.05)	Short-term	A (Appendix A1)	Link between Tsing Yi Hong Wan Rd / Tsing Yi Rd	Additional demands to be served by shuttle buses, GMBs and/or franchised buses	-
Site B3 ⁽²⁾	85,000 m ² (Plot Ratio 4.05)	Short-term	A (Appendix A1)	-		Re-provisioning by means of raising the utilization rate of the other S.T.T. sites in the area and utilizing the other sites
Additional Parking Provision ⁽³⁾	-	Short-term	A (Appendix A1) H (Appendix A8) I (Appendix A9)	-	-	-
KWAI CHUNG						
Sites A2/A3 ^{(4) †}	106,250 m ² (Plot Ratio 2.76)	Short-term	B (Appendix A2) C (Appendix A3)	Footbridge between Mei Ching Rd / Lai Chi Kok Park	Additional demands to be served by shuttle buses, GMBs and/or franchised buses	Re-provisioning by means of raising the utilization rate of the other S.T.T. sites in the area and utilizing the other sites
		Long-term	D (Appendix A4) E (Appendix A5) F (Appendix A6)	Pedestrian Link between Lai Chi Kok Bridge / Lai Chi Kok Park		
Site C ^{(5) †}	170,000 m ² (Plot Ratio 2.76)	Short-term	B (Appendix A2) C (Appendix A3)	Footbridge between Mei Ching Rd / Lai Chi Kok Rd		
		Long-term	E (Appendix A5) F (Appendix A6) G (Appendix A7)	At-grade Crossing at Hing Wah St W / Lai Po Rd		

(1) Includes the development of potential Tsing Yi barging site (48,700 m² Area) along with Site B2.

(2) Includes the development of TYTL 181 (Site B2) (97,200 m² GFA) and potential Tsing Yi barging site (48,700 m² Area), along with potential Site B3.

(3) Includes the development of TYTL 181 (Site B2) (97,200 m² GFA), potential Site B3 (85,000 m² GFA) and potential Tsing Yi barging site (48,700 m² Area), along with additional parking provision for Sites B1/B2/B3.

(4) Includes the development of potential Stonecutters Island barging site (67,500 m² Area) along with Sites A2/A3.

(5) Includes the development of potential Stonecutters Island barging site (67,500 m² Area) along with Site C.

† Development at Sites A2/A3 and development at Site C are mutually exclusive, which means if Sites A2/A3 are developed, Site C will not be developed as a result; and vice versa.

The proposed road improvement schemes and pedestrian schemes are recommended to be completed before the completion of the corresponding new development.

Details of proposed improvement schemes: A: Exclusive free-flow left -turn lane at Tsing Yi R/A 2 - keep the traffic of Tsing Yi Road SB to Tsing Yi Hong Wan Road away from entering TY R/A 2
B: Widening at CP R/A 4 and construction of new exit slip road and merging taper to Kwai Chung Rd – divert Kwai Chung Rd-bound traffic away from CP R/A 3
C: Free-flow lane at CP R/A 5 from Container Port Road South to Ching Cheung Road – keep the traffic of CPRS SB to Ching Cheung Rd away from CP R/A5
D: New slip road from Mei Foo Roundabout to future road between Sites A2 and A3 – provide new access route to Sites A2/A3
E: Northwestbound right-turning flyover at CP R/A 5 – divert CPRS SB traffic away from CP R/A 5
F: Southbound flyover at CP R/A 6 – divert CPRS SB traffic away from CP R/A 6
G: Distributor road in Site C connecting Mei Ching Road and CP R/A 7A – provide new access road for Site C
H: MOC modification and widening of the junction of Tsing Hung Road / Tsing Yi Road – increase capacity at the junction of Tsing Hung Road / Tsing Yi Road
I: Exclusive bypass left-turn lane at Tsing Yi R/A 2 – divert some traffic to exclusive bypass lanes to increase the capacity at Tsing Yi R/A 2