Appendix III

Traffic Impact Assessment

S16 Planning Application for

Proposed Composite Development of Harbourside HQ

at 8 Lam Chak Street, Kowloon – N.K.I.L. 6215

Revised TIA Report

June 2026

CTA Consultants Limited
志達顧問有限公司

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDIX

1. INTRODUCTION

1.1 Background

1.1.1 CTA Consultants Limited was commissioned as the traffic consultant to prepare a Traffic Impact Assessment Report for proposed composite development of Harbourside HQ at 8 Lam Chak Street, Kowloon – N.K.I.L. 6215 (hereafter called "proposed development").

1.1.2 The site is currently Harbourside HQ, a commercial building and is planned to demolish and redevelop into composite development of residential and commercial uses.

1.1.3 The location of the proposed development is shown in **Figure 1.1**.

1.2 Study Objectives

1.2.1 The main objectives of this study are as follows:

- To assess the existing traffic conditions in the vicinity of the proposed development;
- To forecast traffic demands on the adjacent road network in the design year;
- To estimate the likely traffic generated by the proposed development;
- To assess the impacts of traffic generated by the proposed development on the adjacent road network; and
- To recommend improvement measures, if necessary, to alleviate any traffic problems on the road network

2. THE DEVELOPMENT

2.1 Site Location

2.1.1 The proposed development is located at 8 Lam Chak Street, Kowloon – N.K.I.L. 6215, which is bounded by Kai Hing Road to the east, Lam Chak Street to the southwest, Cheung Yip Street to the west and Pacific Trade Centre to the north as shown in **Figure 1.1**.

2.1.2 The site is currently Harbourside HQ, a commercial building and is planned to demolish and redevelop into composite development of residential and commercial uses.

2.2 Proposed Development

2.2.1 Development parameters of the proposed development are summarized in **Table 2.1**.

Table 2.1 Development Parameters of the Proposed Development

Site Location	8 Lam Chak Street, Kowloon – N.K.I.L. 6215 (existing Harbourside HQ)
Proposed Use	Residential
Site Area	6,541m^2
No. of Towers	2
Number of Units	Flat size <40m^2: 498 nos. 40m^2<Flat size ≤70m^2: 642 nos. **Total: 1,140 nos.**
Commercial	3,270.5 m^2

2.2.2 It is anticipated that the proposed development will be completed by 2033 tentatively. Therefore, design year 2036 (i.e. 3 years after the planned commencement year of the proposed development) is adopted assessments.

2.3 Proposed Access Road and Vehicular Access

2.3.1 Similar to the vehicular access of the existing site, the vehicular access of the proposed development will be located at Kai Hing Road. Location of the vehicular access is

shown diagrammatically in **Figure 2.1 (Rev B)**. The width of the vehicular access will be 7.3m. Swept path analysis demonstrates it is feasible to maneuver HGV in/out the proposed vehicular access is shown in **Figure SP-01 (Rev B)**.

2.4 Internal Transport Facilities Provision

2.4.1 According to the requirements as stipulated under the latest Hong Kong Planning Standards and Guidelines (HKPSG), the proposed development shall provide the following internal transport facilities as summarized in **Table 2.2**.

Table 2.2 Proposed Parking Provision

<table>
<tr><td colspan="2">Development Parameters
No. of Towers: 2
No. of Flats: 1,140
Retail GFA: 3,270.5m²</td><td colspan="7">Parking Requirement</td><td colspan="2">Loading/Unloading Requirement</td></tr>
<tr><td colspan="11">Residential (Total Required)</td></tr>
<tr><td rowspan="3">Average Flat Size (m²)</td><td rowspan="3">No. of Flats</td><td colspan="6">Private Car Parking Space (5m x 2.5m)</td><td rowspan="3" colspan="2">L/UL for Goods Vehicles (HGV: 11m x 3.5m)</td></tr>
<tr><td colspan="5">Residents</td><td>Visitors</td></tr>
<tr><td>GPS 1 car space per 4-7 flats</td><td>R1</td><td>R2</td><td>R3</td><td>GPS x R1 x R2 x R3(1)</td><td>More than 75 units per block should be provided at 5 visitor spaces per block</td></tr>
<tr><td>FS<40</td><td>498</td><td>4-7</td><td>0.5</td><td>1.0</td><td>0.9</td><td>33 to 57</td><td rowspan="2">10</td><td rowspan="5" colspan="2">1 per 800 flats or part thereof, subject to a minimum of 1 bay for each housing block</td></tr>
<tr><td>40<FS≤70</td><td>642</td><td>4-7</td><td>1.2</td><td>1.0</td><td>0.9</td><td>100 to 174</td></tr>
<tr><td>Total</td><td>1,140</td><td>-</td><td>-</td><td>-</td><td>-</td><td colspan="2">143 to 241</td></tr>
<tr><td colspan="2" rowspan="2"></td><td colspan="3">Motorcycle Parking Space (2.4m x 1m)</td><td colspan="3">Bicycle Parking Space</td></tr>
<tr><td colspan="2">1 per 100-150 flats</td><td>8 to 12</td><td>within a 0.5-2km radius of a rail station, 1 bicycle parking space for every 15 flats with flat size smaller than 70m²</td><td>76</td><td>2</td></tr>
</table>

<table>
<tr><th colspan="2">Development Parameters
No. of Towers: 2
No. of Flats: 1,140
Retail GFA: 3,270.5m²</th><th colspan="3">Parking Requirement</th><th colspan="2">Loading/Unloading Requirement</th></tr>
<tr><td colspan="7">Non-Residential (Total Required)</td></tr>
<tr><td>Use</td><td>GFA</td><td colspan="2">Private Car Parking Space (5m x 2.5m)</td><td colspan="2">L/UL for Goods Vehicles</td></tr>
<tr><td rowspan="3">Retail</td><td rowspan="3">GFA: 3,270.5m²</td><td colspan="2">1 car space per 150 - 300m² GFA</td><td>11 to 22</td><td rowspan="3">1 loading/ unloading bay for goods vehicles for every 800 to 1,200m², or part thereof, GFA</td><td rowspan="3">3 to 5</td></tr>
<tr><td colspan="2">Motorcycle Parking Space (2.4m x 1m)</td></tr>
<tr><td colspan="2">5 to 10% of Total Provision for Private Cars</td><td>1 to 3</td></tr>
</table>

Total (Residential + Non-residential)		Private Car Parking Space[(2)] (5m x 2.5m)	Bicycle Parking Space	Motorcycle Parking Space (2.4m x 1m)	L/UL for LGV (7m x 3.5m)	L/UL for HGV 11m x 3.5m)
Total Required	Residential	143 to 241	76	8 to 12	-	2
	Non-residential	11 to 22	-	1 to 3	2 to 3	1 to 2
	Total	154 to 263	76	9 to 15	2 to 3	3 to 4
Total Proposed	**Residential**	**241**	**76**	**12**	**-**	**2**
	Non-residential	**22**	**-**	**3**	**3**	**2**
	Total	**263**	**76**	**15**	**3**	**4**

Notes:
(1) GPS = Global Parking Standard; R1 = Demand Adjustment Ratio; R2 = Accessibility Adjustment Ratio; R3 = Development Intensity Adjustment Ratio.
(2) Including minimum 4 accessible car parking spaces for 251-350 car parking spaces.

2.5 Public Transport Services in the Vicinity

2.5.1 Numerous road-based public transport services are provided in vicinity of the proposed development. Details of the current services of franchised buses and GMB routes are listed in **Table 2.3 and Figure 2.2**. It is revealed that the site is well-served by public transport services in the vicinity.

Table 2.3 Road-Based Public Transport Services in the Vicinity

Service	Route	Origin – Destination
Franchised Bus	5R(1)	Kwun Tong (APM) - Kai Tak Cruise Terminal
	14X(1)	Yau Tong (Shung Tak Wai) - Tsim Sha Tsui
	15A	Ping Tin - Tsz Wan Shan (north)
	16P	Kwun Tong Ferry - Mong Kok (Park Avenue)
	20A	High Speed Rail West Kowloon Station - Kai Tak Cruise Terminal
	22	Kowloon Tong (Festival Walk) - Kai Tak Cruise Terminal
	22M(1)	To Kwa Wan - Kai Tak Cruise Terminal
	38P	Ping Tin - Kwai Shing (Central)
	55	Kwun Tong Ferry - Tuen Mun (Ching Tin and Wo Tin)
	234D	Kwun Tong (Tsui Ping North Estate) - Tsing Lung Tau
	258X	Kwun Tong Ferry - Tuen Mun (Po Tin Estate)
	259X	Kwun Tong Ferry - Tuen Mun (Lung Mun Oasis)
	268P	Kwun Tong Ferry - Long Ping Station
	269S	Kwun Tong Ferry - Tin Shui Wai Town Centre
	797(1)	LOHAS Park - San Po Kong
	E22S	Tseung Kwan O (Po Lam) - Tung Chung (Mun Tung Estate)
	X6C	Mei Foo - Hong Kong Children's Hospital
GMB	22A	Lok Wah Estate - Kwun Tong Ferry
	68(1)	Choi Wan Estate - Kowloon Bay
	86(1)	Cruise Terminal - Kowloon Bay (Telford Garden)
	88A(1)	Hong Kong Children's Hospital - Wong Tai Sin Station
	90A	Hong Kong Children's Hospital - Yau Tong (Yau Lai Estate)
	90B	Hong Kong Children's Hospital - Sau Mau Ping

Notes:
(1) Circular route.

3. THE EXISTING TRAFFIC CONDITIONS

3.1 Critical Junctions

3.1.1 As shown in **Figure 3.1 (Rev B)**, 8 junctions were identified to be critical for assessment of traffic impact due to the proposed development. They are listed in **Table 3.1** and their existing junction layout arrangements are shown in **Figures 3.2** to **3.9** respectively.

Table 3.1 Identified Critical Junctions

Ref.	Junction	Method of Control	Figure No.
A	Shun Yip Street/ Wai Yip Street	Signal	**3.2**
B	Hoi Bun Road/ Shun Yip Street	Signal	**3.3**
C	Kai Hing Road/ Hoi Bun Road	Signal	**3.4**
D	Hoi Bun Road/ Wang Chiu Road/ Cheung Yip Street	Signal	**3.5**
F	Cheung Yip Street/ Shing Cheong Road	Signal	**3.6**
G	Wang Chiu Road/ Sheung Yee Road	Signal	**3.7**
H	Shing Cheong Road/ Kai Tak Bridge Road	Roundabout	**3.8**
I	Shing Fung Road/Kai Tak Bridge Road	Signal	**3.9**

3.1.2 In order to establish the existing traffic condition in the above-mentioned critical junctions, traffic survey in form of manual classified count was conducted during the AM and PM peak periods (7:30am to 9:30am and 5:00pm to 7:00pm) on a typical weekday, 6 June 2025. Analysis of the existing traffic data indicates that the AM and PM peak hour flows occurred from 8:15am to 9:15am and 5:30pm to 6:30pm respectively. The existing traffic flows is presented in **Figure 3.10**.

3.1.3 Central Kowloon Bypass (Yau Ma Tei Section) was commissioned in December 2025. It is an alternative express route, alleviating the traffic congestion of the existing major east-west transport corridors in central Kowloon. It is noted that the Central Kowloon Bypass Yau Ma Tei Section) was not opened at the time of traffic survey.

3.1.4 Existing operational performance of the identified critical junctions and road links were assessed. The results are summarized in **Table 3.2**, **Table 3.3** and the junction calculation sheets are attached in **Appendix A**.

Table 3.2 Junction Performance of Identified Critical Junctions in Year 2025

Junction	Junction Location	Method of Control	Year 2025 RC(1)/RFC(2)	
			AM Peak	PM Peak
A	Shun Yip Street/ Wai Yip Street	Signal	74%	66%
B	Hoi Bun Road/ Shun Yip Street	Signal	96%	58%
C	Kai Hing Road/ Hoi Bun Road	Signal	>100%	>100%
D	Hoi Bun Road/ Wang Chiu Road/ Cheung Yip Street	Signal	33%	51%
F	Cheung Yip Street/ Shing Cheong Road	Signal	>100%	>100%
G	Wang Chiu Road/ Sheung Yee Road	Signal	26%	27%
H	Shing Cheong Road/ Kai Tak Bridge Road	Roundabout	0.19	0.19
I	Shing Fung Road/Kai Tak Bridge Road	Signal	>100%	>100%

Note:
(1) RC = Reserve Capacity for Signalized Junction
RFC = Ratio of Flow to Capacity for Priority Junction

3.1.5 The assessment results in **Table 3.2** indicate that all critical junctions are at present operating within their capacities during peak hours.

4. THE FUTURE TRAFFIC CONDITIONS

4.1 Design Year

4.1.1 The proposed development is anticipated to be completed by year 2033 tentatively. Year 2036 (i.e. 3 years after completion) is therefore adopted as the design year for assessment purpose.

4.2 Future Road Network

4.2.1 It is understood that few road works are planned and currently under construction in Kowloon Bay and Kai Tak Development Area.

4.2.2 The Kai Tak Development Area spanned a total planning area of over 320 hectares, covering a mix of community, housing, business, tourism and infrastructural uses.

4.2.3 The Trunk Road T2 (Kai Tak to Cha Kwo Ling) connects CKR to the west and the main tunnel of the Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) to the east, anticipated to be completed in year 2026.

4.2.4 The Smart and Green Mass Transit System in Kai Tak is about 3.5 km mass transit system in Kai Tak. It serves as a light and green feeder service to nearby railway station within the area to strengthen connections among the residential and commercial developments, facilities focused on tourism, culture and recreation, sports and the community within the area, as well as the connection with the railway network, anticipated to be completed in year 2031.

4.3 Planned Junction Layout under Planned Project

4.3.1 Junction Hoi Bun Road/ Shun Yip Street (B), Junction Hoi Bun Road/ Wang Chiu Road/ Cheung Yip Street (D), Junction Wang Chiu Road/ Sheung Yee Road (G) and will be modified under KBAA Project and the details are presented in **Table 4.1**, **Figure 4.1** to **Figure 4.3** respectively. Junction Shing Cheong Road/ Kai Tak Bridge Road (H) will be modified by CEDD and presented in **Figure 4.4**. It is anticipated that

all improvement works would be completed before 2033 (the commissioned year of the proposed development), hence it is assumed that the planned junction layouts would be in place for reference and design years for the assessments.

Table 4.1 Planned Junction Layouts under Planned Development

Ref.	Junction	Detail	Anticipated Completion Year
B	Hoi Bun Road/ Shun Yip Street	As shown in **Figure 4.1**	2031
D	Hoi Bun Road/ Wang Chiu Road/ Cheung Yip Street	As shown in **Figure 4.2**	2031
G	Wang Chiu Road/ Sheung Yee Road	As shown in **Figure 4.3**	2031
H	Shing Cheong Road/ Kai Tak Bridge Road	As shown in **Figure 4.4**	2026

4.4 Traffic Generations and Attractions of Proposed Development

4.4.1 The site is existing Harbourside HQ, a grade A office building currently in operation. The trips of the traffic generation and attraction of existing use has been made reference to the trip generation rates as stipulated in Volume 1 Chapter 3 Appendix D Table 1 of the latest T.P.D.M. published by Transport Department summarized in **Table 4.2**.

Table 4.2 Traffic Generation and Attraction of Existing Use

Existing Use	Unit	AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Commercial (~65,000m²)	pcu/hr/100m²	0.2296	0.2434	0.31	0.3563
	pcu/hr	111	160	103	77

4.4.2 To estimate the traffic generation and attraction of the proposed development, reference has been made to the trip generation rates as stipulated in Volume 1 Chapter 3 Appendix D Table 1 of the latest T.P.D.M. published by Transport Department. The adopted trip rates are summarized in **Table 4.3**.

Table 4.3 Trip Rates of Proposed Development

Development Parameters	Unit	AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Residential	pcu/hr/flat	0.0718	0.0425	0.0286	0.0370
Retail	pcu/hr/100m^2	0.2296	0.2434	0.3100	0.3563

4.4.3 Based on **Table 2.1** and **Table 4.3**, the estimated traffic generation and attraction due to the proposed development are summarized in **Table 4.4**.

Table 4.4 Estimated Traffic Generation and Attraction of Proposed Development

Development Parameters		AM Peak		PM Peak	
		Generation (pcu/hr)	Attraction (pcu/hr)	Generation (pcu/hr)	Attraction (pcu/hr)
Residential	1,140 units	82	49	33	43
Retail	3,270.5m^2	8	8	11	12
Total	**-**	**90**	**57**	**44**	**55**

4.4.4 It is anticipated that the proposed development would generate and attract 90 pcu/hr and 57 pcu/hr during AM peak hour respectively, and generate and attract 44 pcu/hr and 55 pcu/hr during PM peak hour respectively.

4.4.5 Based on the overall traffic generation listed in **Table 4.2** and **Table 4.4**, difference of the trip generation and attraction between the existing use and the proposed development is summarized in **Table 4.5**.

Table 4.5 Difference of Traffic Generation and Attraction between Existing Use and Proposed Development

Development Parameters	AM Peak		PM Peak	
	Generation (pcu/hr)	Attraction (pcu/hr)	Generation (pcu/hr)	Attraction (pcu/hr)
Existing Use [A]	111	160	103	77
Proposed Development [B]	90	57	44	55
Net Difference [B] – [A]	-21 (say -20)	-103 (say -100)	-59 (say -60)	-22 (say -20)

4.4.6 Comparing with the existing commercial use, it is anticipated that the proposed development would generate and attract -21 pcu/hr and -103 pcu/hr during AM peak hour respectively, and generate and attract -59 pcu/hr and -22 pcu/hr during PM peak hour respectively.

4.5 Reference Traffic Flows

4.5.1 Due to the changes in road network in the coming years mentioned in **Section 4.2**, the future traffic flows cannot simply forecasted by growth factor. In view of the reduction of traffic flows to the adjacent road network due to the proposed development and the complexity of the traffic modelling due to the future road network, reference traffic flows of this TIA for 2036 has made reference to 2036 design traffic flows of the recent approved planning application (approved in 2025) for the Proposed Minor Relaxation of PR and BH Restrictions for Permitted Private Housing Development with Proposed Eating Place, Shop and Services and Social Welfare Facilities at Kai Tak Area 3E Sites 1 and 2 by CEDD (adjacent site of the proposed development).

4.5.2 2036 design traffic flows of the abovementioned study has been adopted as 2036 reference traffic flows of this TIA and presented diagrammatically in **Figure 4.5**.

4.6 Design Traffic Flows

4.6.1 The future traffic generations of the proposed development were then assigned onto the road network and superimposed onto the 2036 reference traffic flows (without proposed development) to derive the 2036 design traffic forecasts (with proposed development).

2036 Design Traffic Flows (With Proposed Development) = 2036 Reference Traffic Flows (Without Proposed Development) + Proposed Development Traffic Flows

4.6.2 Year 2036 development traffic flow attraction and generation, and design traffic flows (with proposed development) are shown in **Figure 4.6**, **Figure 4.7 (Rev A)** and **Figure 4.8** respectively.

5. TRAFFIC IMPACT ASSESSMENT

5.1 Operational Assessment

5.1.1 To assess the potential traffic impact due to the proposed development, capacity analysis of the identified critical junction and road links for both reference (without proposed development) and design scenarios (with proposed development) in year 2036 were carried out. The results are summarized in **Table 5.1**, **Table 5.2** and the junction calculation sheets are attached in **Appendix A**.

Table 5.1 Junction Performance of Identified Critical Junctions in Year 2036 (With and Without Proposed Development)

Ref.	Junction	Method of Control	Year 2036 RC/RFC (1)			
			Reference Scenario (Without Proposed Development)		Design Scenario (With Proposed Development)	
			AM Peak	PM Peak	AM Peak	PM Peak
A	Shun Yip Street/ Wai Yip Street	Signal	65%	81%	66%	84%
B(2)	Hoi Bun Road/ Shun Yip Street	Signal	58%	72%	59%	75%
C	Kai Hing Road/ Hoi Bun Road	Signal	27%	74%	28%	80%
D(2)	Hoi Bun Road/ Wang Chiu Road/ Cheung Yip Street	Signal	16%	16%	22%	18%
F	Cheung Yip Street/ Shing Cheong Road	Signal	67%	43%	67%	44%
G(2)	Wang Chiu Road/ Sheung Yee Road	Signal	16%	15%	18%	17%
H(2)	Shing Cheong Road/ Kai Tak Bridge Road	Roundabout	0.65	0.59	0.65	0.59
I	Shing Fung Road/Kai Tak Bridge Road	Signal	16%	16%	16%	16%

Notes:
(1) RC = Reserve Capacity for Signalized Junction
RFC = Ratio of Flow to Capacity for Priority Junction
(2) Reference has been made to the planned junction improvement works mentioned in **Section 4.5**.

5.1.2 The assessment results in **Table 5.1** revealed that all critical junctions would still operate within their capacities in both reference scenario (without proposed development) and design scenario (with proposed development) in 2036 during the peak hours.

5.1.3 Queue length assessments of the critical signalized junctions are carried out for both reference scenario (without proposed development) and design scenario (with proposed development) in year 2036. The results are summarized in **Table 5.2** and **Table 5.3** respectively.

Table 5.2 Average Queue Length of Identified Critical Signalized Junctions in Year 2036 - Without Proposed Development

Ref	Junction	Direction	Length of Road Segment (m)	Year 2036 Reference scenario (Without Proposed Development) Queue Length (m)	
				AM Peak Hour	PM Peak Hour
A	Wai Yip Street/ Shun Yip Street	Wai Yip Street (EB)	60	55	55
		Wai Yip Street WB (ST)	300	41	47
		Shun Yip Street SB (LT & RT)	50	39	46
B	Ho Bun Road / Shun Yip Street	Ho Bun Road WB (RT)	90	41	85
		Ho Bun Road WB (ST)	90	55	80
		Ho Bun Road EB (LT & ST)	80	57	76
C	Kai Hing Street / Hoi Bun Road	Hoi Bun Road EB (ST)	150	59	53
		Hoi Bun Road WB (ST)	60	41	37
		Kai Hing Road NB (LT & RT)	150	33	26
D	Wang Chiu Road / Hoi Bun Road / Cheung Yip Street	Wang Chiu Road EB (ST & RT)	195	66	62
		Hoi Bun Road WB (ST)	130	34	45
		Hoi Bun Road WB (LT)	130	31	25
		Cheung Yip Street NB (LT)	180	62	57
		Cheung Yip Street NB (RT)	180	53	51
F	Cheung Yip Street/ Shing Cheong Road	Shing Cheong Road EB (LT)	250	56	69
		Shing Cheong Road EB (RT)	250	11	32

Ref	Junction	Direction	Length of Road Segment (m)	Year 2036 Reference scenario (Without Proposed Development) Queue Length (m)	
				AM Peak Hour	PM Peak Hour
		Cheung Yip Street NB (LT & ST)	25	12	**37**
		Cheung Yip Street SB (RT & ST)	80	55	73
G	Wang Chiu Road / Sheung Yee Road	Sheung Yee Road EB (LT & ST & RT)	90	45	58
		Wang Chiu Road NB (ST)	100	45	57
		Wang Chiu Road NB (RT)	100	47	58
		Wang Chiu Road SB (LT & ST)	80	51	41
		Sheung Yee Road WB (LT & RT)	40	31	32
I	Shing Fung Road/Kai Tak Bridge Road	Shing Fung Road WB (ST)	130	25	15
		Shing Fung Road WB (RT)	130	27	20
		Kai Tak Bridge Road SB (LT)	300	21	16
		Kai Tak Bridge Road SB (RT)	300	15	14
		Shing Fung Road EB (LT & ST)	170	21	18

Table 5.3 Average Queue Length of Identified Critical Signalized Junctions in Year 2036 - With Proposed Development

Ref	Junction	Direction	Length of Road Segment (m)	Year 2036 Design Scenario (With Proposed Development) Queue Length (m)	
				AM Peak Hour	PM Peak Hour
A	Wai Yip Street/ Shun Yip Street	Wai Yip Street (EB)	60	55	55
		Wai Yip Street WB (ST)	300	41	47
		Shun Yip Street SB (LT & RT)	50	39	45
B	Ho Bun Road / Shun Yip Street	Ho Bun Road WB (RT)	90	41	82
		Ho Bun Road WB (ST)	90	54	76
		Ho Bun Road EB (LT & ST)	80	56	74
C	Kai Hing Street / Hoi Bun Road	Hoi Bun Road EB (ST)	150	59	51
		Hoi Bun Road WB (ST)	60	39	36
		Kai Hing Road NB (LT & RT)	150	32	22
D	Wang Chiu Road / Hoi Bun Road / Cheung Yip Street	Wang Chiu Road EB (ST & RT)	195	64	61
		Hoi Bun Road WB (ST)	130	32	42
		Hoi Bun Road WB (LT)	130	29	23
		Cheung Yip Street NB (LT)	180	59	56
		Cheung Yip Street NB (RT)	180	52	50
F	Cheung Yip Street/ Shing Cheong Road	Shing Cheong Road EB (LT)	250	56	68
		Shing Cheong Road EB (RT)	250	11	30

Ref	Junction	Direction	Length of Road Segment (m)	Year 2036 Design Scenario (With Proposed Development) Queue Length (m)	
				AM Peak Hour	PM Peak Hour
		Cheung Yip Street NB (LT & ST)	25	12	**37**
		Cheung Yip Street SB (RT & ST)	80	55	71
G	Wang Chiu Road / Sheung Yee Road	Sheung Yee Road EB (LT & ST & RT)	90	44	57
		Wang Chiu Road NB (ST)	100	45	57
		Wang Chiu Road NB (RT)	100	46	56
		Wang Chiu Road SB (LT & ST)	80	49	41
		Sheung Yee Road WB (LT & RT)	40	31	32
I	Shing Fung Road/Kai Tak Bridge Road	Shing Fung Road WB (ST)	130	25	15
		Shing Fung Road WB (RT)	130	27	20
		Kai Tak Bridge Road SB (LT)	300	21	16
		Kai Tak Bridge Road SB (RT)	300	15	14
		Shing Fung Road EB (LT & ST)	170	21	18

5.1.4 **Table 5.2** and **Table 5.3** revealed that the queue length of the critical junction in both reference scenario (without proposed development) and design scenario (with proposed development) in 2036 during the peak hours will be within their available length of road segment, except the road link at Junction F Cheung Yip Street NB (RT & ST) during PM peak hour in both reference scenario (without proposed development) and design scenario (with proposed development). Queue lengths at these junctions could be more or less be cleared shortly.

6. PUBLIC TRANSPORT ASSESSMENT

6.1 Public Transport Demand in Year 2036

6.1.1 Reference is made to the modal split from Census 2021 published by Census and Statistics Department as shown in **Table 6.1** and **Table 6.2** to derive the estimated public transport demand due to the proposed development.

Table 6.1 Working Population for Main Mode of Transport to Place of Work in Kwun Tong Area

Mode	No. of Persons(1)	%
MTR (Local line)	99,580	43.2%
Bus	68,140	29.6%
Walk	24,659	10.7%
Private car	7,322	3.2%
PLB	19,054	8.3%
Company bus/Van	5,781	2.5%
Taxi	1,844	0.8%
Residential Service	1,597	0.7%
Ferry	429	0.2%
Others	1,943	0.8%
Total	**230,349**	**100%**

Note:
(1) From Census 2021 Table C204.

Table 6.2 Working District of Working Population in Kwun Tong

Location	%
Work in the same district	29.2%
Hong Kong Island	26.0%
Kowloon	25.8%
Work in another district (New Towns)	15.2%
Work in another district (Other areas in the New Territories)	3.9%
Total	**100%**

Note:
(1) From Census 2021 Table C204.

6.1.2 The calculation of peak hour trips for public transport services is summarized in **Table 6.3**.

Table 6.3 Calculation of Peak Hour Trips of Public Transport Services

Calculation	Results
No. of Flats	1,140
Average household size	2.7 ppl/unit(1)
Total Population	~3,078
Trip Rate per Person	1.69(2)
Daily trips generated from proposed development	= 3,192 ppl x 1.69 = 5,202 passengers
% of Daily trips in peak hours	AM Peak Hour: 13%(3) PM Peak Hour: 14%(3)
Peak hour Passenger trips	AM Peak Hour: = 5,202 passengers x 13% = 677 passengers/hr PM Peak Hour: = 5,202 passengers x 14% = 729 passengers/hr

Notes:
(1) Extracted from E2.2 of Travel Characteristics Survey (TCS) Report 2022.
(2) Extracted from Table E.2 of TCS Report 2022.
(3) Extracted from E2.13 of TCS Report 2022.

6.1.3 The calculation of peak hour trips for public transport services by mode is summarized in **Table 6.4**. With consideration that the site is located at a distance from nearby MTR stations, transport mode for MTR, bus and PLB are taken into consideration in calculation of public transport service for the proposed development.

6.1.4 Since bus and PLB of the surveyed bus stops for public transport assessment have similar destination groups, passengers tend to board the public transport mode whichever arrive first, therefore bus and PLB are assessed as one category.

Table 6.4 Calculation of Peak Hour Trips of Public Transport Services by Mode

Peak hour Passenger trips for Public Transport by Mode	%	AM Peak Hour		PM Peak Hour	
		GEN	ATT	GEN	ATT
Bus and PLB	81.1%(1)	= 677 x 81.1% = **550**	= 677 x 81.1% = **550**	= 729 x 81.1% = **592**	= 729 x 81.1% = **592**

Notes:
(1) From **Table 6.1**, MTR 43.2% + bus 29.6% + PLB 8.3% = 81.1%.

6.2 Survey on Existing Public Transport Service in the Vicinity

6.2.1 Existing bus/PLB stops to be assessed on impacts due to the proposed development is shown in **Figure 2.2**, which is expected to serve the residents of the proposed development.

6.2.2 A preliminary and localized public transport survey was carried out. The survey was carried out during the morning peak period and evening peak periods (7:30am to 9:30am and 5:00pm to 7:00pm) on a typical weekday on 16 October 2025.

6.2.3 **Table 6.5** summarized the walking distance and walking time from the proposed development to the public transport stops (A to F).

Table 6.5 Walking Distance and Time between Proposed Development and Different Public Transport Stops

Stop	Approximate Walking Distance (m)	Approximate Time (min)
A	390	6
B	360	5
C	210	3
D	120	2
E	320	5
F	320	5

6.2.4 It is assumed that there is no boarding passengers from the proposed development at bus stops towards Kai Tak runway development, i.e. Hong Kong Children's Hospital, Shing Cheong Road WB (Stop A) and Cheung Yip Street near Harbourside SB (Stop D), therefore these two bus stops would not be assessed.

6.2.5 As stipulated in the TPDM, the ideal walking distance to a bus stop should not exceed 400m in urban areas, therefore Stops B, C, E and F would be included in the assessment.

6.2.6 The bus stops information and finding are presented in **Table 6.6** and **Table 6.7**. The surveyed bus frequencies as in **Table 6.7** have been checked and are within the normal schedule range during peak periods listed in bus company's website.

Table 6.6 Bus/PLB Stops Information

Bus Stop B: Hong Kong Children's Hospital, Shing Cheong Road EB			
Mode	**Route No.**	**Origin**	**Destination**
Bus	5R	Kai Tak Cruise Terminal	Kwun Tong (APM)
	22	Kai Tak Cruise Terminal	Kowloon Tong (Festival Walk)
	22M	Kai Tak Cruise Terminal	To Kwa Wan
	X6C	Hong Kong Children's Hospital	Mei Foo

Bus Stop C: Cheung Yip Street near Kai Tak Fire Station NB			
Mode	**Route No.**	**Origin**	**Destination**
GMB	22A	Lok Wah Estate	Kwun Tong Ferry
	86	Cruise Terminal	Kowloon Bay (Telford Garden)
	88A	Hong Kong Children's Hospital	Wong Tai Sin Station
	90A	Hong Kong Children's Hospital	Yau Tong (Yau Lai Estate)
	90B	Hong Kong Children's Hospital	Sau Mau Ping

Bus Stop E: Kwun Tong Promenade, Hoi Bun Road WB			
Mode	**Route No.**	**Origin**	**Destination**
Bus	5R	Kwun Tong (APM)	Kai Tak Cruise Terminal
	14X	Yau Tong (Shung Tak Wai)	Tsim Sha Tsui
	15A	Ping Tin	Tsz Wan Shan (north)
	16P	Kwun Tong Ferry	Mong Kok (Park Avenue)
	38P	Ping Tin	Kwai Shing (Central)
	55	Kwun Tong Ferry	Tuen Mun (Ching Tin and Wo Tin)
	234D	Kwun Tong (Tsui Ping North Estate)	Tsing Lung Tau
	258X	Kwun Tong Ferry	Tuen Mun (Po Tin Estate)
	259X	Kwun Tong Ferry	Tuen Mun (Lung Mun Oasis)
	268P	Kwun Tong Ferry	Long Ping Station
	269S	Kwun Tong Ferry	Tin Shui Wai Town Centre
	797	LOHAS Park	San Po Kong
	E22S	Tseung Kwan O (Po Lam)	Tung Chung (Mun Tung Estate)

Bus Stop F: Hoi Bun Road Park, Hoi Bun Road EB			
Mode	**Route No.**	**Origin**	**Destination**
Bus	5R	Kai Tak Cruise Terminal	Kwun Tong (APM)
	E22S	Tung Chung	Tseung Kwan O (Po Lam)

Table 6.7 Observed Occupancy of Existing Bus/PLB Stops during AM and PM Peak Hours

AM Peak Hour								
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Total Approx. passengers on board arriving bus stop/hr [B]**	**Boarding**		**Total No. of Alighting Passengers/ hr (by route) [D]**	**Total Surplus Capacity/ hr**
					Total No. of Boarding Passengers/ hr (by route)	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [C]**		
Bus Stop B: Hong Kong Children's Hospital, Shing Cheong Road EB								
Bus	Work in the same district & Hong Kong Island	5R	3	36	3	3	0	321
	Kowloon	22	2	24	0	3	0	669
		22M	2	24	2		0	
		X6C	2	0	1		0	
	Sub-total	-	-	-	*6*	*6*	-	-
GMB Stop C: Cheung Yip Street near Kai Tak Fire Station NB								
GMB	Work in the same district & Hong Kong Island	86	12	50	0	0	0	298
		22A	5	3	0		0	
		90A	2	1	0		0	
		90B	3	0	0		0	
	Kowloon	88A	2	0	0	0	0	32
	Sub-total	-	-	-	*0*	*0*	-	-
Bus Stop E: Kwun Tong Promenade, Hoi Bun Road WB								
Bus	Work in the same district & Hong Kong Island	5R	5	432	7	7	7	168
	Kowloon	797	3	300	0	1	116	373
		14X	2	156	1		24	
		15A	2	180	0		30	
	Sub-total	-	-	-	*8*	*8*	-	-
Bus Stop F: Hoi Bun Road Park, Hoi Bun Road EB								
Bus	Work in the same district & Hong Kong Island	5R	3	96	0	0	7	271

AM Peak Hour								
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Total Approx. passengers on board arriving bus stop/hr [B]**	**Boarding**		**Total No. of Alighting Passengers/ hr (by route) [D]**	**Total Surplus Capacity/ hr**
					Total No. of Boarding Passengers/ hr (by route)	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [C]**		
	Work in another district (New Towns)	E22S	3	252	4	4	62	166
	Sub-total	-	-	-	*4*	*4*	-	-
Total	**-**	**-**	**-**	**-**	**18**	**18**	**-**	**-**

PM Peak Hour								
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Total Approx. passengers on board arriving bus stop/hr [B]**	**Boarding**		**Total No. of Alighting Passengers/ hr (by route) [D]**	**Total Surplus Capacity/ hr**
					Total No. of Boarding Passengers/ hr (by route)	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [C]**		
Bus Stop B: Hong Kong Children's Hospital, Shing Cheong Road EB								
Bus	Work in the same district & Hong Kong Island	5R	3	168	53	53	0	139
	Kowloon	22	3	48	34	94	0	794
		22M	2	24	24		0	
		X6C	3	0	36		0	
	Sub-total	-	-	-	*147*	*147*	-	-
GMB Stop C: Cheung Yip Street near Kai Tak Fire Station NB								
GMB	Work in the same district & Hong Kong Island	86	13	206	1	4	0	7
		22A	3	33	3		0	
		90A	1	16	0		0	
		90B	4	70	0		0	
	Kowloon	88A	3	33	0	0	0	15
	Sub-total	-	-	-	*4*	*4*	-	-

PM Peak Hour								
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Total Approx. passengers on board arriving bus stop/hr [B]**	**Boarding**		**Total No. of Alighting Passengers/ hr (by route) [D]**	**Total Surplus Capacity/ hr**
					Total No. of Boarding Passengers/ hr (by route)	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [C]**		
Bus Stop E: Kwun Tong Promenade, Hoi Bun Road WB								
Bus	Work in the same district & Hong Kong Island	5R	3	36	1	1	0	323
	Kowloon	15A	3	144	12	74	0	670
		797	3	36	5		0	
		14X	2	144	55		0	
		16P	1	12	2		0	
	Work in another district (New Towns)	55	3	84	9	105	0	855
		258X	1	12	11		0	
		259X	2	120	9		0	
		268P	2	120	26		0	
		269S	3	84	32		0	
		E22S	1	60	18		0	
	Work in another district (Other areas in the New Territories)	38P	1	12	10	21	0	147
		234D	1	60	11		0	
	Sub-total	-	-	-	*201*	*201*	-	-
Bus Stop F: Hoi Bun Road Park, Hoi Bun Road EB								
Bus	Work in the same district & Hong Kong Island	5R	5	462	4	4	19	153
	Sub-total	-	-	-	*4*	*4*	-	-
Total	**-**	**-**	**-**	**-**	**356**	**356**	**-**	**-**

Notes:
(1) Assumed 120-seat for all franchised bus services.
(2) Assumed 16-seat for all GMB service.

6.3 Future Public Transport Service in the Vicinity

6.3.1 It is noted that the Kai Tak Hospital will tentatively scheduled to open in October 2026, its travel demand is the largest individual development adjacent to the proposed development and the growth rate may not cover the travel demand, therefore the passenger demand of the Kai Tak Hospital has to take into account. It is anticipated that the majority of passenger trips generated by the Kai Tak Hospital will depend on public transport services.

6.3.2 According to LCQ8 New Acute Hospital in Kai Tak dated 14 May 2025, most of the clinical in-patient services of the Queen Elizabeth Hospital (QEH), including the accident and emergency (A&E) services, will be relocated to the Kai Tak Hospital while the Ambulatory Care Centre Extension of the QEH will remain at the King's Park site.

6.3.3 There will be 2,400 beds when in full operation. It is estimated that about 2,000 to 3,000 people entering and leaving the Kai Tak Hospital daily in the first phase.

6.3.4 A preliminary and localized public transport survey was carried out during the morning peak period and evening peak periods (7:30am to 9:30am and 5:00pm to 7:00pm) on a typical weekday on 23 January 2026 for bus/PLB stops near Queen Elizabeth Hospital.

6.3.5 In view of the close proximity between QEH and Jordan MTR station, a much higher ratio of staff, patients and visitors would therefore take MTR and walk to the hospital directly. As the Kai Tak Hospital is further away from the MTR station(s), the staff, patients and visitors are expected to be more rely on the feeder services connecting to the MTR station. Therefore the assessment would also take into account the passengers taking MTR to QEH. According to Travel Characteristics Survey 2022 published by the Transport Department, bus/PLB accounted a total of 37% (i.e. 26% for bus and 11% for PLB) and railway accounted for 35%. Therefore the estimated number of boarding passengers of bus/PLB for QEH would be doubled as reference for the Kai Tak Hospital.

6.3.6 In view of the increasing population intake of the residential development of Kai Tak Runway area, its estimated number of boarding passengers of bus/PLB would be also be included for the assessment.

6.3.7 The estimated number of boarding passengers of the Kai Tak Hospital and the residential development of Kai Tak Runway area would be included in 2036 reference passenger flows (without proposed development) in the assessment.

6.3.8 According to "*Legco CB(2)1454/2024(02) Administration's response to issues raised at the meeting on 7 October 2024*", TD has planned two new bus routes in view of development of Kai Tak Runway area in-take rate: bus route no. 20X between Kai Tak Cruise Terminal and Tsim Sha Tsui (Circular) (headway of 20min-30min in peak hour) and bus route no. 22S between Kai Tak Cruise Terminal and Kai Tak PTI (headway of 15min-20min in peak hour). The planned assumptions would be included in the assessments for Stop B (i.e. Hong Kong Children's Hospital, Shing Cheong Road EB). It is assumed that the passenger loading arriving at Stop B similar to the survey result for the existing bus route no. 20A.

6.4 Traffic Forecasts

Estimated Traffic Growth Rate for Public Transport Survey Data from 2025 to 2035

6.4.1 Reference is made to the 2021-based Territorial Population and Employment Data Matrix ("TPEDM") data produced by the Planning Department for Kwun Tong District, which are for 2021, 2026 and 2031 and are presented in **Table 6.8**.

Table 6.8 2021-Based TPEDM Data Produced by Planning Department for Kwun Tong District

Kwun Tong	**TPEDM Planning Data from 2021 to 2031**		
Year	**2021**	**2026**	**2031**
Population	673,150	682,500	690,750
Employment	395,900	400,050	441,300
Total	1,069,050	1,082,550	1,132,050
Avg. Annual Growth Rate	-	**From 2021 to 2026: +0.25%** **From 2021 to 2031: +0.57%**	**From 2026 to 2031: +0.9%**

6.4.2 Based the result shown in **Table 6.8**, the planning data indicates that the highest total population and employment data of the study area is expected to grow with an average annual growth rate of +0.90% from 2026 to 2031. As a conservative approach, annual growth rate of **+1%** per annum is adopted for forecasting future passenger flows.

6.4.3 Based on the observed passenger flows, the adopted growth rate of +1%, the future reference passenger flows (without proposed development) in Year 2036 are estimated and summarized in the equation below:

2036 Reference Passenger Flows (Without Proposed Development) = (**2025 Passenger Flows** x **Adopted Growth Factor (i.e. +1 %(1) p.a. for 11 years)**)+ **Passenger Flows of Planned Adjacent Development**

Notes:
(1) From **Para. 6.4.2**.

6.4.4 The passenger flows generated by the proposed development was then superimposed onto the 2036 reference passenger flows including the passenger flows of the estimated Kai Tak (without proposed development) to derive the 2036 design passenger flows (with proposed development).

2036 Design Passenger Flows (With Proposed Development) = **2036 Reference Passenger Flows (without proposed development)** + **Proposed Development Passenger Flows**

6.4.5 Since the current developments along Shing Cheong Road or Hoi Bun Road are not residential development, the traveling and transportation demand have made reference to Census 2021.

6.4.6 It is assumed that the passengers to take public transport to/from Kowloon Bay or Kwun Tong and interchange MTR to Hong Kong Island, therefore the public transport to Kowloon Bay and Kwun Tong would be categorized as “Work in the same district” and “Hong Kong Island”. For calculation purposes, the abovementioned categories would be assessed as one category.

6.4.7 Based on **Table 6.2** and **Table 6.4**, the estimated number of boarding passenger from the proposed development by locations is shown in **Table 6.9**.

Table 6.9 Estimated Boarding Passengers of Proposed Development by Locations

Location	%[1]	AM Peak Hour	PM Peak Hour
Work in the same district + Hong Kong Island	55.2%	304	327
Kowloon	25.8%	142	152
Work in another district (New Towns)	15.2%	83	90
Work in another district (Other areas in the New Territories)	3.9%	21	23
Total	**100%**	**550[2]**	**592[2]**

Notes:
(1) From **Table 6.2**.
(2) From **Table 6.4**.

6.4.8 Based on **Table 6.7** and **Table 6.9**, the estimated number of boarding passenger from the proposed development by public transport stops is shown in **Table 6.10**.

Table 6.10 Estimated Boarding Passengers of Proposed Development by Public Transport Stops

Bus Destination Location Group	Peak Hour	Existing Boarding Passengers by Stops					%					Estimated Boarding Passengers of Proposed Development by Stops				
		B	C	E	F	Total	B	C	E	F	Total	B	C	E	F	Total
Work in the same district & Hong Kong Island	AM	3	0	7	0	**10**	30%	0%	70%	0%	**100%**	91	0	213	0	**304**
	PM	53	4	1	4	**62**	85%	6%	2%	6%	**100%**	280	21	5	21	**327**
Kowloon	AM	3	0	1	0	**4**	75%	0%	25%	0%	**100%**	107	0	36	0	**142**
	PM	94	0	74	0	**168**	56%	0%	44%	0%	**100%**	85	0	67	0	**152**
Work in another district (New Towns)	AM	0	0	0	4	**4**	0%	0%	0%	100%	**100%**	0	0	0	104	**104[1]**
	PM	0	0	105	0	**105**	0%	0%	100%	0%	**100%**	0	0	90	0	**90**
Work in another district (Other areas in the New Territories)	AM	0	0	0	0	**0**	0%	0%	0%	0%	**0%**	0	0	0	0	**0[1]**
	PM	0	0	21	0	**21**	0%	0%	100%	0%	**100%**	0	0	23	0	**23**

Note:
(1) No boarding passengers for "Work in another district (Other areas in the New Territories)" from survey, therefore boarding passengers of the proposed development during AM peak hour as in

Table 6.9 is added to "Work in another district (New Towns)", i.e. 83+21=104.

6.4.9 Based on **Table 6.7** and **Table 6.9**, the expected demand of public transport in Year 2036 without and with proposed development is shown in **Table 6.11**.

Table 6.11 Expected Occupancy of Bus/PLB Stops during 2036 AM and PM Peak Hours in Reference Scenario (Without Proposed Development) and Design Scenario (With Proposed Development)

AM Peak Hour										
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Reference Scenario (Without Proposed Development)**					**Design Scenario (With Proposed Development)**	
				Total Approx. passengers on board arriving bus stop/hr [E]= [B]x(1+1%)[11]	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [F]= [C]]x(1+1%)[11]**	**No. of Boarding Passengers from New Acute Hospital & Planned Adjacent Developments [G]**	**Total No. of Alighting Passengers/ hr (by route) [H]= [D]x(1+1%)[1]** [1]	**Total Surplus Capacity / hr [I]**	**No. of Boarding Passengers from Proposed Development [J]**	**Total Surplus Capacity/ hr [I]-[J]**
Bus Stop B: Hong Kong Children's Hospital, Shing Cheong Road EB										
Bus	Work in the same district & Hong Kong Island	5R	3	41	3	18	0	832	91(3)	741
		22S(4)	4	-		55	-			
	Kowloon	20X(4)	3	-	3	49	-	938	107(3)	831
		22	2	27		36	0			
		22M	2	27			0			
		X6C	2	0			0			
	Sub-total	-	*16*	-	*7*	-	-	-	*198*	-
GMB Stop C: Cheung Yip Street near Kai Tak Fire Station NB										
GMB	Work in the same district & Hong Kong Island	86	12	56	0	18	0	274	0(3)	274
		22A	5	3			0			
		90A	2	1			0			
		90B	3	0			0			
	Kowloon	88A	2	0	0	2	0	30	0(3)	30
	Sub-total	-	*24*	-	*0*	-	-	-	*0*	-
Bus Stop E: Kwun Tong Promenade, Hoi Bun Road WB										
Bus	Work in the same district & Hong Kong Island	5R	5	482	8	30	8	88	213(3)	-125 +2 nos. of bus is required.
	Kowloon	797	3	335	1	42	129	277	36(3)	241

AM Peak Hour										
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Reference Scenario (Without Proposed Development)**					**Design Scenario (With Proposed Development)**	
				Total Approx. passengers on board arriving bus stop/hr [E]= [B]x(1+1%)[11]	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [F]= [C]]x(1+1%)[11]**	**No. of Boarding Passengers from New Acute Hospital & Planned Adjacent Developments [G]**	**Total No. of Alighting Passengers/ hr (by route) [H]= [D]x(1+1%)[11]**	**Total Surplus Capacity / hr [I]**	**No. of Boarding Passengers from Proposed Development [J]**	**Total Surplus Capacity/ hr [I]-[J]**
		14X	2	174			27			
		15A	2	201			33			
	Sub-total	-	*12*	-	*9*	-	-	-	*249*	-
Bus Stop F: Hoi Bun Road Park, Hoi Bun Road EB										
Bus	Work in the same district & Hong Kong Island	5R	3	107	0	18	8	243	0(3)	243
	Work in another district (New Towns)	E22S	3	281	4	18	69	144	104(3)	40
	Sub-total	-	*6*	-	*4*	-	-	-	*104*	-
Total	**-**	**-**	**58**	**-**	**20**	**-**	-	**-**	**551**(3)	**-**

PM Peak Hour										
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Reference Scenario (Without Proposed Development)**					**Design Scenario (With Proposed Development)**	
				Total Approx. passengers on board arriving bus stop/hr [E]= [B]x(1+1%)[11]	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [F]= [C]]x(1+1%)[11]**	**No. of Boarding Passengers from New Acute Hospital & Planned Adjacent Developments [G]**	**Total No. of Alighting Passengers/ hr (by route) [H]= [D]x(1+1%)[11]**	**Total Surplus Capacity / hr [I]**	**No. of Boarding Passengers from Proposed Development [J]**	**Total Surplus Capacity/ hr [I]-[J]**
Bus Stop B: Hong Kong Children's Hospital, Shing Cheong Road EB										
Bus	Work in the same district & Hong Kong Island	5R	3	188	59	72	0	162	280(3)	-118
		22S(4)	4	-		359	-			+1 no. of bus is required.
	Kowloon	20X(4)	3	-	105	335	-	607	85(3)	607
		22	3	54		192	0			
		22M	2	27			0			
		X6C	3	0			0			
	Sub-total	-	*18*	-	*164*	-	-	-	*365*	-

PM Peak Hour										
Mode	**Bus Destination Location Group**	**Route No.**	**Observed Vehicular Trips/hr [A]**	**Reference Scenario (Without Proposed Development)**					**Design Scenario (With Proposed Development)**	
				Total Approx. passengers on board arriving bus stop/hr [E]= [B]x(1+1%)[11]	**Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [F]= [C]]x(1+1%)[11]**	**No. of Boarding Passengers from New Acute Hospital & Planned Adjacent Developments [G]**	**Total No. of Alighting Passengers/ hr (by route) [H]= [D]x(1+1%)[11]**	**Total Surplus Capacity / hr [I]**	**No. of Boarding Passengers from Proposed Development [J]**	**Total Surplus Capacity/ hr [I]-[J]**
GMB Stop C: Cheung Yip Street near Kai Tak Fire Station NB										
GMB	Work in the same district & Hong Kong Island	86	13	230	4	67	0	-98	21(3)	-119 +8 nos. of GMB is required
		22A	3	37			0			
		90A	1	18			0			
		90B	4	78			0			
	Kowloon	88A	3	37	0	10	0	2	0	2
	Sub-total	-	*24*	-	*4*	-	-	-	*21*	-
Bus Stop E: Kwun Tong Promenade, Hoi Bun Road WB										
Bus	Work in the same district & Hong Kong Island	5R	3	40	1	72	0	247	5(3)	242
	Kowloon	15A	3	161	83	216	0	407	67(3)	340
		797	3	40			0			
		14X	2	161			0			
		16P	1	13			0			
	Work in another district (New Towns)	38P	1	13	117	240	0	388	90(3)	298
		55	3	94			0			
		234D	1	67			0			
		258X	1	13			0			
		259X	2	134			0			
		268P	2	134			0			
	Work in another district (Other areas in the New Territories)	269S	3	94	23	96	0	200	23(3)	177
		E22S	1	67			0			
	Sub-total	-	*26*	-	*224*	-	-	-	*185*	-
Bus Stop F: Hoi Bun Road Park, Hoi Bun Road EB										
Bus	Work in the same district & Hong Kong Island	5R	5	515	4	120	21	-19	21(3)	-40 +1 no. of bus is required

PM Peak Hour										
Mode	Bus Destination Location Group	Route No.	Observed Vehicular Trips/hr [A]	Reference Scenario (Without Proposed Development)					Design Scenario (With Proposed Development)	
				Total Approx. passengers on board arriving bus stop/hr [E]= [B]x(1+1%)[11]	Total No. of Boarding Passengers/ hr (by Bus Destination Location Group) [F]= [C]]x(1+1%)[11]	No. of Boarding Passengers from New Acute Hospital & Planned Adjacent Developments [G]	Total No. of Alighting Passengers/ hr (by route) [H]= [D]x(1+1%)[11]	Total Surplus Capacity / hr [I]	No. of Boarding Passengers from Proposed Development [J]	Total Surplus Capacity/ hr [I]-[J]
	Sub-total	-	*5*	-	*4*	-	-	-	*21*	-
Total	-	-	**73**	-	**397**	-	-	-	**592**	-

Notes:
(1) Assumed 120-seat for all franchised bus services.
(2) Assumed 16-seat for all GMB service.
(3) From **Table 6.10**.
(4) As in Para. 6.3.8, TD has planned two new bus routes in view of development of Kai Tak Runway area in-take rate: bus route no. 20X between Kai Tak Cruise Terminal and Tsim Sha Tsui (Circular) (headway of 20min-30min in peak hour) and bus route no. 22S between Kai Tak Cruise Terminal and Kai Tak PTI (headway of 15min-20min in peak hour).

6.4.10 Assessments in **Table 6.11** indicate that there are surplus capacities for the most of the bus/PLB stops during AM and PM peak hours in 2036 with the proposed development except the following:

AM Peak Hour

- Bus Stop E: Kwun Tong Promenade, Hoi Bun Road WB - Work in the same district & Hong Kong Island, +2 buses is required with the proposed development.

PM Peak Hour

- Bus Stop B: Hong Kong Children's Hospital, Shing Cheong Road EB - Work in the same district & Hong Kong Island, +1 bus is required with the proposed development;
- GMB Stop C: Cheung Yip Street near Kai Tak Fire Station NB - Work in the same district & Hong Kong Island, +8 GMB is required with the proposed development; and
- Bus Stop F: Hoi Bun Road Park, Hoi Bun Road EB - Work in the same district & Hong Kong Island, +1 bus is required with the proposed development.

7. SUMMARY AND CONCLUSION

7.1 Summary

7.1.1 CTA Consultants Limited (CTA) is commissioned as the traffic consultant to prepare the Traffic Impact Assessment Report and provide technical justifications in supporting the proposed development from traffic engineering point of view.

7.1.2 To appraise the existing traffic condition, manual-classified counting surveys were conducted at critical junctions in 2025. Current operational performance of the critical junctions has been assessed. The results reveal all critical junctions are at present operating within their capacities during peak hours.

7.1.3 The assessment results revealed that all critical junctions would still operate within their capacities in both reference scenario (without proposed development) and design scenario (with proposed development) in 2036 during the peak hours.

7.1.4 Queue length of the critical junction in both reference scenario (without proposed development) and design scenario (with proposed development) in 2036 during the peak hours will be within their available length of road segment, except the road link at Junction F Cheung Yip Street NB (RT & ST) during PM peak hour in both reference scenario (without proposed development) and design scenario (with proposed development). Queue lengths at these junctions could be more or less be cleared shortly.

7.1.5 Comparing with the existing commercial use, it is anticipated that the proposed development would generate and attract -21 pcu/hr and -103 pcu/hr during AM peak hour respectively, and generate and attract -59 pcu/hr and -22 pcu/hr during PM peak hour respectively.

7.1.6 The proposed development is anticipated to generate negative peak-hour traffic (i.e., a reduction in traffic demand compared to the reference scenario). This will result in reduced traffic impact on the surrounding road network. Accordingly, no junction improvement works will be proposed by the proposed development.

7.1.7 Assessments indicate that there are surplus capacities for the most of the bus/PLB stops during AM and PM peak hours in 2036 with the proposed development except the following:

AM Peak Hour

- Bus Stop E: Kwun Tong Promenade, Hoi Bun Road WB - Work in the same district & Hong Kong Island, +2 buses is required with the proposed development.

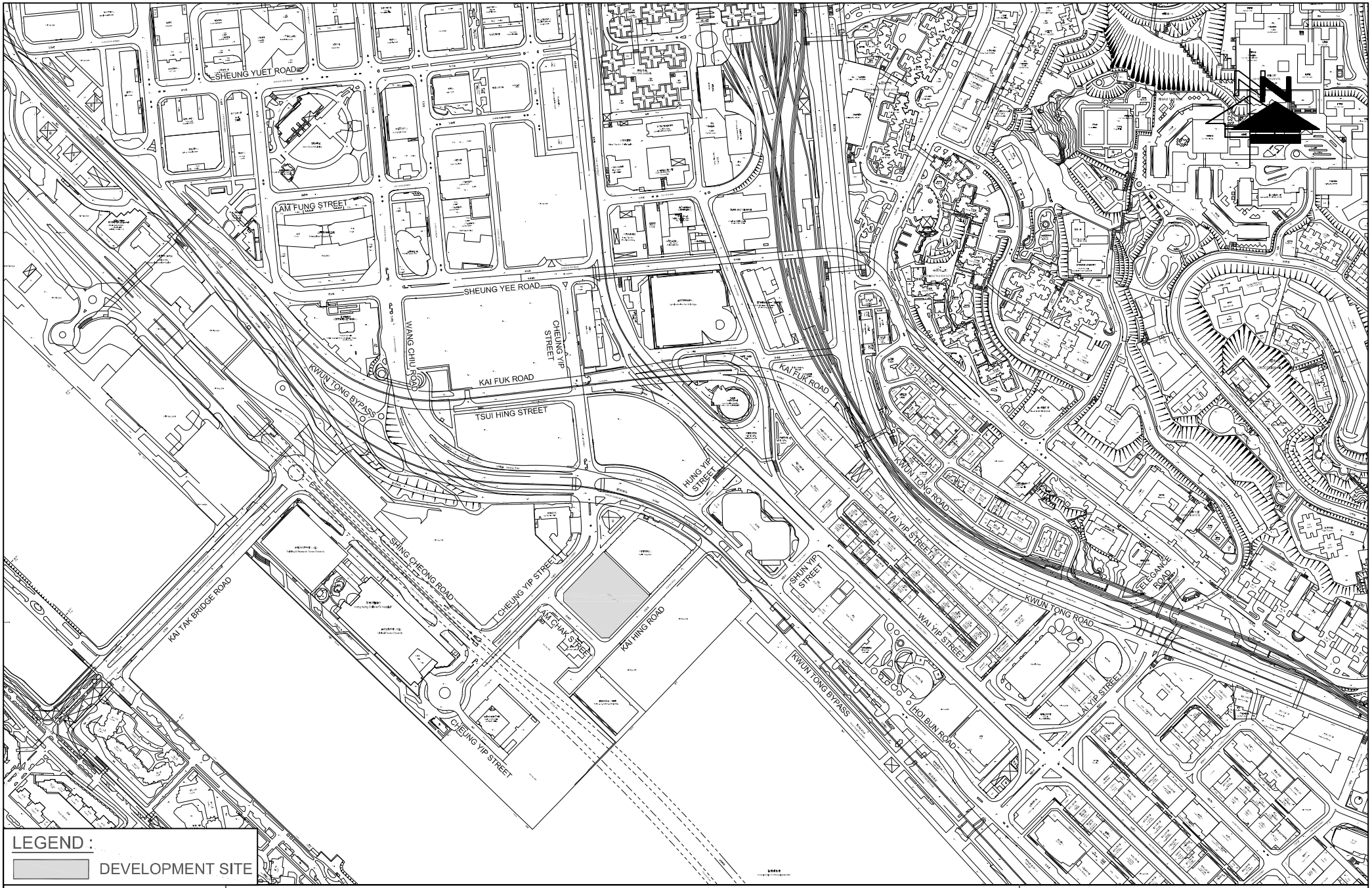
PM Peak Hour

- Bus Stop B: Hong Kong Children's Hospital, Shing Cheong Road EB - Work in the same district & Hong Kong Island, +1 bus is required with the proposed development;
- GMB Stop C: Cheung Yip Street near Kai Tak Fire Station NB - Work in the same district & Hong Kong Island, +8 GMB is required with the proposed development; and
- Bus Stop F: Hoi Bun Road Park, Hoi Bun Road EB - Work in the same district & Hong Kong Island, +1 bus is required with the proposed development.

7.2 Conclusion

7.2.1 In conclusion, this Traffic Impact Assessment Report has demonstrated that the related traffic trips related to the proposed development can reduce the traffic to the nearby road network and no significant traffic impact will be induced.

7.2.2 Therefore, the proposed development is reckoned feasible from traffic engineering point of view.



LEGEND :

DEVELOPMENT SITE

FIGURE NO.: 1.1	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: SITE LOCATION PLAN	
SCALE: 1 : 6200 @A4 / DATE: 11 JUL 2025		

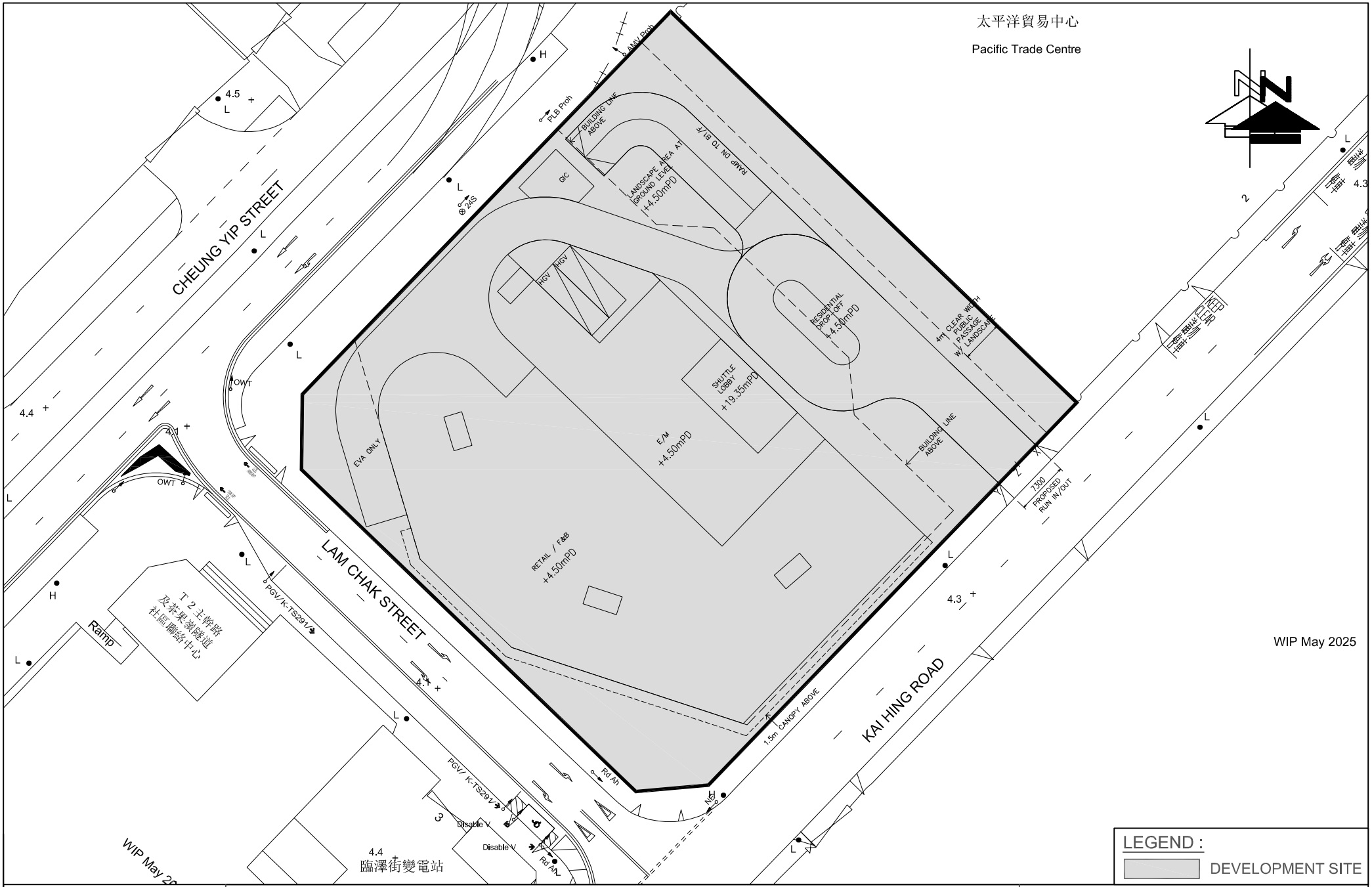


FIGURE NO.: 2.1 (REV B)	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: G/F LAYOUT PLAN	
SCALE: 1 : 700 @A4	DATE: 01 JUN 2026	

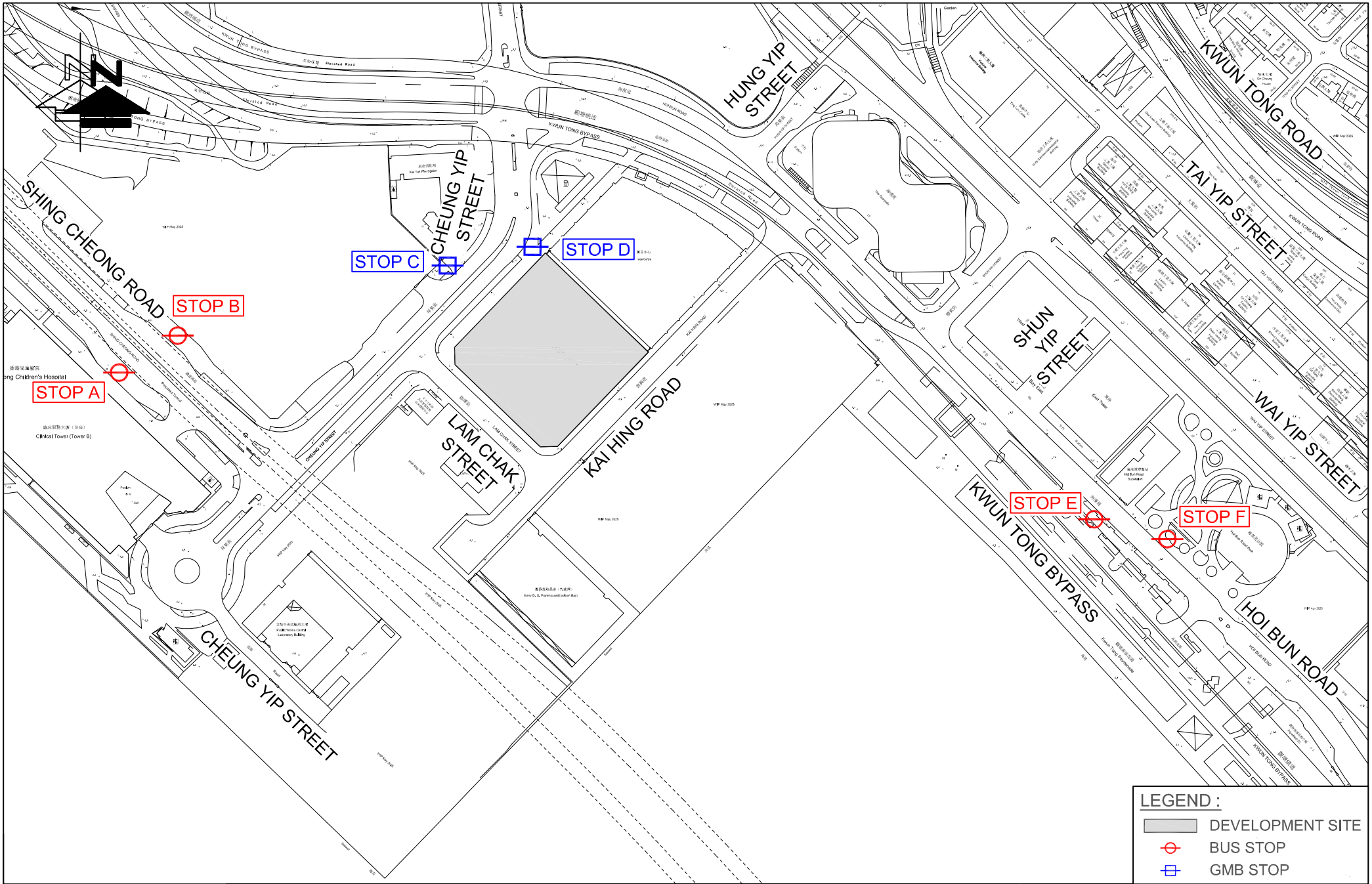


FIGURE NO.: 2.2	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: EXISTING PUBLIC TRANSPORT FACILITIES	
SCALE: 1 : 2750 @A4 / DATE: 18 NOV 2025		

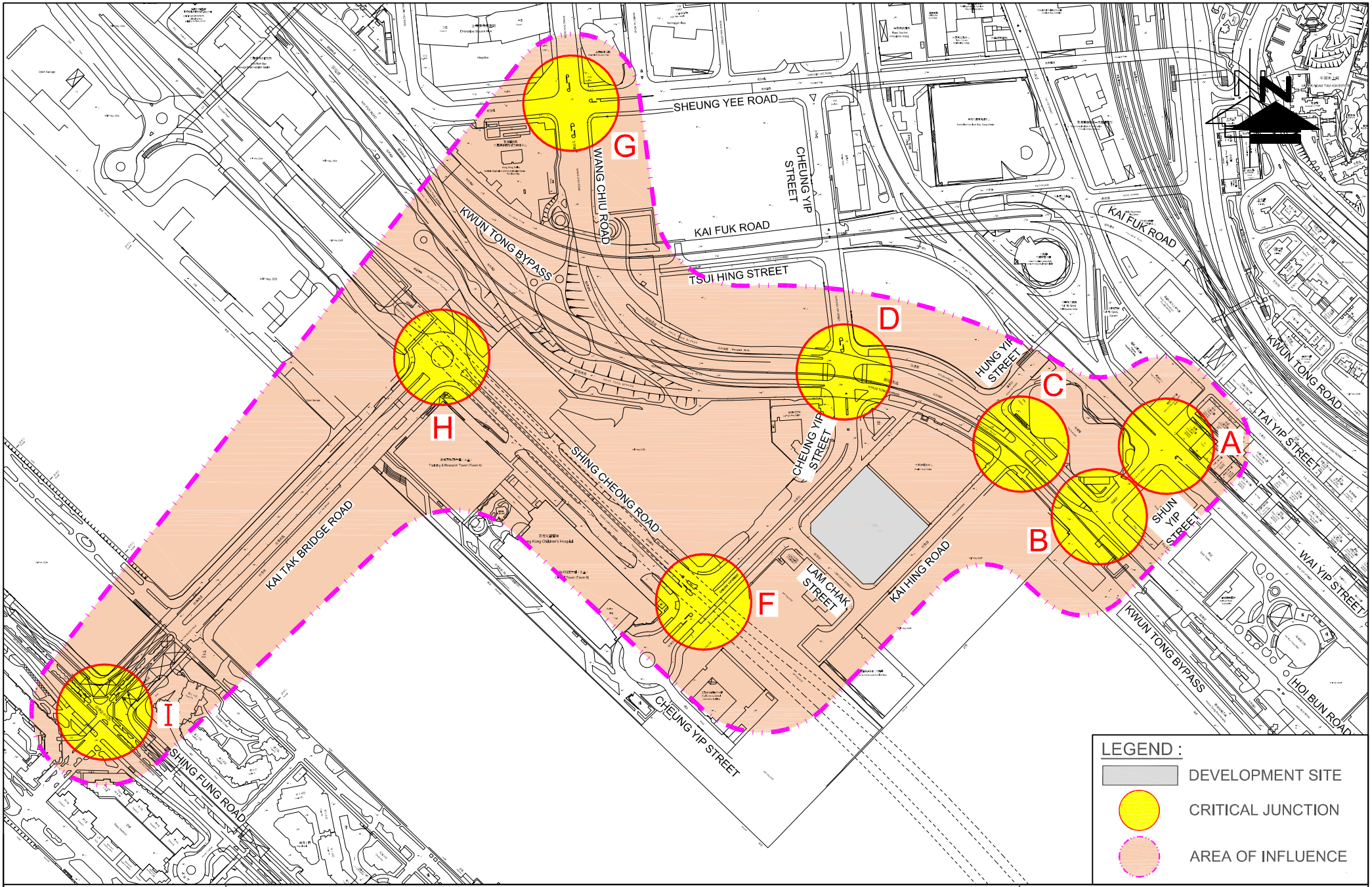


FIGURE NO.: 3.1 (REV B)	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: AREA OF INFLUENCE	
SCALE: 1 : 4500 @A4 / DATE: 25 FEB 2026		

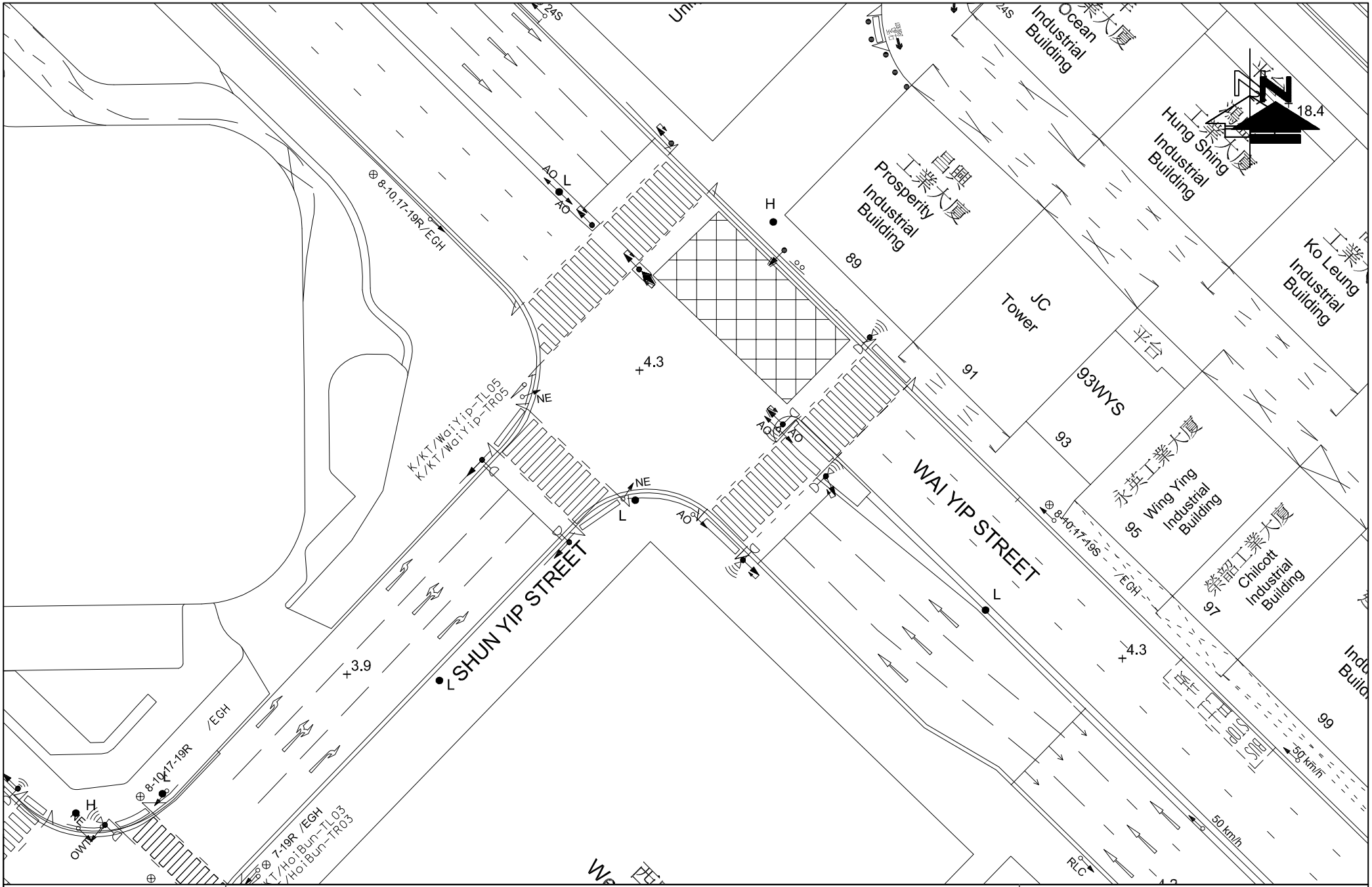


FIGURE NO.: 3.2	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF WAI YIP STREET / SHUN YIP STREET (A)	
SCALE: 1 : 500 @A4 / DATE: 13 AUG 2025		

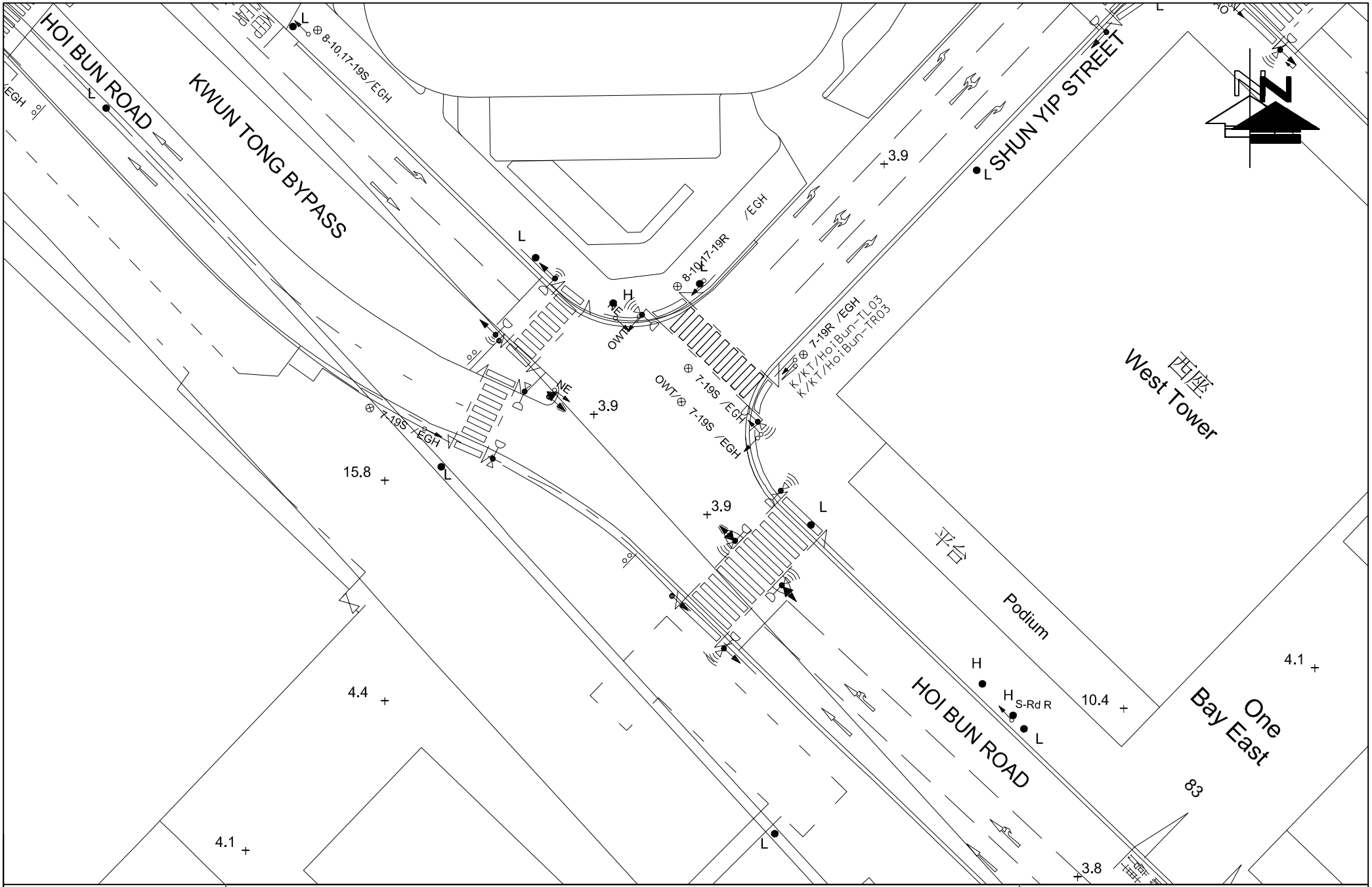


FIGURE NO.: 3.3	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF HOI BUN ROAD / SHUN YIP STREET (B)	
SCALE: 1 : 500 @A4 / DATE: 13 AUG 2025		

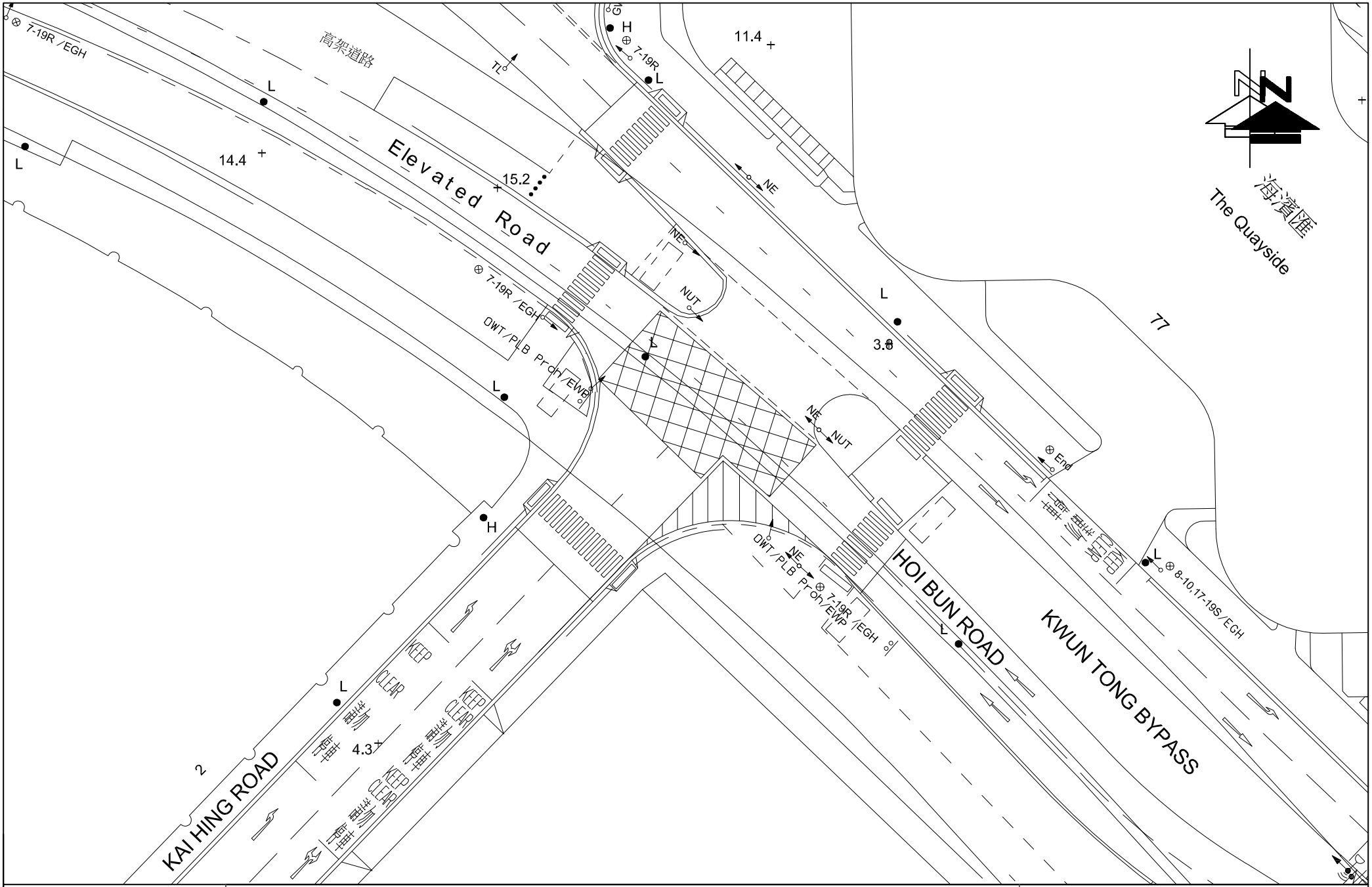


FIGURE NO.: 3.4	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF HOI BUN ROAD / KAI HING ROAD (C)	
SCALE: 1 : 500 @A4	DATE: 13 AUG 2025		

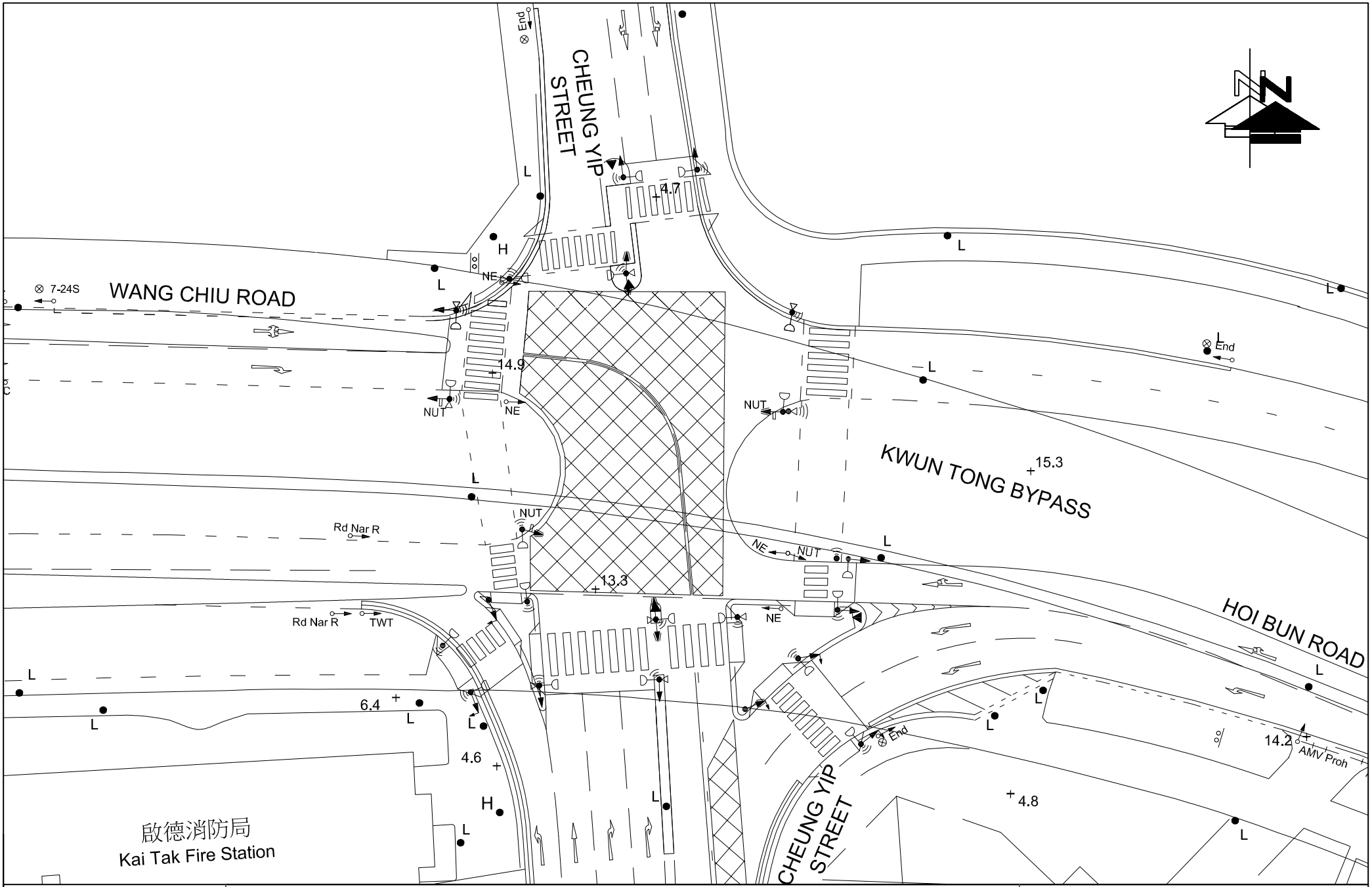


FIGURE NO.: 3.5	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF HOI BUN ROAD / WANG CHIU ROAD / CHEUNG YIP STREET (D)	
SCALE: 1 : 500 @A4 / DATE: 22 AUG 2025		

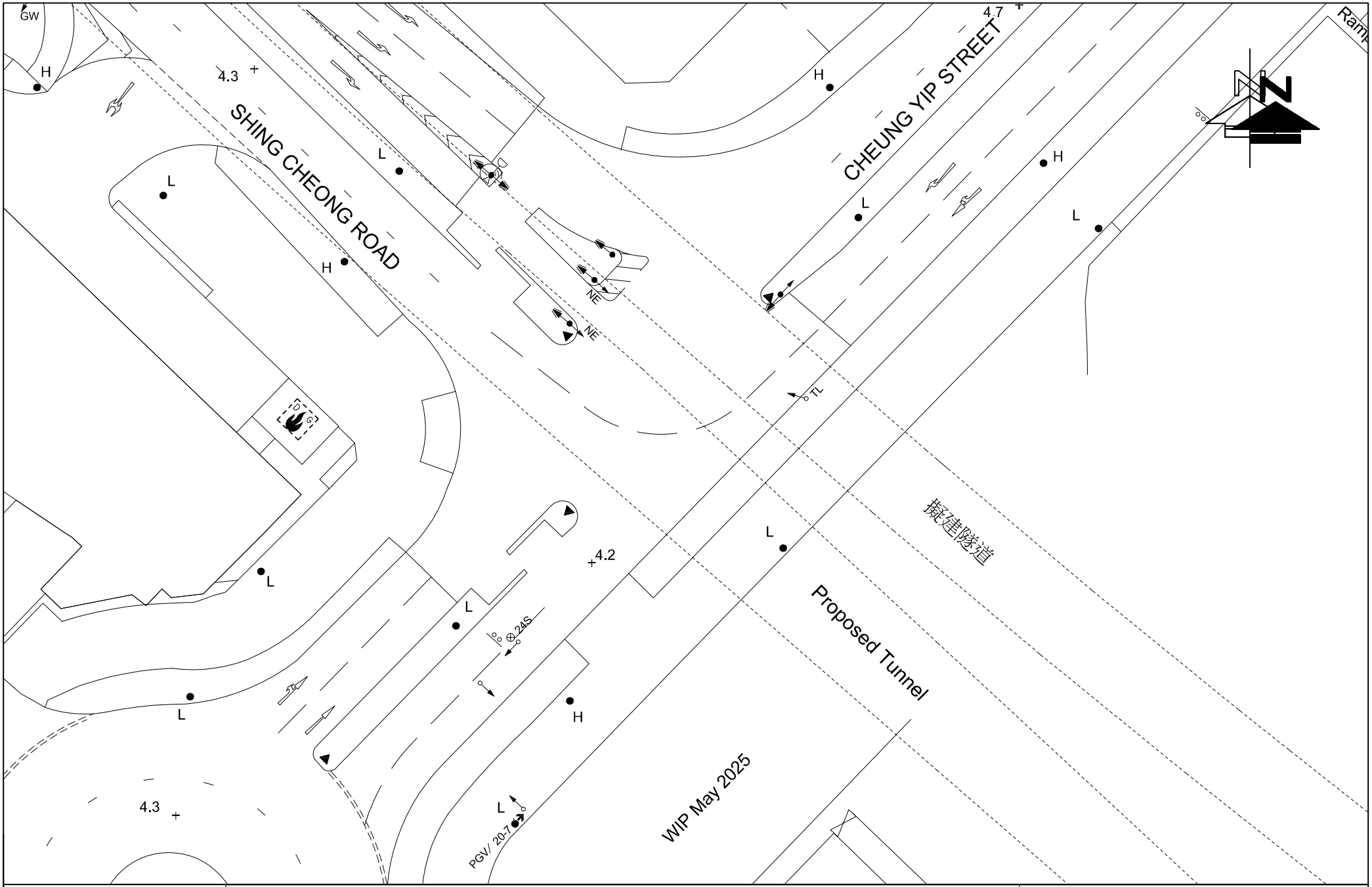


FIGURE NO.: 3.6	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF SHING CHEONG ROAD / CHEUNG YIP STREET (F)	
SCALE: 1 : 500 @A4 / DATE: 12 AUG 2025		

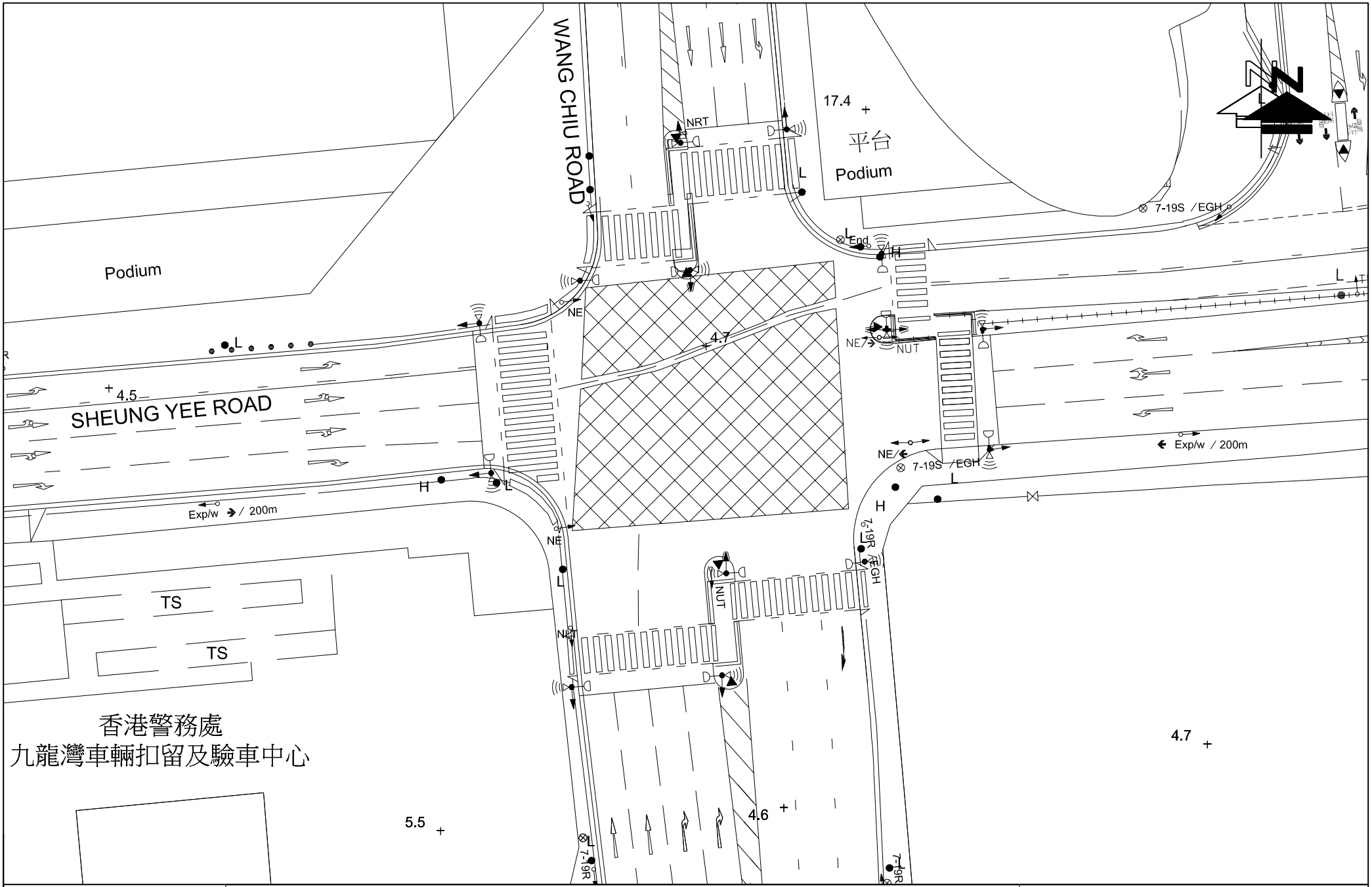


FIGURE NO.: 3.7	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF WANG CHIU ROAD / SHEUNG YEE ROAD (G)	
SCALE: 1 : 500 @A4	DATE: 12 AUG 2025		

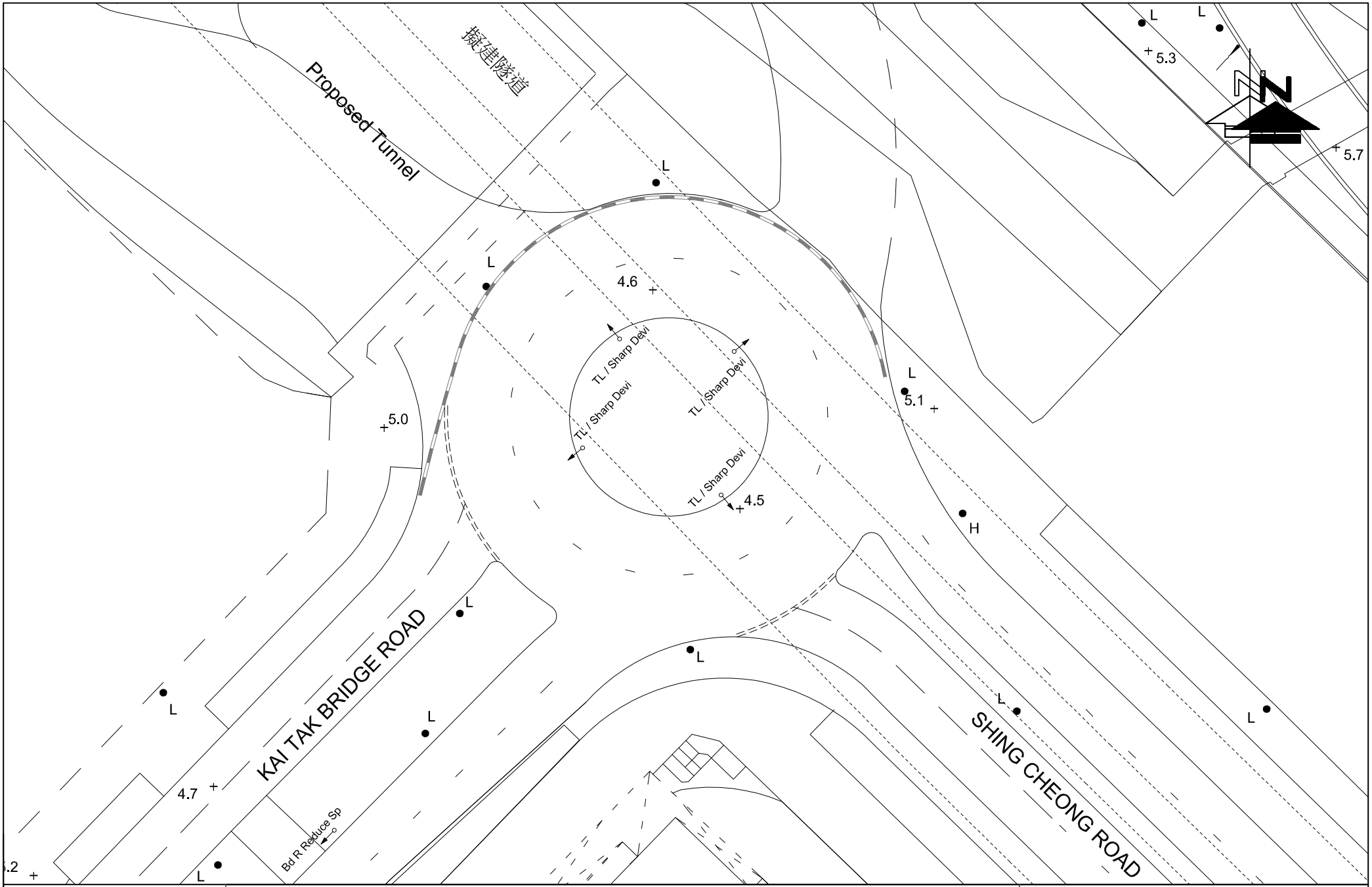


FIGURE NO.: 3.8	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	
PROJECT NO.: 25046HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF SHING CHEONG ROAD / KAI TAK BRIDGE ROAD (H)	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 500 @A4	DATE: 12 AUG 2025		

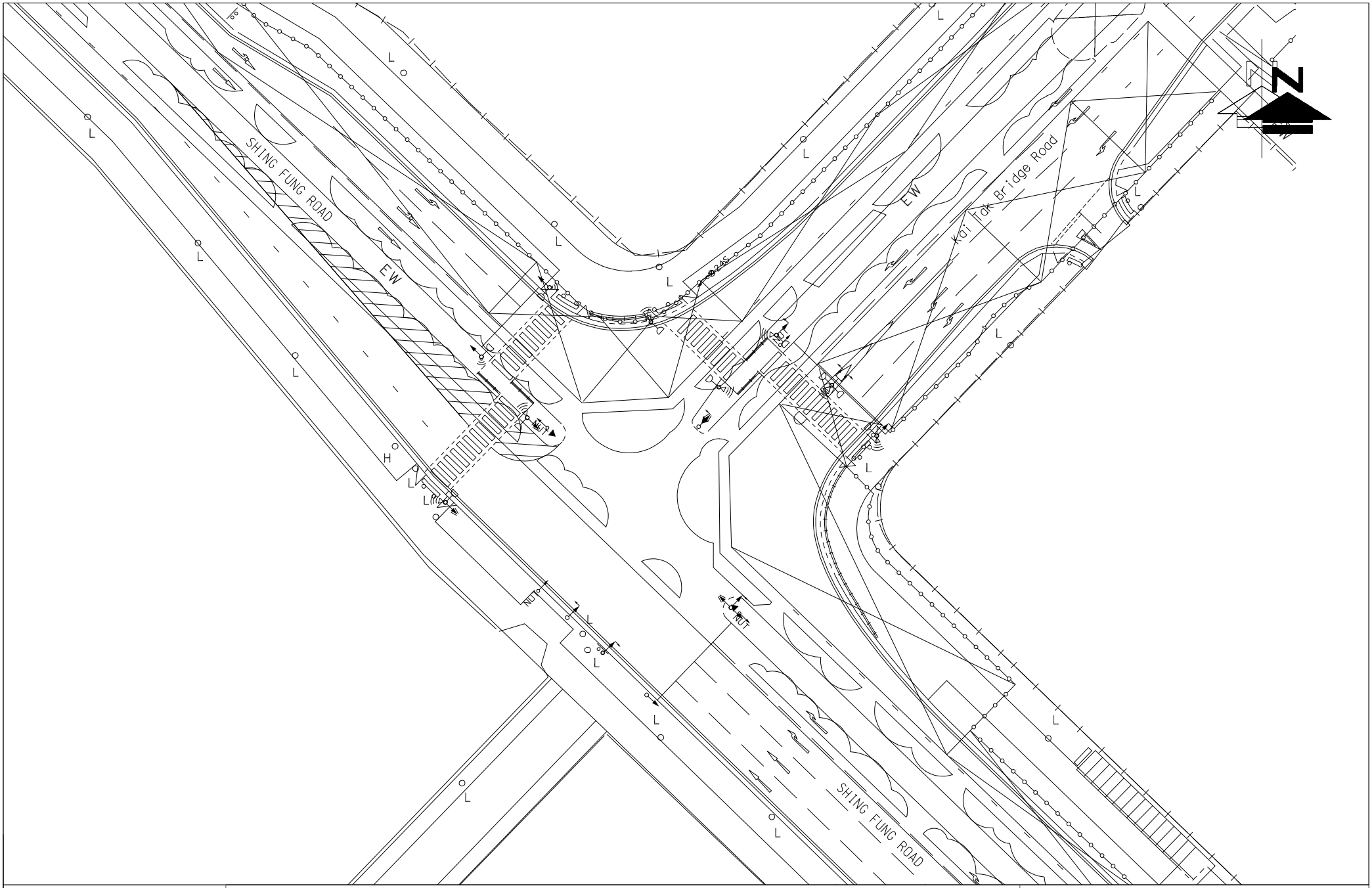


FIGURE NO.: 3.9	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE:	EXISTING JUNCTION LAYOUT OF SHING FUNGROAD / KAI TAK BRIDGE ROAD (I)	
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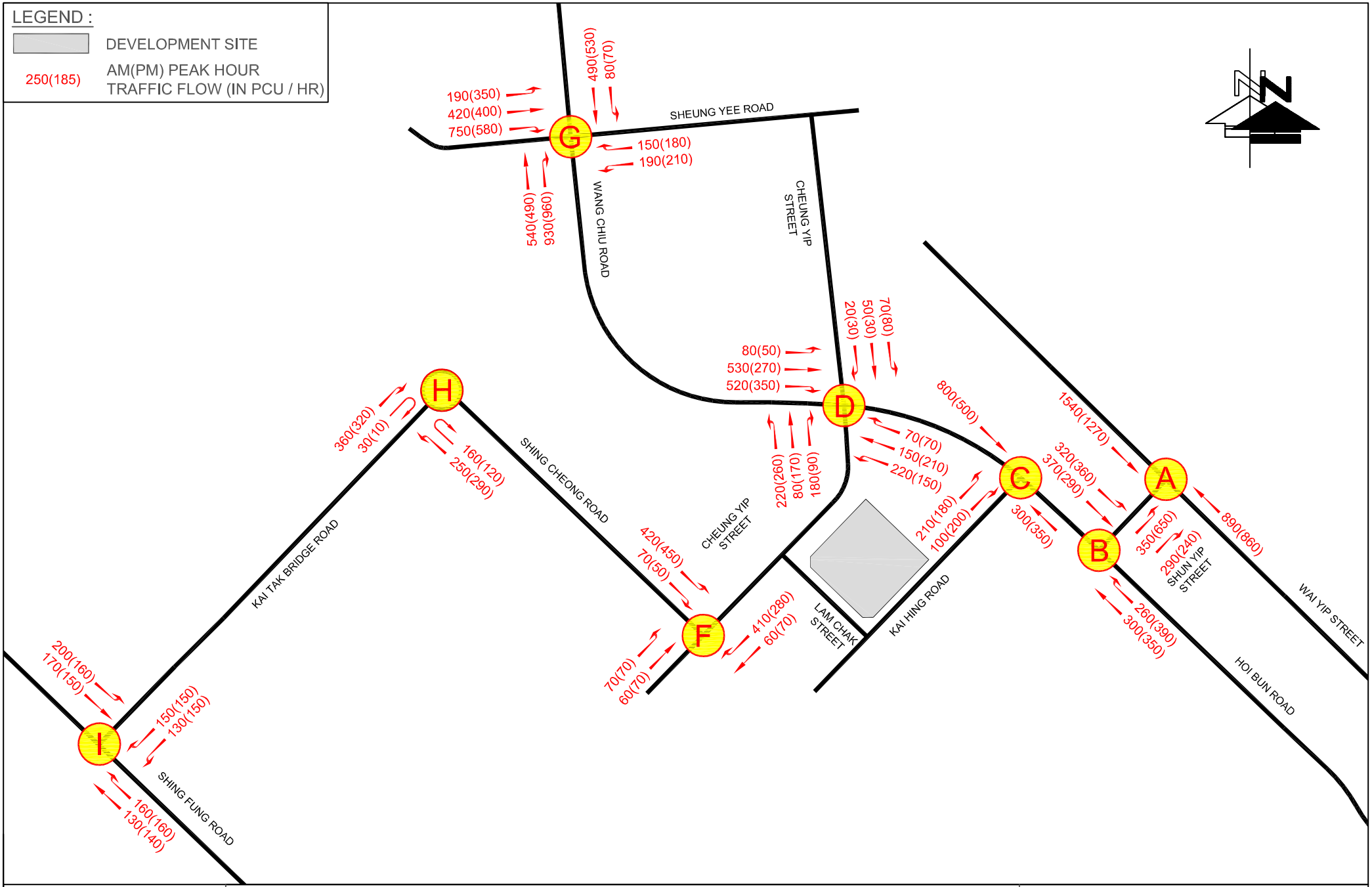


FIGURE NO.: 3.10	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE:	2025 EXISTING TRAFFIC FLOWS	
SCALE: N.T.S. @A4	DATE: 26 NOV 2025		

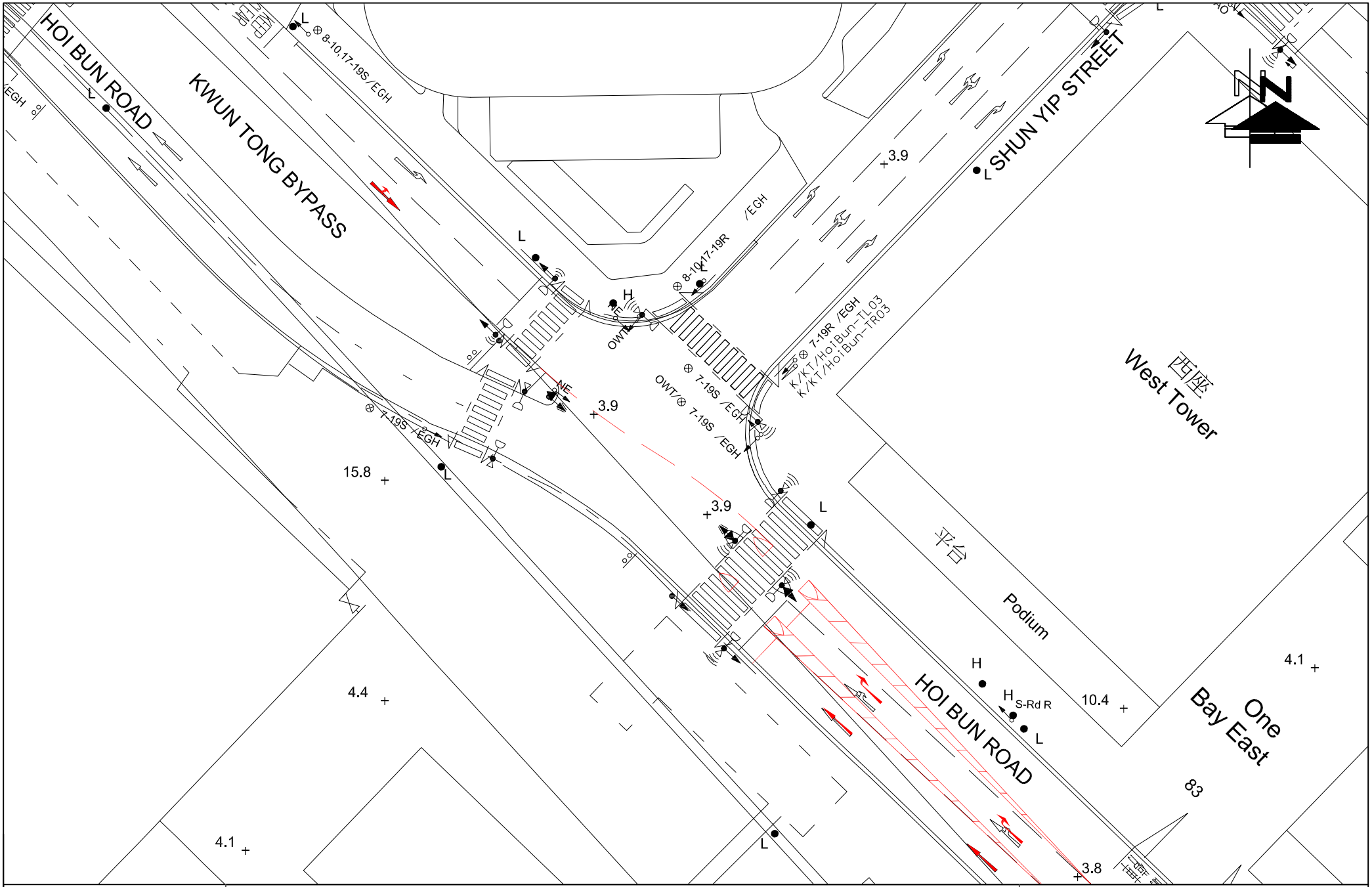


FIGURE NO.: 4.1	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: PLANNED JUNCTION IMPROVEMENT LAYOUT OF HOI BUN ROAD / SHUN YIP STREET (B)	
SCALE: 1 : 500 @A4 / DATE: 11 MAR 2026		

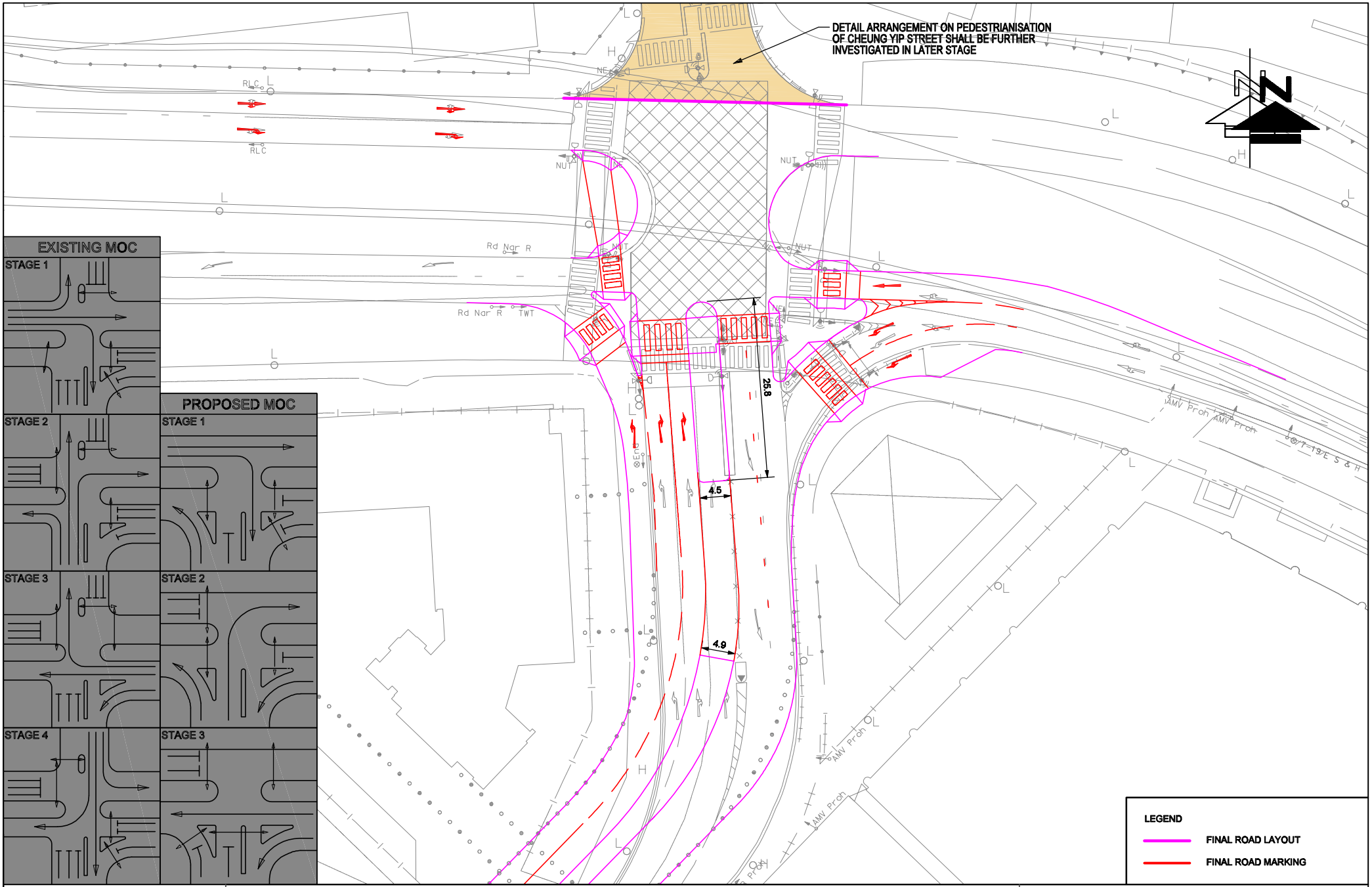


FIGURE NO.: 4.2	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay
PROJECT NO.: 25046HK	DRAWING TITLE:	PLANNED JUNCTION IMPROVEMENT LAYOUT OF HOI BUN ROAD / WANG CHIU ROAD / CHEUNG YIP STREET (D)
SCALE: N.T.S. @A4 / DATE: 11 MAR 2026		

CTA Consultants Limited
志達顧問有限公司

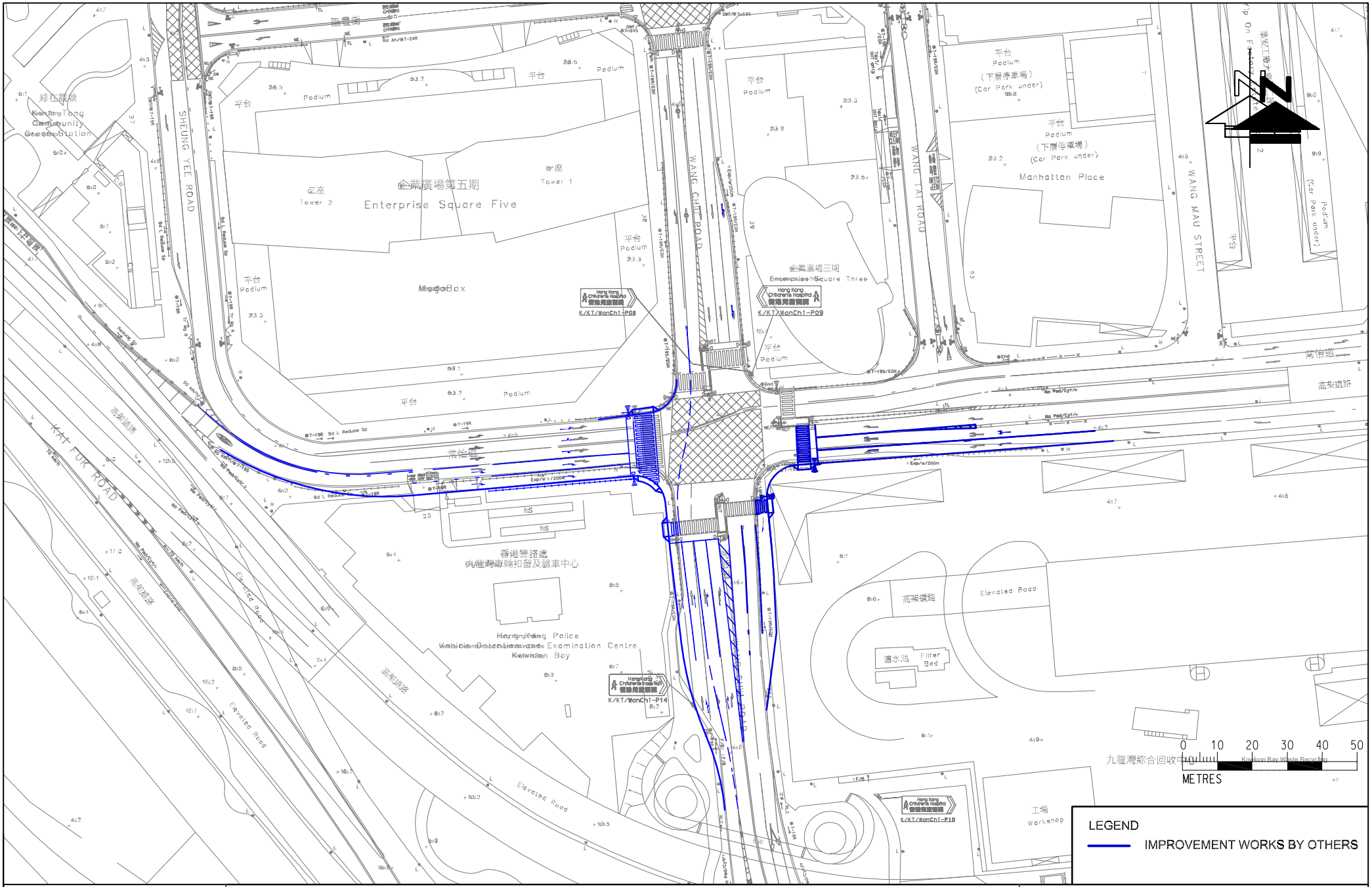


FIGURE NO.: 4.3	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay
PROJECT NO.: 25046HK	DRAWING TITLE:	PLANNED JUNCTION IMPROVEMENT LAYOUT OF WANG CHIU ROAD / SHEUNG YEE ROAD (G)
SCALE: N.T.S. @A4 / DATE: 11 MAR 2026		

CTA Consultants Limited
志達顧問有限公司

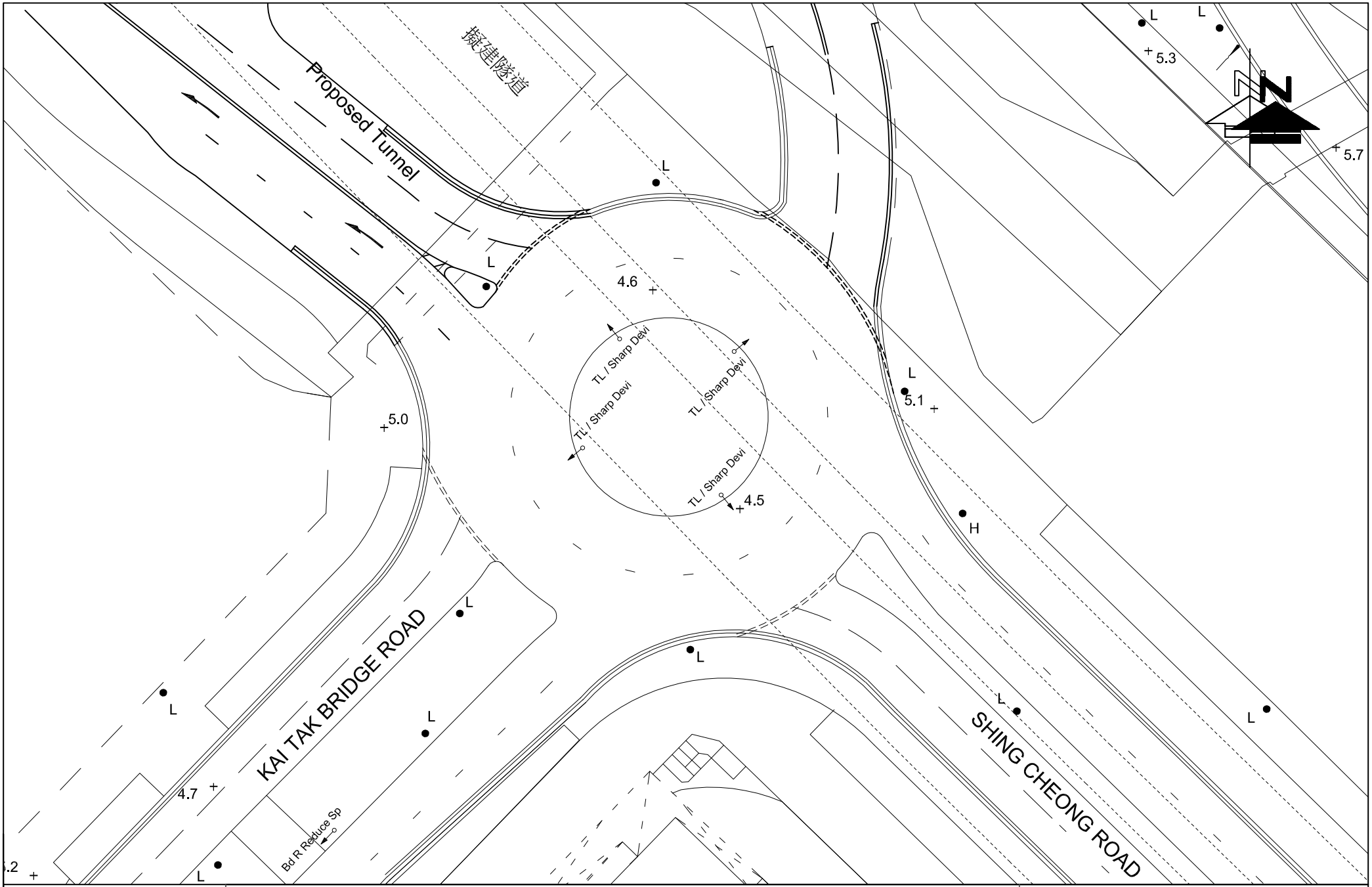


FIGURE NO.: 4.4	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: PLANNED JUNCTION IMPROVEMENT LAYOUT OF SHING CHEONG ROAD / KAI TAK BRIDGE ROAD (H)	
SCALE: 1 : 500 @A4 / DATE: 11 MAR 2026		

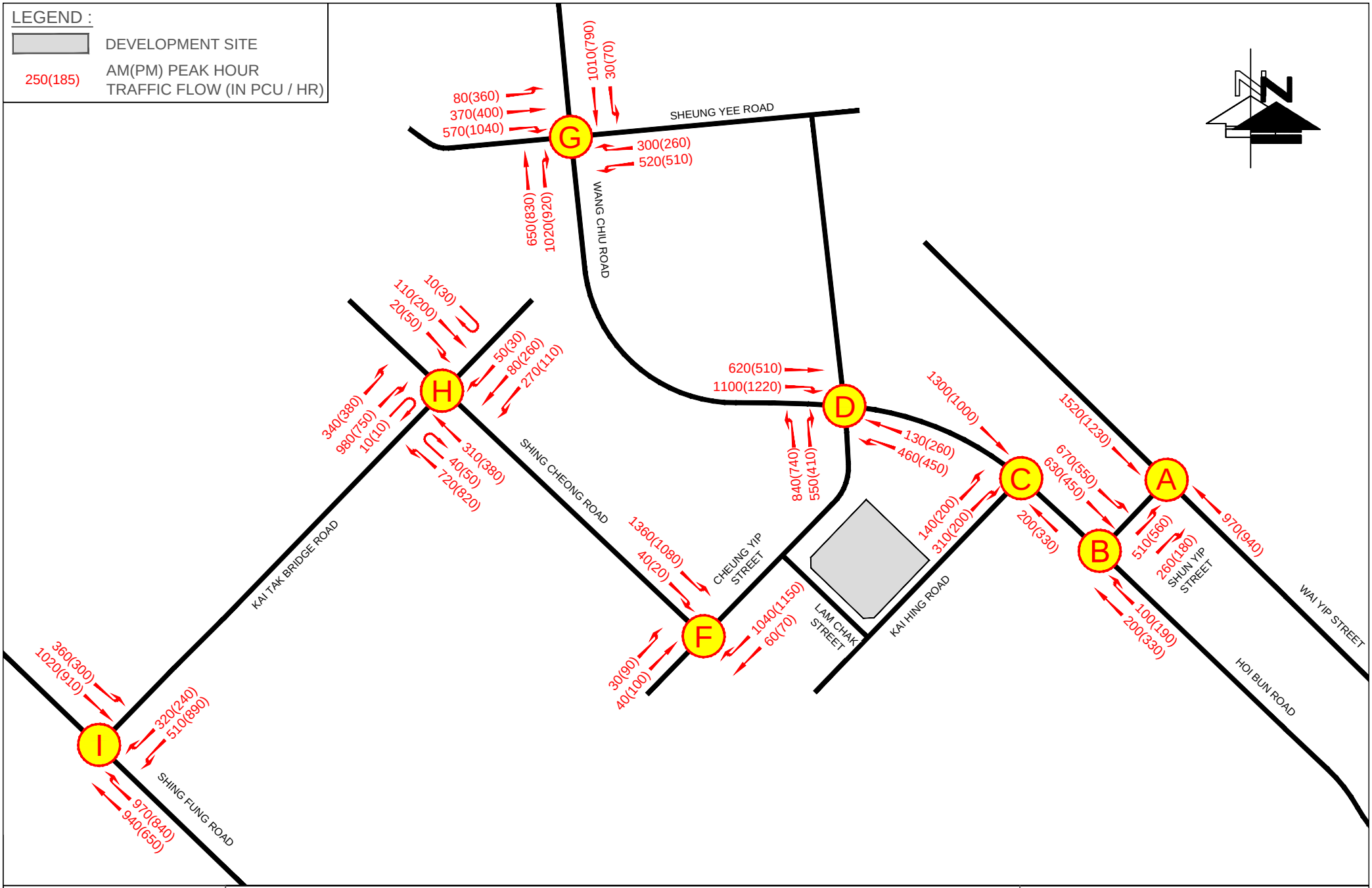


FIGURE NO.: 4.5	PROJECT TITLE:	S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE:	2036 REFERENCE TRAFFIC FLOWS (WITHOUT PROPOSED DEVELOPMENT)	
SCALE: N.T.S. @A4 / DATE: 27 MAR 2026			

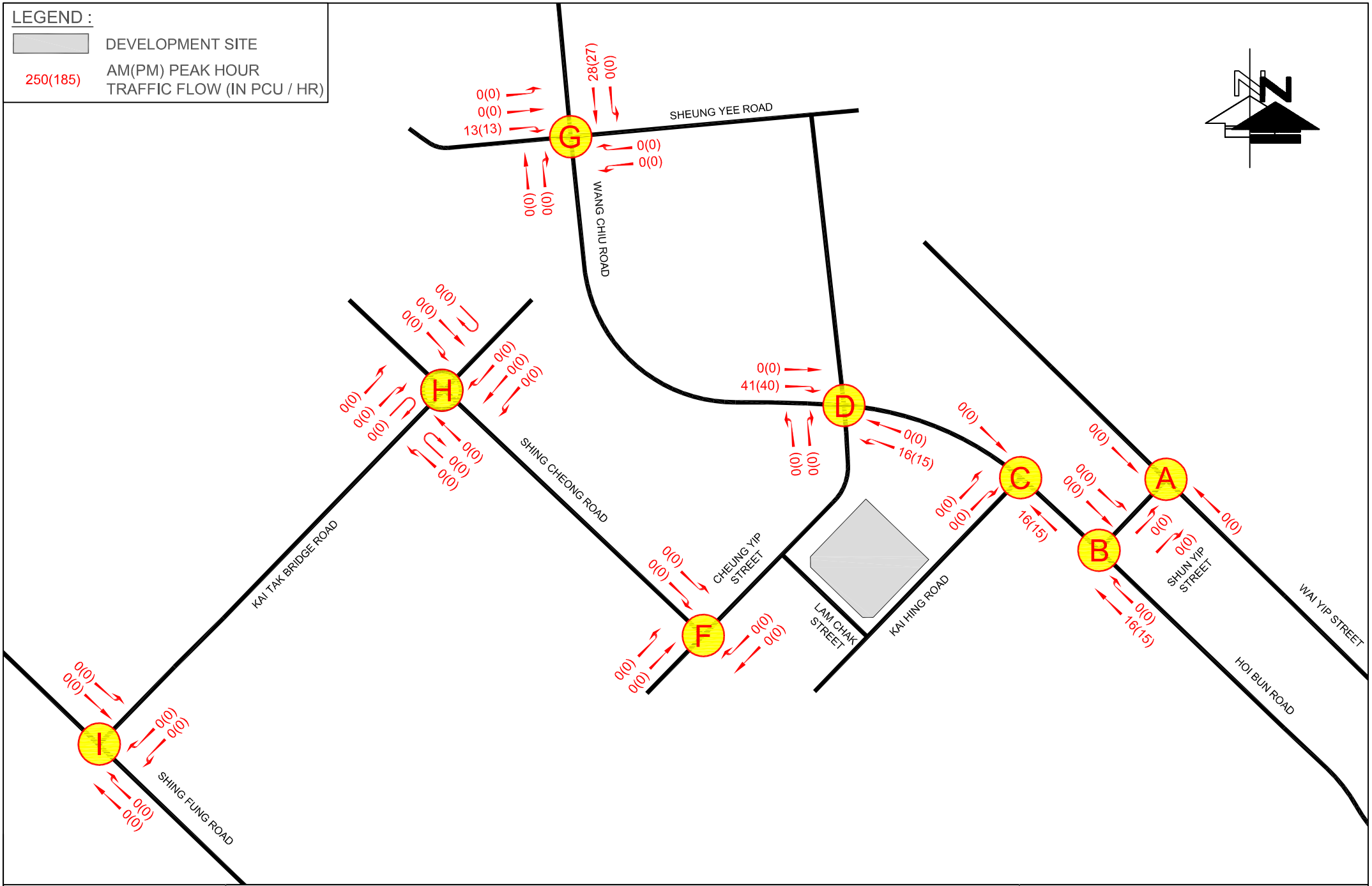


FIGURE NO.: 4.6	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay		
PROJECT NO.: 25046HK	DRAWING TITLE: 2036 DEVELOPMENT TRAFFIC FLOWS - ATTRACTION		
SCALE: N.T.S. @A4	DATE: 11 MAR 2026		

CTA Consultants Limited
志達顧問有限公司

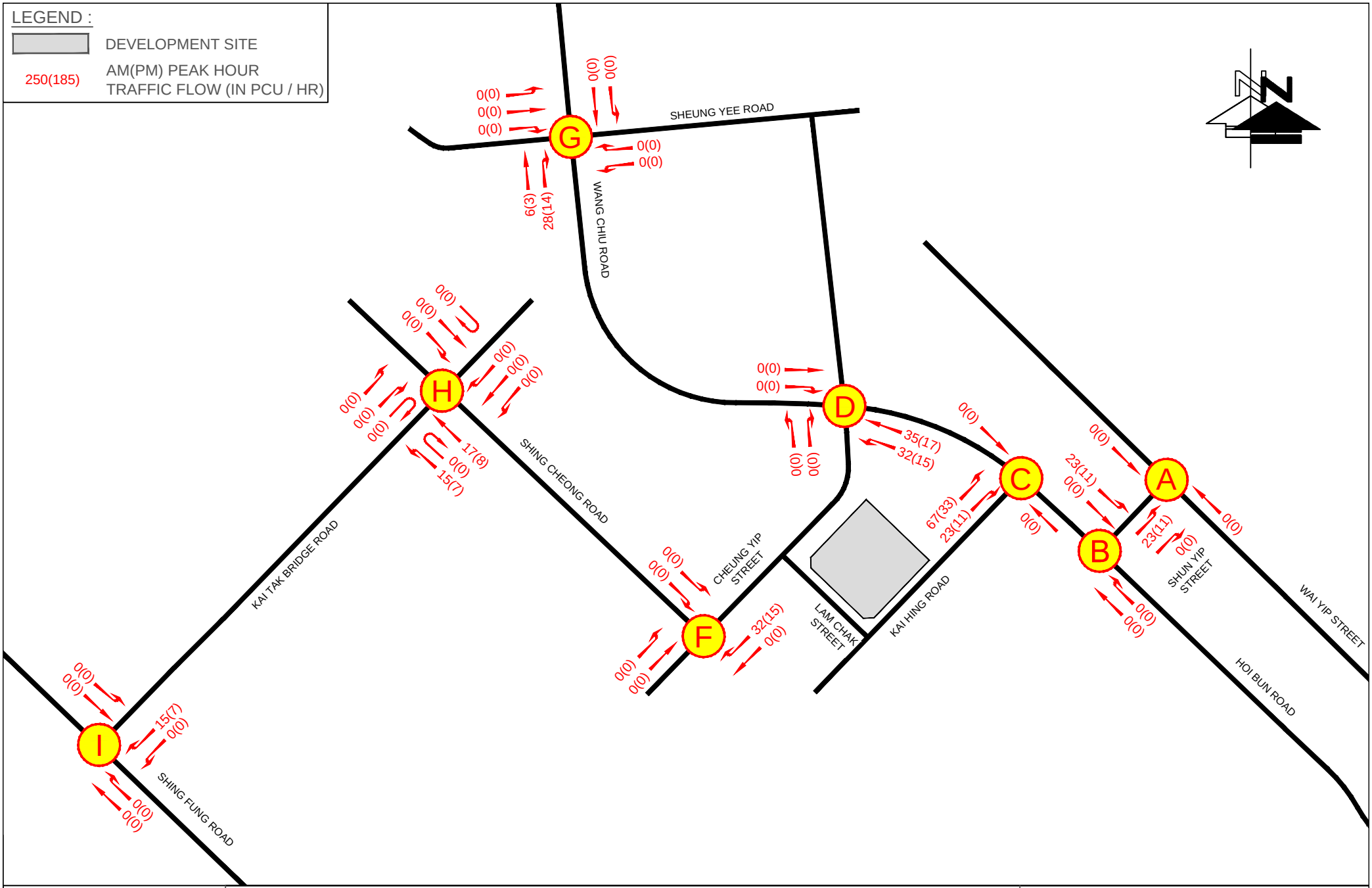


FIGURE NO.: 4.7 (REV A)	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: 2036 DEVELOPMENT TRAFFIC FLOWS - GENERATION	
SCALE: N.T.S. @A4 / DATE: 27 MAY 2026		

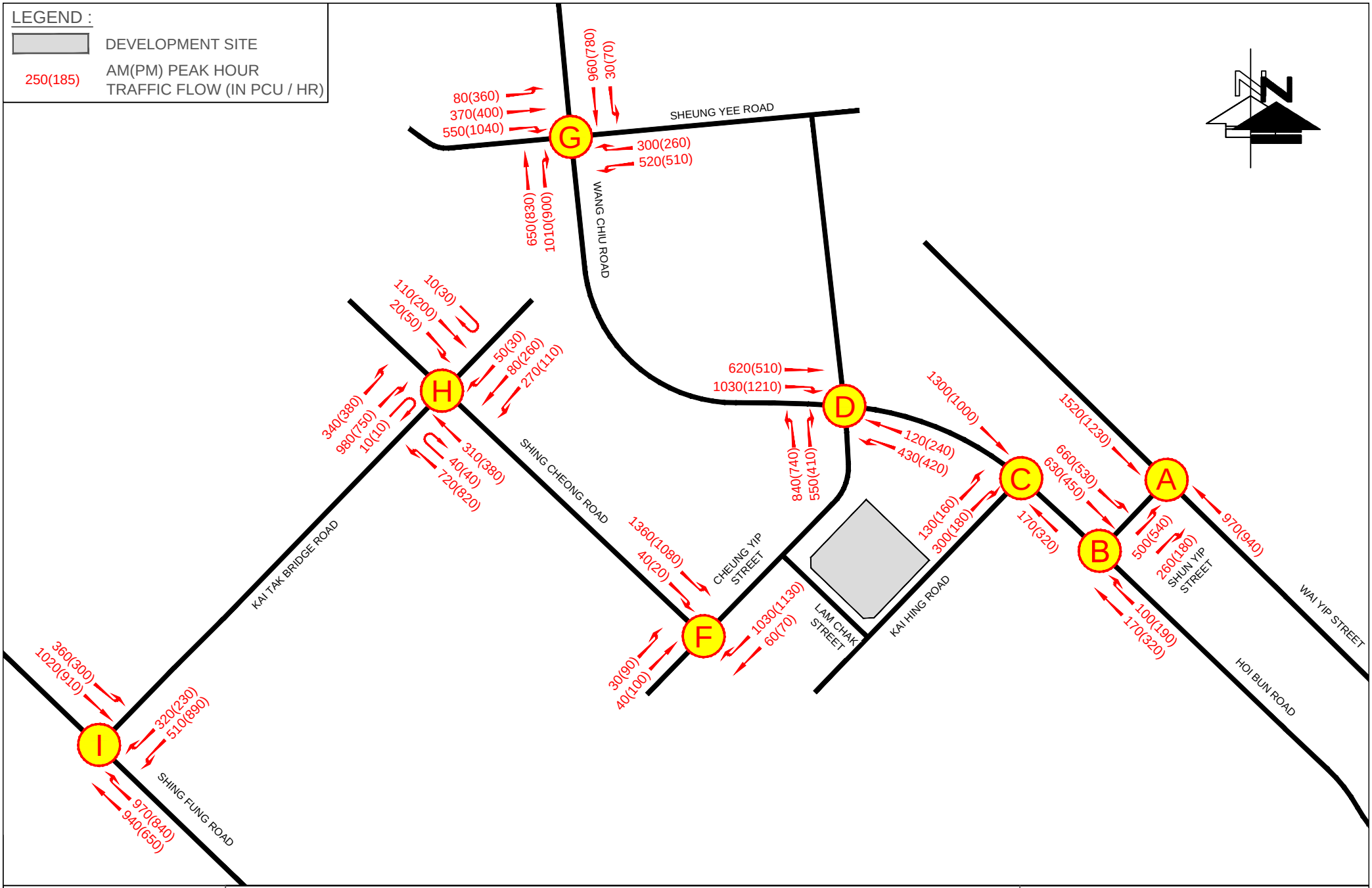
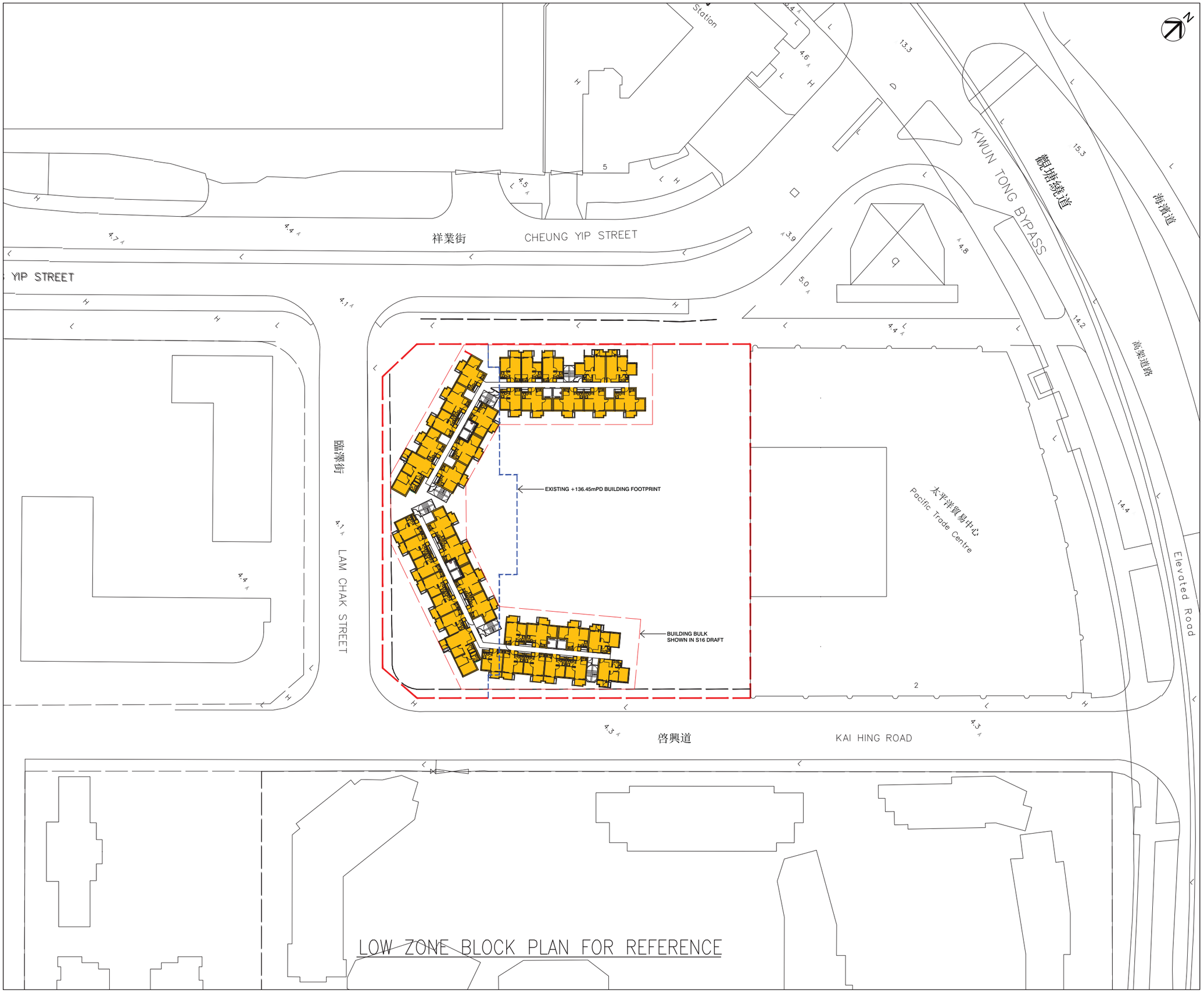


FIGURE NO.: 4.8(REV A)	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: 2036 DESIGN TRAFFIC FLOWS (WITH PROPOSED DEVELOPMENT)	
SCALE: N.T.S. @A4 / DATE: 27 MAY 2026		



B.D. REFERENCE	屋宇署檔案
F.S.D. REFERENCE	消防處檔案
W.W.O. REFERENCE	水務署檔案
CAD FILE NAME	檔案編號
NOTES	注釋

NO. 修定號	REVISIONS 修定內容	DATE 日期	BY 經手人

DLN

DLN Architects Limited
劉榮廣伍振民建築師有限公司

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時代廣場一座46至47樓

t +852 2895 6888 f +852 2576 4074
email general@dln.com.hk www.dln.com.hk

PROJECT 項目名稱

PROPOSED COMPOSITE DEVELOPMENT
AT 8 LAM CHAK STREET, KOWLOON
– N.K.I.L. 6215

TITLE 標題

BLOCK PLAN FOR REFERENCE

SCALE 比例	DATE 日期
1:800(A3)	AUG 2025
DRAWN BY 製作人	CHECKED BY 檢查
JOB NO. 工程項目	DRAWING NO. 圖號

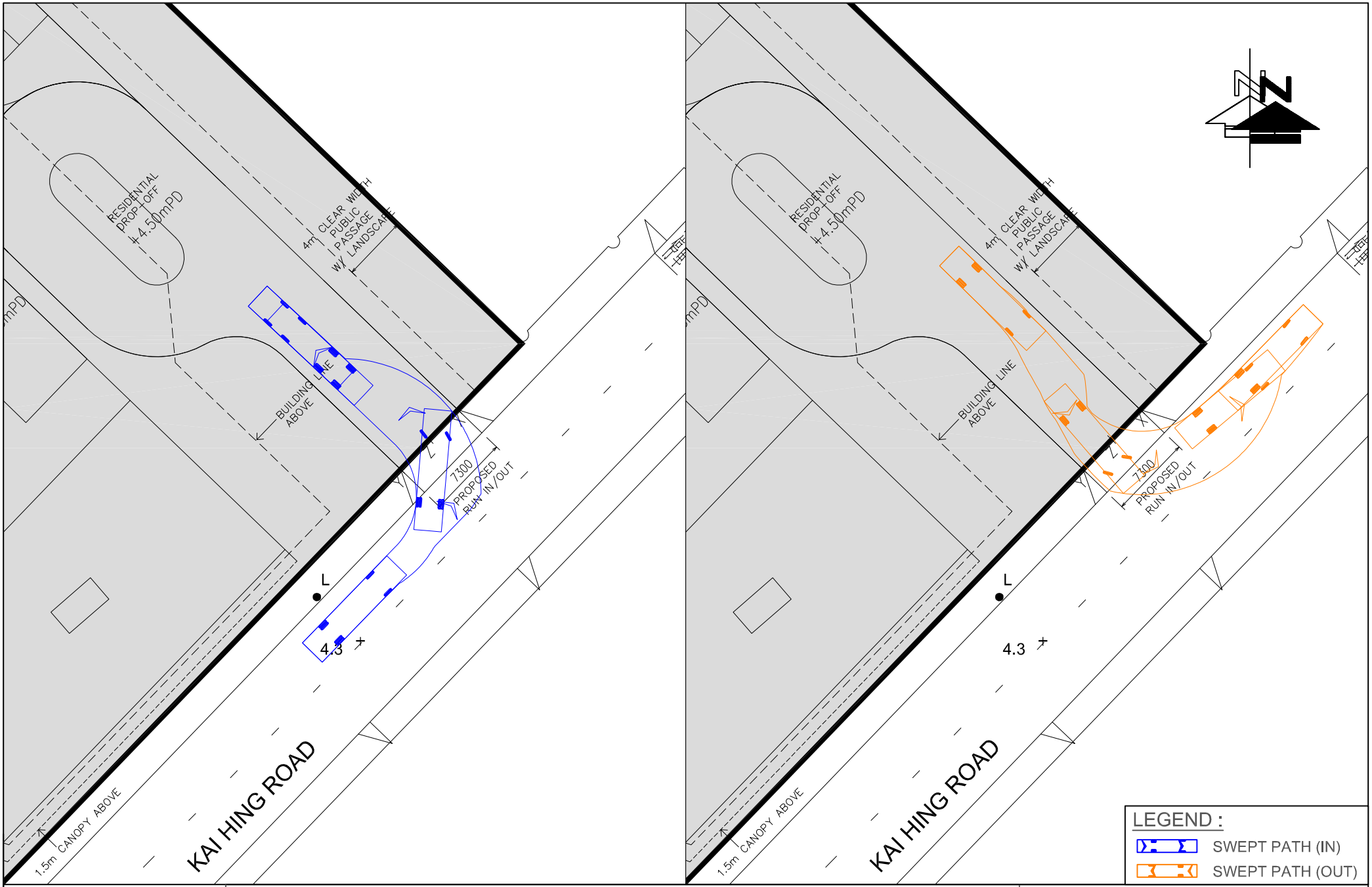


FIGURE NO.: SP01 (REV B)	PROJECT TITLE: S16 Planning Application for Proposed Composite Development of Harbourside HQ at No.8 Lam Chak Street, Kowloon Bay	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 25046HK	DRAWING TITLE: SWEPT PATH ANALYSIS OF HGV	
SCALE: 1 : 450 @A4 / DATE: 01 JUN 2026		

APPENDIX A

Junction Calculation Sheets

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wai Yip Street/ Shun Yip Street (A)**

Description: **2025 Observed Traffic Flows**

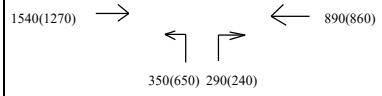
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Wai Yip Street	E	→	A	2	3.3	0	0	1	0%	0%	1945	6115	1945	1945	6115	6115	490	0.252	0.252	404	0.208	0.208
Wai Yip Street	E	→	A	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	525	0.252		433	0.208	
Wai Yip Street	E	→	A	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	525	0.252		433	0.208	
Wai Yip Street	W	←	B	2	3.3	0	0	1	0%	0%	1945	6115	1945	1945	6115	6115	283	0.146		274	0.141	
Wai Yip Street	W	←	B	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	303	0.146		293	0.141	
Wai Yip Street	W	←	B	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	303	0.146		293	0.141	
Shun Yip Street	S	↰	C	4	3.5	11	0	1	100%	100%	1965	6225	1720	1720	5520	5520	199	0.116	0.116	306	0.178	0.178
Shun Yip Street	S	↑	C	4	3.5	18	18	0	67% / 33%	100% / 0%	2105	0	1940	1940	0	0	225	0.116		344	0.178	
Shun Yip Street	S	↱	C	4	4.0	0	10	0	100%	100%	2155	0	1860	1860	0	0	216	0.116		240	0.129	

Pedestrian Crossing

Dp	2,3	Min. Crossing Time = 11Gm + 11FGm =22s
Ep	3	Min. Crossing Time = 12Gm + 9FGm = 21s
Fp	3	Min. Crossing Time = 13Gm + 12FGm =25s

Notes:

Traffic Flow (pcu / hr) AM(PM)



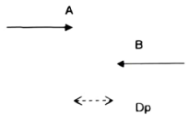
A.M. Check Phase		P.M. Check Phase	
εy	0.368	εy	0.385
L (sec)	34	L (sec)	34
C (sec)	118	C (sec)	118
y pract.	0.641	y pract.	0.641
R.C. (%)	74%	R.C. (%)	66%

Stage / Phase Diagrams

1.

I/G =6s

2.



I/G = 8s

3.

I/G = 20+2s

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Ho Bun Road / Shun Yip Street (B)**

Description: **2025 Observed Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Hoi Bun Road	W	↰↑	A	1	3.4	0	0	1	0%	0%	1955	4050	1955	1955	3880	3870	282	0.144	0.144	350	0.179	
Hoi Bun Road	W	←	A	1	3.4	0	16	0	94%	100%	2095	0	1925	1915	0	0	278	0.144		390	0.204	0.204
Hoi Bun Road	E	↱	B	2	3.5	18	0	0	100%	100%	2105	2105	1940	1940	1940	1940	320	0.165		360	0.186	0.186
Hoi Bun Road	E	→	B	2	3.5	0	0	1	0%	0%	1965	1965	1965	1965	1965	1965	370	0.188	0.188	290	0.148	

Pedestrian Crossing	Cp	1,3	Min. Crossing Time = 5Gm + 5FGm = 10s
	Dp	2,3	Min. Crossing Time = 5Gm + 7FGm = 12s
	Ep	3	Min. Crossing Time = 5Gm + 10FGm = 15s
	Fp	3	Min. Crossing Time = 13Gm + 12FGm =25s

Notes:

Traffic Flow (pcu / hr) AM(PM)

320(360) →

370(290) →

↰ 260(390)

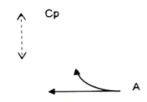
← 300(350)

A.M. Check Phase	
εy	0.333
L (sec)	33
C (sec)	120
y pract.	0.653
R.C. (%)	96%

P.M. Check Phase	
εy	0.389
L (sec)	34
C (sec)	108
y pract.	0.617
R.C. (%)	58%

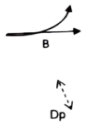
Stage / Phase Diagrams

1.



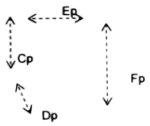
I/G =8s

2.



I/G = 9s

3.



I/G = 14+3s

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Kai Hing Street / Hoi Bun Road (C)**

Description: **2025 Observed Traffic Flows**

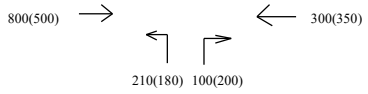
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Nearside 0/1	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	Total Revised Saturation Flow (pcu/hr) A.M.	Total Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Hoi Bun Road	E	→	A	1,2	3.5	0	0	1	0%	0%	1965	4070	1965	1965	4070	4070	386	0.197	0.197	241	0.123	0.123
Hoi Bun Road	E	→	A	1,2	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	414	0.197		259	0.123	
Hoi Bun Road	W	←	B	1,4	3.3	0	0	1	0%	0%	1945	4030	1945	1945	4030	4030	145	0.074		169	0.087	
Hoi Bun Road	W	←	B	1,4	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	155	0.074		181	0.087	
Kai Hing Road	N	↰	C	3	5.0	13	0	1	100%	100%	2115	4230	1890	1890	3820	3815	153	0.081	0.081	180	0.095	
Kai Hing Road	N	↱	C	3	5.0	18	15	1	5% / 64% / 100		2115	0	1930	1925	0	0	157	0.081		200	0.104	0.104

Pedestrian Crossing ↕

Dp	3,4	Min. Crossing Time = 7Gm + 7FGm =14s
Ep	2	Min. Crossing Time = 5Gm + 16FGm = 21s
Fp	4	Min. Crossing Time = 5Gm + 16FGm = 21s
Gp	2,3	Min. Crossing Time = 5Gm + 11FGm =16s
Hp	1,2,4	Min. Crossing Time = 7Gm + 12FGm =19s

Notes:

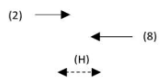
Traffic Flow (pcu / hr) AM(PM)



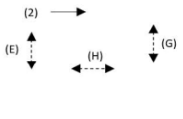
A.M. Check Phase	
εy	0.278
L (sec)	42
C (sec)	130
y pract.	0.609
R.C. (%)	119%

P.M. Check Phase	
εy	0.227
L (sec)	42
C (sec)	130
y pract.	0.609
R.C. (%)	169%

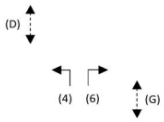
Stage / Phase Diagrams



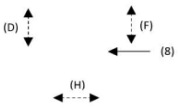
I/G =21s



I/G = 12s



I/G = 11s



TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

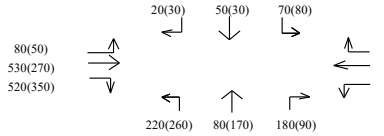
Junction: **Wang Chiu Road / Hoi Bun Road (D)**

Description: **2025 Observed Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Wang Chiu Road	E		1	A	4.0	18	30	1	13% / 0%	15% / 3%	2015	4170	1995	1985	4030	4020	610	0.306	0.306	331	0.167	0.167
Wang Chiu Road	E		1	A	4.0	0	25	0	100%	100%	2155	0	2035	2035	0	0	520	0.256		339	0.167	
Hoi Bun Raod	W		3	E	3.5	0	15	0	32%	25%	2105	2105	2040	2055	2040	2055	220	0.108	0.108	280	0.136	0.136
Hoi Bun Raod	W		3, 4	D	3.4	15	0	1	100%	100%	1955	1955	1775	1775	1775	1775	220	0.124		150	0.085	
Cheung Yip Street	N		1,4	B	3.5	15	0	1	100%	100%	1965	1965	1785	1785	1785	1785	220	0.123		260	0.146	
Cheung Yip Street	N		4	C	3.3	0	0	0	0%	0%	2085	2085	2085	2085	2085	2085	80	0.038	0.038	170	0.082	0.082
Cheung Yip Street	N		4	C	3.5	0	33	0	100%	100%	2105	4210	2015	2015	4020	4020	90	0.045		45	0.022	
Cheung Yip Street	N		4	C	3.5	0	30	0	100%	100%	2105	0	2005	2005	0	0	90	0.045		45	0.022	
Cheung Yip Street	S		2	F	4.0	40	0	1	100%	100%	2015	4170	1940	1940	4060	4030	70	0.036	0.036	80	0.041	0.041
Cheung Yip Street	S		2	F	4.0	0	25	0	29%	50%	2155	0	2120	2090	0	0	70	0.033		60	0.029	
Pedestrian crossing			Gp	3		Min. Crossing Time = 10Gm + 9FGm =19s																
			Hp	2,3,4		Min. Crossing Time = 5Gm + 6FGm =11s																
			Ip	1,2,4		Min. Crossing Time = 5Gm + 6FGm =11s																
			Jp	1,2		Min. Crossing Time = 5Gm + 5FGm =10s																
			Kp	1, 4		Min. Crossing Time = 5Gm + 6FGm =11s																
			Lp	1,3,4		Min. Crossing Time = 5Gm + 5FGm =10s																
			Mp	2		Min. Crossing Time = 5Gm + 5FGm =10s																
			Np	2,3		Min. Crossing Time = 5Gm + 6FGm =11s																

Notes:

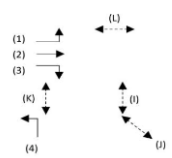
Traffic Flow (pcu / hr)

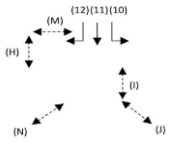


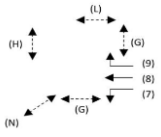
A.M. Check Phase	
cy	0.488
L (sec)	36
C (sec)	130
y pract.	0.651
R.C. (%)	**33%**

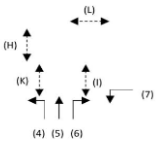
P.M. Check Phase	
cy	0.426
L (sec)	36
C (sec)	125
y pract.	0.641
R.C. (%)	**51%**

Stage / Phase Diagrams









AM: I/G = 9	AM: I/G = 12	AM: I/G = 12	AM: I/G = 8		
PM: I/G = 9	PM: I/G = 12	PM: I/G = 12	PM: I/G = 7		

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

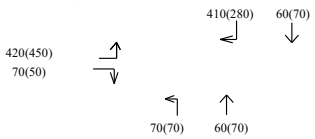
Junction: **Cheung Yip Street/ Shing Cheong Road (F)**

Description: **2025 Observed Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Shing Cheong Road	E		A	1,2	3.5	15	0	1	100%	100%	1965	4070	1785	1785	3730	3730	201	0.113		215	0.121	
Shing Cheong Road	E		A	1,2	3.5	18	0	0	100%	100%	2105	0	1945	1945	0	0	219	0.113		235	0.121	
Shing Cheong Road	E		D	2	3.5	0	10	0	100%	100%	2105	2105	1830	1830	1830	1830	70	0.038	0.038	50	0.027	0.027
Cheung Yip Street	N		C	3	3.5	15	0	1	100%	100%	1965	4070	1785	1785	3890	3890	70	0.039	0.039	70	0.039	0.039
Cheung Yip Street	N		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	60	0.029		70	0.033	
Cheung Yip Street	S		B	1	3.5	0	15	1	75%	60%	1965	4050	1830	1855	3645	3670	236	0.129	0.129	177	0.095	0.095
Cheung Yip Street	S		B	1	3.3	0	10	0	100%	100%	2085	0	1815	1815	0	0	234	0.129		173	0.095	
Pedestrian crossing			Ep	1,2		Min. Crossing Time = 5Gm + 8FGm =13s																
			Fp	2		Min. Crossing Time = 6Gm + 8FGm =14s																
			Gp	3		Min. Crossing Time = 10Gm + 8FGm =18s																
			Hp	3		Min. Crossing Time = 5Gm + 7FGm =12s																

Notes:

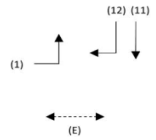
Traffic Flow (pcu / hr)



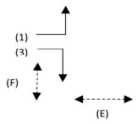
A.M. Check Phase	
ey	0.206
L (sec)	29
C (sec)	120
y pract.	0.683
R.C. (%)	**231%**

P.M. Check Phase	
ey	0.162
L (sec)	29
C (sec)	120
y pract.	0.683
R.C. (%)	**322%**

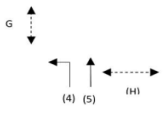
Stage / Phase Diagrams



I/G = 6



I/G = 7



I/G = 5

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wang Chiu Road / Sheung Yee Road (G)**

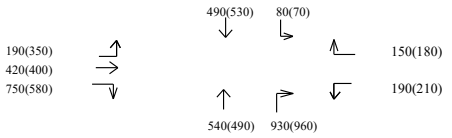
Description: **2025 Observed Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Sheung Yee Road	E		B	2	3.5	15	0	1	100%	100%	1965	8140	1785	1785	7655	7665	190	0.106		310	0.174	
Sheung Yee Road	E		B	2	3.5	18	0	0	0%	11%	2105	0	2105	2085	0	0	420	0.199	0.199	362	0.174	0.174
Sheung Yee Road	E		B	2	3.5	0	20	0	100%	77%	2105	0	1960	1990	0	0	390	0.199		345	0.173	
Sheung Yee Road	E		B	2	3.5	0	17	1	0%	0%	1965	0	1805	1805	0	0	360	0.199		313	0.174	
Wang Chiu Road	N		A	1	3.5	0	0	1	0%	0%	1825	3930	1825	1825	3930	3930	251	0.137		228	0.125	
Wang Chiu Road	N		A	1	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	289	0.137		262	0.125	
Wang Chiu Road	N		A	1	3.5	0	28	0	100%	100%	2105	4210	2000	2000	3985	3985	467	0.233	0.233	482	0.241	0.241
Wang Chiu Road	N		A	1	3.5	0	25	0	100%	100%	2105	0	1985	1985	0	0	463	0.233		478	0.241	
Sheung Yee Road	W		D	4	3.5	15	0	1	100%	100%	1965	6175	1785	1785	5665	5670	107	0.060		123	0.069	
Sheung Yee Road	W		D	4	3.5	20	25	0	70% / 30%	64% / 36%	2105	0	1965	1970	0	0	118	0.060		135	0.069	
Sheung Yee Road	W		D	4	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	115	0.060		132	0.069	
Wang Chiu Road	S		C	3	3.5	0	0	0	0%	0%	1965	4070	1965	1965	4070	4070	237	0.120	0.120	256	0.130	0.130
Wang Chiu Road	S		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	253	0.120		274	0.130	
Wang Chiu Road	S		C	3	3.5	15	0	1	100%	100%	1965	1965	1785	1785	1785	1785	80	0.045		70	0.039	

Pedestrian crossing	Ep	1,3,4	Min. Crossing Time = 5Gm + 9FGm =14s
	Fp	3	Min. Crossing Time = 5Gm + 7FGm =12s
	Gp	1,2,4	Min. Crossing Time = 5Gm + 5FGm =10s
	Hp	1,2,3	Min. Crossing Time = 5Gm + 5FGm =10s
	Ip	1	Min. Crossing Time = 5Gm + 5FGm =10s
	Jp	2,3,4	Min. Crossing Time = 5Gm + 5FGm =10s
	Kp	4	Min. Crossing Time = 5Gm + 7FGm =12s

Notes:

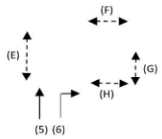
Traffic Flow (pcu / hr)



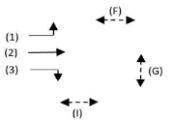
A.M. Check Phase	
cy	0.553
L (sec)	32
C (sec)	140
y pract.	0.694
R.C. (%)	**26%**

P.M. Check Phase	
cy	0.545
L (sec)	32
C (sec)	140
y pract.	0.694
R.C. (%)	**27%**

Stage / Phase Diagrams



I/G = 5



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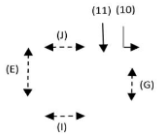

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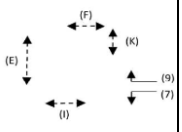
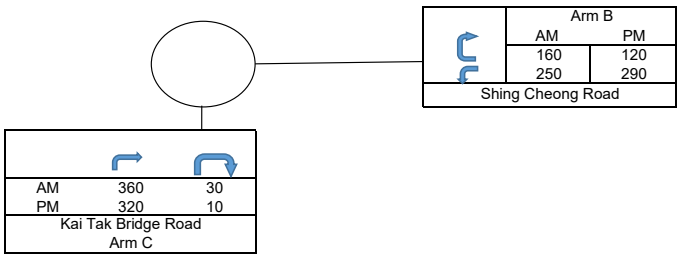


I/G = 12+2

Roundabout Junction Calculation

Roundabout Junction : **Shing Cheong Road / Kai Tak Bridge Road (H)** Project No. 25046HK

Design Year : **2025 Observed Traffic Flows**



Input Parameters			Arm B - Shing Cheong Road		Arm C - Kai Tak Bridge Road	
			AM	PM	AM	PM
V	=	Approach half width (m)	7.3	7.3	7.3	7.3
E	=	Entry width (m)	7.3	7.3	7.3	7.3
L	=	Effective length of flare (m)	1	1	1	1
R	=	Entry radius	15	15	15	15
D	=	Inscribed circle diameter (m)	45	45	45	45
A	=	Entry angle (degree)	30	30	30	30
Q	=	Entry flow (pcu/hr)	410	410	390	330
Qc	=	Circulating flow across entry (pcu/hr)	30	10	160	120

Output Parameters			Arm B		Arm C	
			AM	PM	AM	PM
S	=	Sharepness of flare = 1.6*(E-V)/L	0.00	0.00	0.00	0.00
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	0.98	0.98	0.98	0.98
X_2	=	V+((E-V)/(1+2*S))	7.30	7.30	7.30	7.30
M	=	Exp((D-60)/10)	0.22	0.22	0.22	0.22
F	=	303*X_2	2212	2212	2212	2212
Td	=	1+(0.5/(1+M))	1.41	1.41	1.41	1.41
Fc	=	0.21*Td*(1+0.2*X_2)	0.73	0.73	0.73	0.73
Qe	=	Capacity = K*(F-Fc*Qc)	2154	2169	2061	2090
DFC	=	Entry Flow/Capacity = Q/Qe	0.19	0.19	0.19	0.16

		AM	PM
DFC of Critical Approach	=	**0.19**	**0.19**

CTA

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

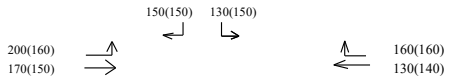
Junction: **Shing Fung Road/Kai Tak Bridge Road (I)**

Description: **2025 Observed Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Shing Fung Road	W		A	1	3.5	0	18	0	100%	100%	2105	4210	1945	1945	3860	3860	81	0.041	0.041	81	0.041	0.041
Shing Fung Road	W		A	1	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	79	0.041		79	0.041	
Shing Fung Road	W		A	1	3.3	0	0	1	0%	0%	1805	3890	1805	1805	3890	3890	60	0.033		65	0.036	
Shing Fung Road	W		A	1	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	70	0.033		75	0.036	
Kai Tak Bridge Road	S		C	2	3.5	0	15	0	100%	100%	2105	4210	1915	1915	3830	3830	75	0.039	0.039	75	0.039	0.039
Kai Tak Bridge Road	S		C	2	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	75	0.039		75	0.039	
Kai Tak Bridge Road	S		B	1,2	3.5	12	0	1	100%	100%	1965	1965	1745	1745	1745	1745	130	0.074		150	0.086	
Shing Fung Road	E		D	3	3.5	25	0	1	94%	90%	2995	5100	2835	2840	4940	4945	212	0.075	0.075	178	0.063	0.063
Shing Fung Road	E		D	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	158	0.075		132	0.063	
Pedestrian crossing			Ep	1,2		Min. Crossing Time = 7Gm + 10FGm =17s																
			Fp	2		Min. Crossing Time = 7Gm + 11FGm =18s																
			Gp	3		Min. Crossing Time = 8Gm + 12FGm =20s																
			Hp	3		Min. Crossing Time = 8Gm + 7FGm =15s																

Notes:

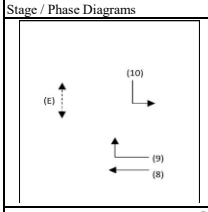
Traffic Flow (pcu / hr)



A.M. Check Phase	
ey	0.156
L (sec)	20
C (sec)	120
y pract.	0.750
R.C. (%)	**382%**

P.M. Check Phase	
ey	0.143
L (sec)	20
C (sec)	120
y pract.	0.750
R.C. (%)	**423%**

Stage / Phase Diagrams



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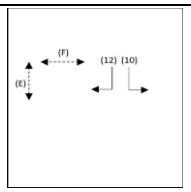

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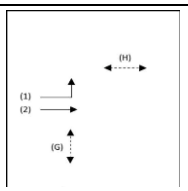


I/G = 5

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wai Yip Street/ Shun Yip Street (A)**

Description: **2036 Reference Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Nearside 0/1	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	Total Revised Saturation Flow (pcu/hr) A.M.	Total Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Wai Yip Street	E	→	A	2	3.3	0	0	1	0%	0%	1945	6115	1945	1945	6115	6115	483	0.249	0.249	391	0.201	0.201
Wai Yip Street	E	→	A	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	518	0.249		419	0.201	
Wai Yip Street	E	→	A	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	518	0.249		419	0.201	
Wai Yip Street	W	←	B	2	3.3	0	0	1	0%	0%	1945	6115	1945	1945	6115	6115	309	0.159		299	0.154	
Wai Yip Street	W	←	B	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	331	0.159		321	0.154	
Wai Yip Street	W	←	B	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	331	0.159		321	0.154	
Shun Yip Street	S	↰	C	1	3.5	11	0	1	100%	100%	1965	6225	1720	1720	5520	5520	240	0.140	0.140	263	0.153	0.153
Shun Yip Street	S	↑	C	1	3.5	18	18	0	100% / 0%	100% / 0%	2105	0	1940	1940	0	0	271	0.139		297	0.153	
Shun Yip Street	S	↱	C	1	4.0	0	10	0	100%	100%	2155	0	1860	1860	0	0	260	0.140		180	0.097	

Pedestrian Crossing

Dp	2,3	Min. Crossing Time = 11Gm + 11FGm =22s
Ep	3	Min. Crossing Time = 12Gm + 9FGm = 21s
Fp	3	Min. Crossing Time = 13Gm + 12FGm =25s

Notes:

Traffic Flow (pcu / hr) AM(PM)

1520(1230) → ← 970(940)

510(560) 260(180)

A.M. Check Phase		P.M. Check Phase	
εy	0.388	εy	0.354
L (sec)	34	L (sec)	34
C (sec)	118	C (sec)	118
y pract.	0.641	y pract.	0.641
R.C. (%)	65%	R.C. (%)	81%

Stage / Phase Diagrams

1. C — I/G =6s

2. A, B, Dp — I/G = 8s

3. Fp, Ep, Dp — I/G = 20+2s

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Ho Bun Road / Shun Yip Street (B)**

Description: **2036 Reference Traffic Flows (With Planned Junction Improvement)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Hoi Bun Road	W		A	1	3.5	0	25	0	100%	100%	2105	2105	1985	1985	1985	1985	100	0.050	0.050	190	0.096	0.096
Hoi Bun Road	W		B	1,2	3.3	0	0	1	0%	0%	1945	1945	1945	1945	1945	1945	200	0.103		330	0.170	
Hoi Bun Road	E		C	2	3.5	18	0	1	100%	100%	1965	4070	1810	1810	3900	3890	603	0.333		465	0.257	
Hoi Bun Road	E		C	2	3.5	20	0	0	10%	16%	2105	0	2090	2080	0	0	697	0.333	0.333	535	0.257	0.257

Pedestrian Crossing	Ep	1,3	Min. Crossing Time = 5Gm + 7FGm = 12s
	Fp	3	Min. Crossing Time = 5Gm + 7FGm = 12s
	Gp	3	Min. Crossing Time = 11Gm + 12FGm = 23s
	Hp	3	Min. Crossing Time = 8Gm + 10FGm = 18s

Notes:

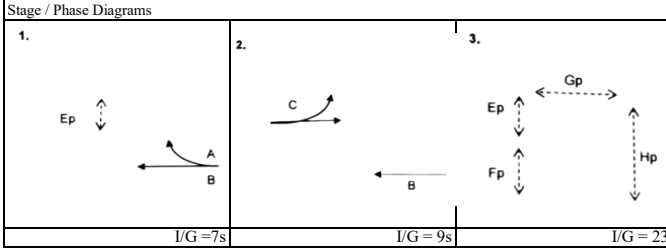
Traffic Flow (pcu / hr) AM(PM)

670(550)
630(450)
100(190)
200(330)

A.M. Check Phase	
εy	0.384
L (sec)	39
C (sec)	120
y pract.	0.608
R.C. (%)	58%

P.M. Check Phase	
εy	0.353
L (sec)	39
C (sec)	120
y pract.	0.608
R.C. (%)	72%

Stage / Phase Diagrams



I/G =7s I/G = 9s I/G = 23+2s

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Kai Hing Street / Hoi Bun Road (C)**

Description: **2036 Reference Traffic Flows**

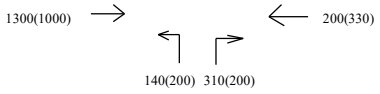
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Nearside 0/1	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	Total Revised Saturation Flow (pcu/hr) A.M.	Total Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Hoi Bun Road	E	→	A	1,2	3.5	0	0	1	0%	0%	1965	4070	1965	1965	4070	4070	628	0.319	0.319	483	0.246	0.246
Hoi Bun Road	E	→	A	1,2	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	672	0.319		517	0.246	
Hoi Bun Road	W	←	B	1,4	3.3	0	0	1	0%	0%	1945	4030	1945	1945	4030	4030	97	0.050		159	0.082	
Hoi Bun Road	W	←	B	1,4	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	103	0.050		171	0.082	
Kai Hing Road	N	↰	C	3	5.0	13	0	1	100%	100%	2115	4230	1890	1890	3815	3815	140	0.074		198	0.105	
Kai Hing Road	N	↕	C	3	5.0	18	15	1	⅓ / 100 %	/ 99%	2115	0	1925	1925	0	0	310	0.161	0.161	202	0.105	0.105

Pedestrian Crossing ↕

Dp	3,4	Min. Crossing Time = 7Gm + 7FGm =14s
Ep	2	Min. Crossing Time = 5Gm + 16FGm = 21s
Fp	4	Min. Crossing Time = 5Gm + 16FGm = 21s
Gp	2,3	Min. Crossing Time = 5Gm + 11FGm =16s
Hp	1,2,4	Min. Crossing Time = 7Gm + 12FGm =19s

Notes:

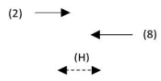
Traffic Flow (pcu / hr) AM(PM)



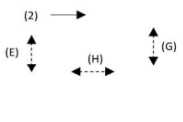
A.M. Check Phase	
εy	0.480
L (sec)	42
C (sec)	130
y pract.	0.609
R.C. (%)	27%

P.M. Check Phase	
εy	0.350
L (sec)	42
C (sec)	130
y pract.	0.609
R.C. (%)	74%

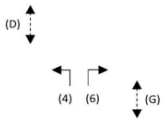
Stage / Phase Diagrams



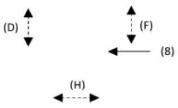
I/G =21s



I/G = 12s



I/G = 11s



TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wang Chiu Road / Hoi Bun Road / Cheung Yip Street (D)**

Description: **2036 Reference Traffic Flows (With Planned Junction Improvement)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Wang Chiu Road	E		A	1	3.5	0	35	1	27%	40%	1965	4070	1945	1930	3950	3935	846	0.435	0.435	849	0.440	0.440
Wang Chiu Road	E		A	1	3.5	0	30	0	100%	100%	2105	0	2005	2005	0	0	874	0.436		881	0.439	
Hoi Bun Road	W		E	3	3.5	0	0	1	0%	0%	1965	1965	1965	1965	1965	1965	130	0.066		260	0.132	
Hoi Bun Raod	W		D	2,3	3.5	30	0	1	100%	100%	1965	1965	1870	1870	1870	1870	460	0.246	0.246	450	0.241	0.241
Cheung Yip Street	N		B	1,2	3.5	15	0	1	100%	100%	1965	1965	1785	1785	1785	1785	840	0.471		740	0.415	
Cheung Yip Street	N		C	2	3.5	0	35	0	100%	100%	2105	4210	2020	2020	4025	4025	276	0.137		206	0.102	
Cheung Yip Street	N		C	2	3.5	0	30	0	100%	100%	2105	0	2005	2005	0	0	274	0.137		204	0.102	
Pedestrian crossing			Fp	3		Min. Crossing Time = 5Gm + 7FGm =12s																
			Gp	2,3		Min. Crossing Time = 5Gm + 9FGm =14s																
			Hp	3		Min. Crossing Time = 5Gm + 17FGm =22s																
			Ip	1,2		Min. Crossing Time = 5Gm + 4FGm =9s																
			Jp	1		Min. Crossing Time = 5Gm + 7FGm =12s																
			Kp	1,2		Min. Crossing Time = 5Gm + 5FGm =10s																
			Lp	3		Min. Crossing Time = 5Gm + 4FGm =9s																

Notes:

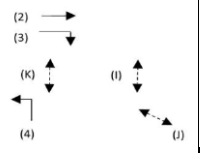
Traffic Flow (pcu / hr)

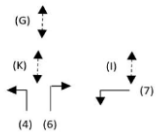
620(510)
1100(1220)
840(740)
550(410)
130(260)
460(450)

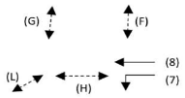
A.M. Check Phase	
cy	0.681
L (sec)	15
C (sec)	120
y pract.	0.788
R.C. (%)	16%

P.M. Check Phase	
cy	0.681
L (sec)	15
C (sec)	120
y pract.	0.788
R.C. (%)	16%

Stage / Phase Diagrams







I/G = 3

I/G = 5

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

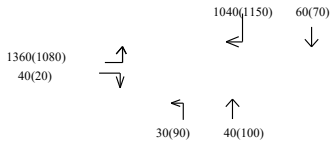
Junction: **Cheung Yip Street/ Shing Cheong Road (F)**

Description: **2036 Reference Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Shing Cheong Road	E		A	1,2	3.5	15	0	1	100%	100%	1965	4070	1785	1785	3730	3730	651	0.365	0.365	517	0.290	
Shing Cheong Road	E		A	1,2	3.5	18	0	0	100%	100%	2105	0	1945	1945	0	0	709	0.365		563	0.290	
Shing Cheong Road	E		D	2	3.5	0	10	0	100%	100%	2105	2105	1830	1830	1830	1830	40	0.022		20	0.011	0.011
Cheung Yip Street	N		C	3	3.5	15	0	1	93%	100%	1965	4070	1800	1785	3905	3890	32	0.018	0.018	90	0.050	0.050
Cheung Yip Street	N		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	38	0.018		100	0.048	
Cheung Yip Street	S		B	1	3.5	0	15	1	89%	88%	1965	4050	1805	1805	3620	3620	548	0.304		608	0.337	0.337
Cheung Yip Street	S		B	1	3.3	0	10	0	100%	100%	2085	0	1815	1815	0	0	552	0.304		612	0.337	
Pedestrian crossing			Ep	1,2		Min. Crossing Time = 5Gm + 8FGm =13s																
			Fp	2		Min. Crossing Time = 6Gm + 8FGm =14s																
			Gp	3		Min. Crossing Time = 10Gm + 8FGm =18s																
			Hp	3		Min. Crossing Time = 5Gm + 7FGm =12s																

Notes:

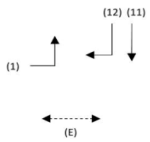
Traffic Flow (pcu / hr)

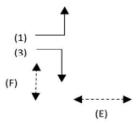


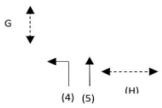
A.M. Check Phase	
cy	0.383
L (sec)	35
C (sec)	120
y pract.	0.638
R.C. (%)	67%

P.M. Check Phase	
cy	0.398
L (sec)	44
C (sec)	120
y pract.	0.570
R.C. (%)	43%

Stage / Phase Diagrams







	AM: I/G = 5	AM: I/G = 8
PM: I/G = 11	PM: I/G = 5	PM: I/G = 8

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wang Chiu Road / Sheung Yee Road (G)**

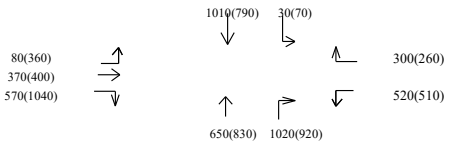
Description: **2036 Reference Traffic Flows (With Planned Junction Improvement)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Sheung Yee Road	E		B	2	3.5	15	0	1	100%	100%	1965	8280	1785	1785	7930	7875	80	0.045		331	0.185	
Sheung Yee Road	E		B	2	3.5	18	0	0	0%	7%	2105	0	2105	2090	0	0	248	0.118	0.118	388	0.186	0.186
Sheung Yee Road	E		B	2	3.5	0	30	0	50%	89%	2105	0	2055	2015	0	0	242	0.118		373	0.185	
Sheung Yee Road	E		B	2	3.5	0	25	0	100%	100%	2105	0	1985	1985	0	0	234	0.118		368	0.185	
Sheung Yee Road	E		B	2	3.5	0	20	1	100%	100%	1965	0	1830	1830	0	0	216	0.118		340	0.186	
Wang Chiu Road	N		A	1	3.5	0	0	1	0%	0%	1825	3930	1825	1825	3930	3930	302	0.165		385	0.211	
Wang Chiu Road	N		A	1	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	348	0.165		445	0.211	
Wang Chiu Road	N		A	1	3.5	0	28	0	100%	100%	2105	4210	2000	2000	3985	3985	512	0.256	0.256	462	0.231	0.231
Wang Chiu Road	N		A	1	3.5	0	25	0	100%	100%	2105	0	1985	1985	0	0	508	0.256		458	0.231	
Sheung Yee Road	W		D	4	3.5	15	0	1	100%	100%	1965	6175	1785	1785	5660	5660	259	0.145		243	0.136	0.136
Sheung Yee Road	W		D	4	3.5	20	25	0	92% / 8%	100% / 0%	2105	0	1960	1960	0	0	284	0.145	0.145	267	0.136	
Sheung Yee Road	W		D	4	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	277	0.145		260	0.136	
Wang Chiu Road	S		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	356	0.169	0.169	296	0.140	0.140
Wang Chiu Road	S		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	356	0.169		296	0.140	
Wang Chiu Road	S		C	3	3.5	15	0	1	9%	26%	1965	6175	1945	1915	6155	6125	329	0.169		269	0.140	

Pedestrian crossing			
	Ep	1,3,4	Min. Crossing Time = 5Gm + 9FGm =14s
	Fp	3	Min. Crossing Time = 5Gm + 7FGm =12s
	Gp	1,2,4	Min. Crossing Time = 5Gm + 5FGm =10s
	Hp	1,2,3	Min. Crossing Time = 5Gm + 5FGm =10s
	Ip	1	Min. Crossing Time = 5Gm + 5FGm =10s
	Jp	2,3,4	Min. Crossing Time = 5Gm + 5FGm =10s
	Kp	4	Min. Crossing Time = 5Gm + 7FGm =12s

Notes:

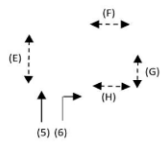
Traffic Flow (pcu / hr)



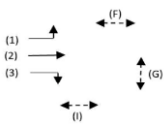
A.M. Check Phase	
ey	0.688
L (sec)	16
C (sec)	140
y pract.	0.797
R.C. (%)	16%

P.M. Check Phase	
ey	0.693
L (sec)	16
C (sec)	140
y pract.	0.797
R.C. (%)	15%

Stage / Phase Diagrams



I/G = 5



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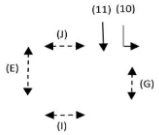

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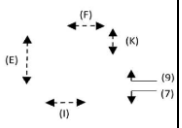
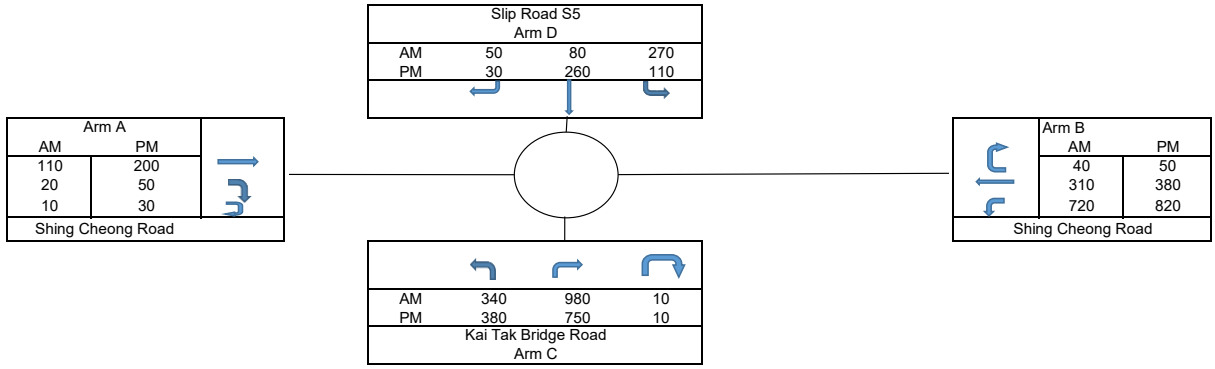


I/G = 5

Roundabout Junction Calculation

Roundabout Junction : **Shing Cheong Road / Kai Tak Bridge Road (H)** Project No. 25046HK

Design Year : **2036 Reference Traffic Flows**



Input Parameters			Arm A - Shing Cheong Road		Arm B - Shing Cheong Road		Arm C - Kai Tak Bridge Road		Arm D - Slip Road S5	
			AM	PM	AM	PM	AM	PM	AM	PM
V	=	Approach half width (m)	7.5	7.5	7.5	7.5	7.6	7.6	3.7	3.7
E	=	Entry width (m)	10	10	10	10	8	8	8.3	8.3
L	=	Effective length of flare (m)	10	10	10	10	11.4	11.4	15	15
R	=	Entry radius	25	25	25	25	25	25	25	25
D	=	Inscribed circle diameter (m)	46	46	46	46	46	46	46	46
A	=	Entry angle (degree)	10	10	10	10	30	30	30	30
Q	=	Entry flow (pcu/hr)	140	280	1070	1250	1330	1140	400	400
Qc	=	Circulating flow across entry (pcu/hr)	1030	810	170	380	410	490	1170	1090

Output Parameters			Arm A		Arm B		Arm C		Arm D	
			AM	PM	AM	PM	AM	PM	AM	PM
S	=	Sharepness of flare = 1.6*(E-V)/L	0.40	0.40	0.40	0.40	0.06	0.06	0.49	0.49
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.08	1.08	1.08	1.08	1.01	1.01	1.01	1.01
X_2	=	V+((E-V)/(1+2*S))	8.89	8.89	8.89	8.89	7.96	7.96	6.02	6.02
M	=	Exp((D-60)/10)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
F	=	303*X_2	2693	2693	2693	2693	2412	2412	1825	1825
Td	=	1+(0.5/(1+M))	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Fc	=	0.21*Td*(1+0.2*X_2)	0.82	0.82	0.82	0.82	0.76	0.76	0.65	0.65
Qe	=	Capacity = K*(F-Fc*Qc)	1998	2192	2757	2571	2120	2058	1076	1129
DFC	=	Entry Flow/Capacity = Q/Qe	0.07	0.13	0.39	0.49	0.63	0.55	0.37	0.35

		AM	PM
DFC of Critical Approach	=	**0.63**	**0.55**

CTA

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

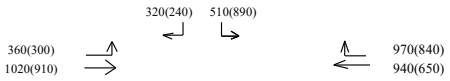
Junction: **Shing Fung Road/Kai Tak Bridge Road (I)**

Description: **2036 Reference Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Shing Fung Road	W		A	1	3.5	0	18	0	100%	100%	2105	4210	1945	1945	3860	3860	489	0.251	0.251	423	0.218	
Shing Fung Road	W		A	1	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	481	0.251		417	0.218	
Shing Fung Road	W		A	1	3.3	0	0	1	0%	0%	1805	3890	1805	1805	3890	3890	436	0.242		302	0.167	
Shing Fung Road	W		A	1	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	504	0.242		348	0.167	
Kai Tak Bridge Road	S		C	2	3.5	0	15	0	100%	100%	2105	4210	1915	1915	3830	3830	160	0.084	0.084	120	0.063	
Kai Tak Bridge Road	S		C	2	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	160	0.084		120	0.063	
Kai Tak Bridge Road	S		B	1,2	3.3	15	0	1	100%	100%	2235	2235	2030	2030	2030	2030	510	0.251		890	0.438	0.438
Shing Fung Road	E		D	3	3.3	20	0	1	50%	47%	2395	4490	2310	2315	4405	4410	724	0.313	0.313	635	0.274	0.274
Shing Fung Road	E		D	3	3.4	0	0	0	0%	0%	2095	0	2095	2095	0	0	656	0.313		575	0.274	
Pedestrian crossing			Ep	1,2		Min. Crossing Time = 7Gm + 10FGm =17s																
			Fp	2		Min. Crossing Time = 7Gm + 11FGm =18s																
			Gp	3		Min. Crossing Time = 8Gm + 12FGm =20s																
			Hp	3		Min. Crossing Time = 8Gm + 7FGm =15s																

Notes:

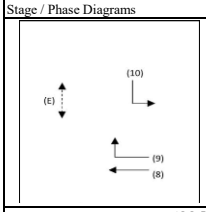
Traffic Flow (pcu / hr)



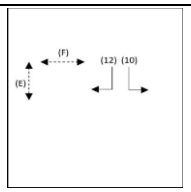
A.M. Check Phase	
ey	0.648
L (sec)	20
C (sec)	120
y pract.	0.750
R.C. (%)	**16%**

P.M. Check Phase	
ey	0.713
L (sec)	10
C (sec)	120
y pract.	0.825
R.C. (%)	**16%**

Stage / Phase Diagrams

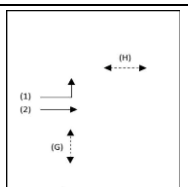


AM: I/G = 5



AM: I/G = 13

PM: I/G = 7



AM: I/G = 5

PM: I/G = 5

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wai Yip Street/ Shun Yip Street (A)**

Description: **2036 Design Traffic Flows**

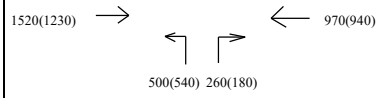
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Nearside 0/1	Pro. Turning (%) A.M.	Pro. Turning (%) P.M.	Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr) A.M.	Revised Saturation Flow (pcu/hr) P.M.	Total Revised Saturation Flow (pcu/hr) A.M.	Total Revised Saturation Flow (pcu/hr) P.M.	A.M. Peak Flow (pcu/hr)	A.M. Peak y Value	A.M. Peak Critical y	P.M. Peak Flow (pcu/hr)	P.M. Peak y Value	P.M. Peak Critical y
Wai Yip Street	E	→	A	2	3.3	0	0	1	0%	0%	1945	6115	1945	1945	6115	6115	483	0.249	0.249	391	0.201	0.201
Wai Yip Street	E	→	A	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	518	0.249		419	0.201	
Wai Yip Street	E	→	A	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	518	0.249		419	0.201	
Wai Yip Street	W	←	B	2	3.3	0	0	1	0%	0%	1945	6115	1945	1945	6115	6115	309	0.159		299	0.154	
Wai Yip Street	W	←	B	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	331	0.159		321	0.154	
Wai Yip Street	W	←	B	2	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	331	0.159		321	0.154	
Shun Yip Street	S	↰	C	1	3.5	11	0	1	100%	100%	1965	6225	1720	1720	5520	5520	237	0.138	0.138	254	0.148	0.148
Shun Yip Street	S	↰↱	C	1	3.5	18	18	0	99% / 1%	100% / 0%	2105	0	1940	1940	0	0	267	0.138		286	0.147	
Shun Yip Street	S	↱	C	1	4.0	0	10	0	100%	100%	2155	0	1860	1860	0	0	256	0.138		180	0.097	

Pedestrian Crossing

Dp	2,3	Min. Crossing Time = 11Gm + 11FGm =22s
Ep	3	Min. Crossing Time = 12Gm + 9FGm = 21s
Fp	3	Min. Crossing Time = 13Gm + 12FGm =25s

Notes:

Traffic Flow (pcu / hr) AM(PM)



A.M. Check Phase	
εy	0.386
L (sec)	34
C (sec)	118
y pract.	0.641
R.C. (%)	66%

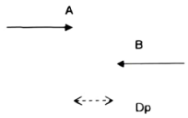
P.M. Check Phase	
εy	0.349
L (sec)	34
C (sec)	118
y pract.	0.641
R.C. (%)	84%

Stage / Phase Diagrams

1.

I/G =6s

2.



I/G = 8s

3.

I/G = 20+2s

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Ho Bun Road / Shun Yip Street (B)**

Description: **2036 Design Traffic Flows (With Planned Junction Improvement)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Hoi Bun Road	W	↰	A	1	3.5	0	25	0	100%	100%	2105	2105	1985	1985	1985	1985	100	0.050	0.050	190	0.096	0.096
Hoi Bun Road	W	←	B	1,2	3.3	0	0	1	0%	0%	1945	1945	1945	1945	1945	1945	170	0.087		320	0.165	
Hoi Bun Road	E	↱	C	2	3.5	18	0	1	100%	100%	1965	4070	1810	1810	3900	3895	599	0.331		456	0.252	
Hoi Bun Road	E	↑→	C	2	3.5	20	0	0	9%	14%	2105	0	2090	2085	0	0	691	0.331	0.331	524	0.251	0.251

Pedestrian Crossing

Ep	1,3	Min. Crossing Time = 5Gm + 7FGm = 12s
Fp	3	Min. Crossing Time = 5Gm + 7FGm = 12s
Gp	3	Min. Crossing Time = 11Gm + 12FGm = 23s
Hp	3	Min. Crossing Time = 8Gm + 10FGm = 18s

Notes:

Traffic Flow (pcu / hr) AM(PM)

660(530) →

630(450) →

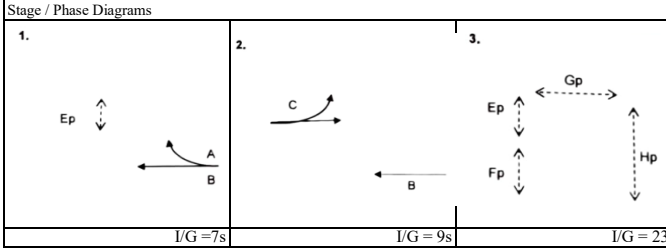
↰ 100(190)

← 170(320)

A.M. Check Phase	
εy	0.381
L (sec)	39
C (sec)	120
y pract.	0.608
R.C. (%)	59%

P.M. Check Phase	
εy	0.347
L (sec)	39
C (sec)	120
y pract.	0.608
R.C. (%)	75%

Stage / Phase Diagrams



I/G =7s I/G = 9s I/G = 23+2s

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Kai Hing Street / Hoi Bun Road (C)**

Description: **2036 Design Traffic Flows**

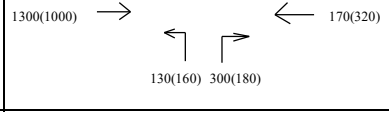
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Hoi Bun Road	E	→	A	1,2	3.5	0	0	1	0%	0%	1965	4070	1965	1965	4070	4070	628	0.319	0.319	483	0.246	0.246
Hoi Bun Road	E	→	A	1,2	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	672	0.319		517	0.246	
Hoi Bun Road	W	←	B	1,4	3.3	0	0	1	0%	0%	1945	4030	1945	1945	4030	4030	82	0.042		154	0.079	
Hoi Bun Road	W	←	B	1,4	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	88	0.042		166	0.079	
Kai Hing Road	N	↰	C	3	5.0	13	0	1	100%	100%	2115	4230	1890	1890	3815	3815	130	0.069		160	0.085	
Kai Hing Road	N	↰↱	C	3	5.0	18	15	1	⅗ / 100	⅗ / 100	2115	0	1925	1925	0	0	300	0.156	0.156	180	0.094	0.094

Pedestrian Crossing ↕

Dp	3,4	Min. Crossing Time = 7Gm + 7FGm =14s
Ep	2	Min. Crossing Time = 5Gm + 16FGm = 21s
Fp	4	Min. Crossing Time = 5Gm + 16FGm = 21s
Gp	2,3	Min. Crossing Time = 5Gm + 11FGm =16s
Hp	1,2,4	Min. Crossing Time = 7Gm + 12FGm =19s

Notes:

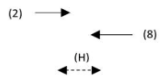
Traffic Flow (pcu / hr) AM(PM)



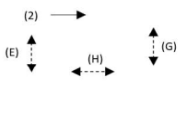
A.M. Check Phase	
εy	0.475
L (sec)	42
C (sec)	130
y pract.	0.609
R.C. (%)	28%

P.M. Check Phase	
εy	0.339
L (sec)	42
C (sec)	130
y pract.	0.609
R.C. (%)	80%

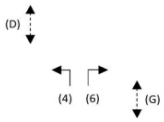
Stage / Phase Diagrams



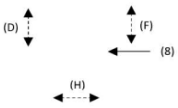
I/G =21s



I/G = 12s



I/G = 11s



TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wang Chiu Road / Hoi Bun Road / Cheung Yip Street (D)**

Description: **2036 Design Traffic Flows (With Planned Junction Improvement)**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Wang Chiu Road	E		A	1	3.5	0	35	1	24%	40%	1965	4070	1945	1930	3950	3935	813	0.418	0.418	844	0.437	0.437
Wang Chiu Road	E		A	1	3.5	0	30	0	100%	100%	2105	0	2005	2005	0	0	837	0.418		876	0.437	
Hoi Bun Road	W		E	3	3.5	0	0	1	0%	0%	1965	1965	1965	1965	1965	1965	120	0.061		240	0.122	
Hoi Bun Raod	W		D	2,3	3.5	30	0	1	100%	100%	1965	1965	1870	1870	1870	1870	430	0.230	0.230	420	0.225	0.225
Cheung Yip Street	N		B	1,2	3.5	15	0	1	100%	100%	1965	1965	1785	1785	1785	1785	840	0.471		740	0.415	
Cheung Yip Street	N		C	2	3.5	0	35	0	100%	100%	2105	4210	2020	2020	4025	4025	276	0.137		206	0.102	
Cheung Yip Street	N		C	2	3.5	0	30	0	100%	100%	2105	0	2005	2005	0	0	274	0.137		204	0.102	
Pedestrian crossing			Fp	3		Min. Crossing Time = 5Gm + 7FGm =12s																
			Gp	2,3		Min. Crossing Time = 5Gm + 9FGm =14s																
			Hp	3		Min. Crossing Time = 5Gm + 17FGm =22s																
			Ip	1,2		Min. Crossing Time = 5Gm + 4FGm =9s																
			Jp	1		Min. Crossing Time = 5Gm + 7FGm =12s																
			Kp	1,2		Min. Crossing Time = 5Gm + 5FGm =10s																
			Lp	3		Min. Crossing Time = 5Gm + 4FGm =9s																

Notes:

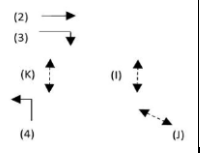
Traffic Flow (pcu / hr)

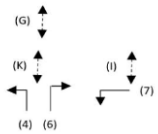
620(510)
1030(1210)
840(740)
550(410)
120(240)
430(420)

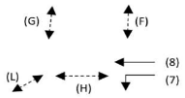
A.M. Check Phase	
cy	0.648
L (sec)	15
C (sec)	120
y pract.	0.788
R.C. (%)	22%

P.M. Check Phase	
cy	0.662
L (sec)	15
C (sec)	120
y pract.	0.788
R.C. (%)	19%

Stage / Phase Diagrams







I/G = 3

I/G = 5

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

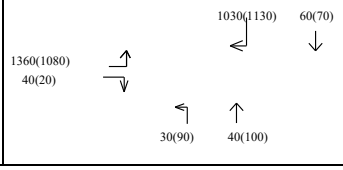
Junction: **Cheung Yip Street/ Shing Cheong Road (F)**

Description: **2036 Design Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Shing Cheong Road	E		A	1,2	3.5	15	0	1	100%	100%	1965	4070	1785	1785	3730	3730	651	0.365	0.365	517	0.290	
Shing Cheong Road	E		A	1,2	3.5	18	0	0	100%	100%	2105	0	1945	1945	0	0	709	0.365		563	0.290	
Shing Cheong Road	E		D	2	3.5	0	10	0	100%	100%	2105	2105	1830	1830	1830	1830	40	0.022		20	0.011	0.011
Cheung Yip Street	N		C	3	3.5	15	0	1	93%	100%	1965	4070	1800	1785	3905	3890	32	0.018	0.018	90	0.050	0.050
Cheung Yip Street	N		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	38	0.018		100	0.048	
Cheung Yip Street	S		B	1	3.5	0	15	1	89%	88%	1965	4050	1805	1805	3620	3620	543	0.301		598	0.332	0.332
Cheung Yip Street	S		B	1	3.3	0	10	0	100%	100%	2085	0	1815	1815	0	0	547	0.301		602	0.331	
Pedestrian crossing			Ep	1,2		Min. Crossing Time = 5Gm + 8FGm =13s																
			Fp	2		Min. Crossing Time = 6Gm + 8FGm =14s																
			Gp	3		Min. Crossing Time = 10Gm + 8FGm =18s																
			Hp	3		Min. Crossing Time = 5Gm + 7FGm =12s																

Notes:

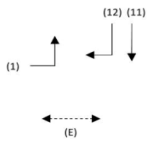
Traffic Flow (pcu / hr)

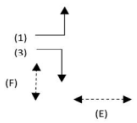


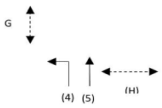
A.M. Check Phase	
cy	0.383
L (sec)	35
C (sec)	120
y pract.	0.638
R.C. (%)	67%

P.M. Check Phase	
cy	0.393
L (sec)	44
C (sec)	120
y pract.	0.570
R.C. (%)	45%

Stage / Phase Diagrams







	AM: I/G = 5	AM: I/G = 8
PM: I/G = 11	PM: I/G = 5	PM: I/G = 8

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: **Wang Chiu Road / Sheung Yee Road (G)**

Description: **2036 Design Traffic Flows (With Planned Junction Improvement)**

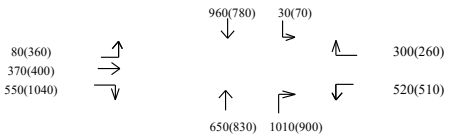
Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Sheung Yee Road	E		B	2	3.5	15	0	1	100%	100%	1965	8280	1785	1785	7935	7875	80	0.045		331	0.185	
Sheung Yee Road	E		B	2	3.5	18	0	0	0%	7%	2105	0	2105	2090	0	0	248	0.118	0.118	388	0.186	0.186
Sheung Yee Road	E		B	2	3.5	0	30	0	41%	89%	2105	0	2060	2015	0	0	242	0.117		373	0.185	
Sheung Yee Road	E		B	2	3.5	0	25	0	100%	100%	2105	0	1985	1985	0	0	234	0.118		368	0.185	
Sheung Yee Road	E		B	2	3.5	0	20	1	100%	100%	1965	0	1830	1830	0	0	216	0.118		340	0.186	
Wang Chiu Road	N		A	1	3.5	0	0	1	0%	0%	1825	3930	1825	1825	3930	3930	302	0.165		385	0.211	
Wang Chiu Road	N		A	1	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	348	0.165		445	0.211	
Wang Chiu Road	N		A	1	3.5	0	28	0	100%	100%	2105	4210	2000	2000	3985	3985	507	0.253	0.253	452	0.226	0.226
Wang Chiu Road	N		A	1	3.5	0	25	0	100%	100%	2105	0	1985	1985	0	0	503	0.253		448	0.226	
Sheung Yee Road	W		D	4	3.5	15	0	1	100%	100%	1965	6175	1785	1785	5660	5660	259	0.145		243	0.136	0.136
Sheung Yee Road	W		D	4	3.5	20	25	0	92% / 8%	100% / 0%	2105	0	1960	1960	0	0	284	0.145	0.145	267	0.136	
Sheung Yee Road	W		D	4	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	277	0.145		260	0.136	
Wang Chiu Road	S		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	339	0.161	0.161	292	0.139	0.139
Wang Chiu Road	S		C	3	3.5	0	0	0	0%	0%	2105	0	2105	2105	0	0	339	0.161		292	0.139	
Wang Chiu Road	S		C	3	3.5	15	0	1	10%	26%	1965	6175	1945	1915	6155	6125	313	0.161		266	0.139	

Pedestrian crossing

Ep	1,3,4	Min. Crossing Time = 5Gm + 9FGm =14s
Fp	3	Min. Crossing Time = 5Gm + 7FGm =12s
Gp	1,2,4	Min. Crossing Time = 5Gm + 5FGm =10s
Hp	1,2,3	Min. Crossing Time = 5Gm + 5FGm =10s
Ip	1	Min. Crossing Time = 5Gm + 5FGm =10s
Jp	2,3,4	Min. Crossing Time = 5Gm + 5FGm =10s
Kp	4	Min. Crossing Time = 5Gm + 7FGm =12s

Notes:

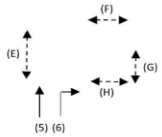
Traffic Flow (pcu / hr)



A.M. Check Phase	
cy	0.677
L (sec)	16
C (sec)	140
y pract.	0.797
R.C. (%)	18%

P.M. Check Phase	
cy	0.687
L (sec)	16
C (sec)	140
y pract.	0.797
R.C. (%)	16%

Stage / Phase Diagrams



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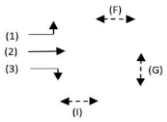

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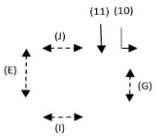
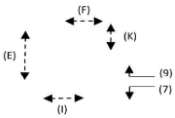


I/G = 5

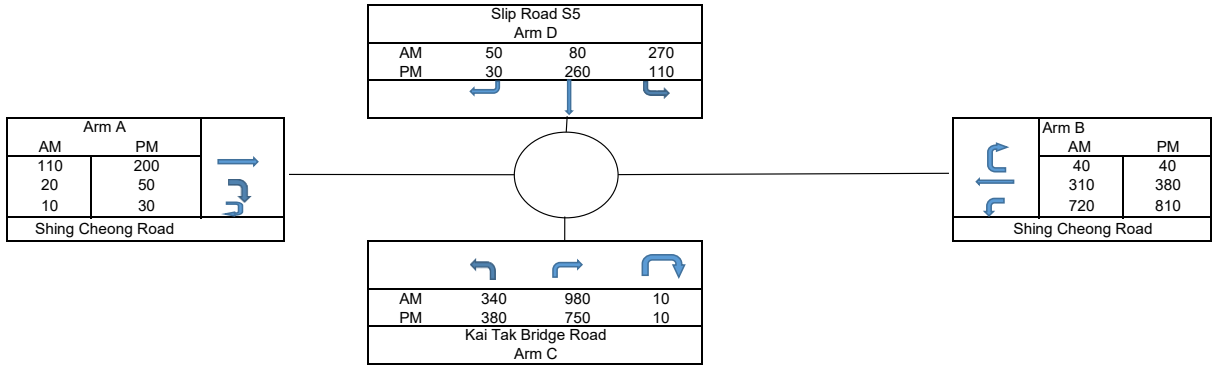


I/G = 5

Roundabout Junction Calculation

Roundabout Junction : **Shing Cheong Road / Kai Tak Bridge Road (H)** Project No. 25046HK

Design Year : **2036 Design Traffic Flows**



Input Parameters			Arm A - Shing Cheong Road		Arm B - Shing Cheong Road		Arm C - Kai Tak Bridge Road		Arm D - Slip Road S5	
			AM	PM	AM	PM	AM	PM	AM	PM
V	=	Approach half width (m)	7.5	7.5	7.5	7.5	7.6	7.6	3.7	3.7
E	=	Entry width (m)	10	10	10	10	8	8	8.3	8.3
L	=	Effective length of flare (m)	10	10	10	10	11.4	11.4	15	15
R	=	Entry radius	25	25	25	25	25	25	25	25
D	=	Inscribed circle diameter (m)	46	46	46	46	46	46	46	46
A	=	Entry angle (degree)	10	10	10	10	30	30	30	30
Q	=	Entry flow (pcu/hr)	140	280	1070	1230	1330	1140	400	400
Qc	=	Circulating flow across entry (pcu/hr)	1030	800	170	380	410	480	1170	1080

Output Parameters			Arm A		Arm B		Arm C		Arm D	
			AM	PM	AM	PM	AM	PM	AM	PM
S	=	Sharepness of flare = 1.6*(E-V)/L	0.40	0.40	0.40	0.40	0.06	0.06	0.49	0.49
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.08	1.08	1.08	1.08	1.01	1.01	1.01	1.01
X_2	=	V+((E-V)/(1+2*S))	8.89	8.89	8.89	8.89	7.96	7.96	6.02	6.02
M	=	Exp((D-60)/10)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
F	=	303*X_2	2693	2693	2693	2693	2412	2412	1825	1825
Td	=	1+(0.5/(1+M))	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Fc	=	0.21*Td*(1+0.2*X_2)	0.82	0.82	0.82	0.82	0.76	0.76	0.65	0.65
Qe	=	Capacity = K*(F-Fc*Qc)	1998	2201	2757	2571	2120	2066	1076	1135
DFC	=	Entry Flow/Capacity = Q/Qe	0.07	0.13	0.39	0.48	0.63	0.55	0.37	0.35

		AM	PM
DFC of Critical Approach	=	**0.63**	**0.55**

CTA

TRAFFIC SIGNALS CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

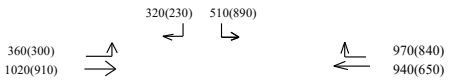
Junction: **Shing Fung Road/Kai Tak Bridge Road (I)**

Description: **2036 Design Traffic Flows**

Approach	Direction	Movement notation	Phase	Stage	Width (m)	Radius (m)		Nearside 0/1	Pro. Turning (%)		Saturation Flow (pcu/hr)	Total Saturation Flow (pcu/hr)	Revised Saturation Flow (pcu/hr)		Total Revised Saturation Flow (pcu/hr)		A.M. Peak			P.M. Peak		
						Left	Right		A.M.	P.M.			A.M.	P.M.	A.M.	P.M.	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Shing Fung Road	W		A	1	3.5	0	18	0	100%	100%	2105	4210	1945	1945	3860	3860	489	0.251	0.251	423	0.218	
Shing Fung Road	W		A	1	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	481	0.251		417	0.218	
Shing Fung Road	W		A	1	3.3	0	0	1	0%	0%	1805	3890	1805	1805	3890	3890	436	0.242		302	0.167	
Shing Fung Road	W		A	1	3.3	0	0	0	0%	0%	2085	0	2085	2085	0	0	504	0.242		348	0.167	
Kai Tak Bridge Road	S		C	2	3.5	0	15	0	100%	100%	2105	4210	1915	1915	3830	3830	160	0.084	0.084	115	0.060	
Kai Tak Bridge Road	S		C	2	3.5	0	15	0	100%	100%	2105	0	1915	1915	0	0	160	0.084		115	0.060	
Kai Tak Bridge Road	S		B	1,2	3.3	15	0	1	100%	100%	2235	2235	2030	2030	2030	2030	510	0.251		890	0.438	0.438
Shing Fung Road	E		D	3	3.3	20	0	1	50%	47%	2395	4490	2310	2315	4405	4410	724	0.313	0.313	635	0.274	0.274
Shing Fung Road	E		D	3	3.4	0	0	0	0%	0%	2095	0	2095	2095	0	0	656	0.313		575	0.274	
Pedestrian crossing			Ep	1,2		Min. Crossing Time = 7Gm + 10FGm =17s																
			Fp	2		Min. Crossing Time = 7Gm + 11FGm =18s																
			Gp	3		Min. Crossing Time = 8Gm + 12FGm =20s																
			Hp	3		Min. Crossing Time = 8Gm + 7FGm =15s																

Notes:

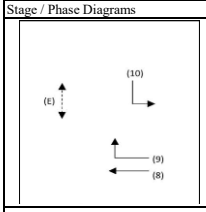
Traffic Flow (pcu / hr)



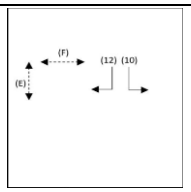
A.M. Check Phase	
cy	0.648
L (sec)	20
C (sec)	120
y pract.	0.750
R.C. (%)	**16%**

P.M. Check Phase	
cy	0.713
L (sec)	10
C (sec)	120
y pract.	0.825
R.C. (%)	**16%**

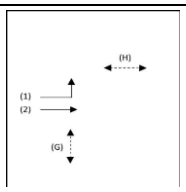
Stage / Phase Diagrams



AM: I/G = 5



AM: I/G = 13
PM: I/G = 7



AM: I/G = 5
PM: I/G = 5

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Wai Yip Street/ Shun Yip Street (A)
Description: 2036 Reference Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Wai Yip Street (EB)		Wai Yip Street (WB)		Shun Yip Street SB (LT & RT)					
	AM	PM	AM	PM	AM	PM				
q (veh/hr)	1,525	1,267	800	967	800	1,092				
g (sec)	53	41	28	31	31	43				
c (sec)	118	118	118	118	118	118				
s (veh/hr)	5,096	5,096	5,096	5,096	4,600	4,600				
λ	0.45	0.34	0.24	0.26	0.26	0.37				
x	0.66	0.72	0.66	0.72	0.66	0.65				
M=qc	49.99	41.52	26.22	31.69	26.22	35.78				
Delay										
d	26.01	34.50	41.43	40.45	39.65	31.58				
Junction Delay (sec)	**33.4**	**35.3**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Wai Yip Street (EB)		Wai Yip Street (WB)		Shun Yip Street SB (LT & RT)					
r (sec)	65	77	90	87	87	75				
N (veh)	**27**	**27**	**20**	**23**	**19**	**23**				
Average Queue length (m)	**55.0**	**54.4**	**40.1**	**46.7**	**38.7**	**45.3**				

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Ho Bun Road / Shun Yip Street (B)

Description: 2036 Reference Traffic Flows (With Planned Junction Improvement)

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm

λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c

x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour

c = Cycle time in seconds

g = Effective green time in seconds

q should be the flow in vehicles per second to give delay in seconds

Approach:	Ho Bun Road WB (RT)		Ho Bun Road WB (ST)		Ho Bun Road EB (LT & ST)					
	AM	PM	AM	PM	AM	PM				
q (veh/hr)	258	483	467	408	1,025	1,042				
g (sec)	27	39	49	33	54	42				
c (sec)	120	120	120	120	120	120				
s (veh/hr)	1,654	1,654	1,621	1,621	3,246	3,233				
λ	0.22	0.32	0.41	0.28	0.45	0.35				
x	0.70	0.91	0.70	0.91	0.70	0.91				
M=qc	8.61	16.11	15.56	13.61	34.17	34.72				
Delay										
d	48.12	64.75	32.49	72.69	27.59	47.72				
Junction Delay (sec)	**31.9**	**57.3**								

From TPDM Vol4 Table 4.2.5

Average Queue N calculated by

N=q(r/2+d) or qr,whichever the greater

where r = effective red time

q = flow (in same units as r and d)

d = average delay per vehicle

Approach:	Ho Bun Road WB (RT)		Ho Bun Road WB (ST)		Ho Bun Road EB (LT & ST)					
r (sec)	93	81	71	87	66	78				
N (veh)	**7**	**14**	**9**	**13**	**19**	**25**				
Average Queue length (m)	**40.8**	**85.0**	**54.9**	**79.0**	**56.2**	**75.1**				

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Kai Hing Street / Hoi Bun Road (C)
Description: 2036 Reference Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda x)} + \frac{x^2}{2q(1-x)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} x^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Hoi Bun Road EB (ST)		Hoi Bun Road WB (ST)		Kai Hing Road NB (LT & RT)			
	AM	PM	AM	PM	AM	PM		
q (veh/hr)	1,083	1,017	475	433	367	283		
g (sec)	65	68	29	29	23	20		
c (sec)	130	130	130	130	130	130		
s (veh/hr)	3,392	3,392	3,358	3,358	3,179	3,183		
λ	0.50	0.52	0.22	0.22	0.18	0.15		
x	0.64	0.57	0.64	0.57	0.64	0.57		
M=qc	39.12	36.71	17.15	15.65	13.24	10.23		
Delay								
d	25.03	21.99	47.18	45.69	50.94	52.03		
Junction Delay (sec)	**35.4**	**32.8**						

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Hoi Bun Road EB (ST)		Hoi Bun Road WB (ST)		Kai Hing Road NB (LT & RT)			
r (sec)	65	62	101	101	107	110		
N (veh)	**20**	**18**	**13**	**12**	**11**	**9**		
Average Queue length (m)	**59.0**	**52.7**	**40.1**	**36.4**	**32.6**	**25.9**		

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Wang Chiu Road / Hoi Bun Road / Cheung Yip Street (D)
Description: 2036 Reference Traffic Flows (With Planned Junction Improvement)

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda x)} + \frac{x^2}{2q(1-x)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} x^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Wang Chiu Road (ST & RT)		Hoi Bun Road WB (ST)		Hoi Bun Road WB (LT)		Cheung Yip Street NB (LT)		Cheung Yip Street NB (RT)		
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
q (veh/hr)	1,417	1,100	158	267	450	308	508	583	708	683	
g (sec)	64	53	14	25	43	31	51	61	31	27	
c (sec)	120	120	120	120	120	120	120	120	120	120	
s (veh/hr)	3,275	3,271	1,638	1,638	1,558	1,558	1,488	1,488	3,354	3,354	
λ	0.54	0.44	0.12	0.21	0.36	0.26	0.42	0.51	0.26	0.27	
x	0.81	0.77	0.81	0.77	0.81	0.77	0.81	0.77	0.81	0.77	
M=qc	47.22	36.67	5.28	8.89	15.00	10.28	16.94	19.44	23.61	22.78	
Delay											
d	24.92	30.30	75.28	53.41	42.69	49.00	37.45	28.12	45.44	43.26	
Junction Delay (sec)	**36.3**	**36.9**									

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Wang Chiu Road (ST & RT)		Hoi Bun Road WB (ST)		Hoi Bun Road WB (LT)		Cheung Yip Street NB (LT)		Cheung Yip Street NB (RT)		
r (sec)	56	67	106	95	77	89	69	59	89	88	
N (veh)	**22**	**21**	**6**	**7**	**10**	**8**	**10**	**9**	**18**	**17**	
Average Queue length (m)	**65.8**	**61.8**	**33.8**	**44.7**	**30.5**	**24.0**	**61.1**	**57.0**	**53.0**	**50.2**	

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Cheung Yip Street/ Shing Cheong Road (F)
Description: 2036 Reference Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Shing Cheong Road EB (LT)		Shing Cheong Road EB (RT)		Cheung Yip Street NB (LT & ST)		Cheung Yip Street SB (RT & ST)			
	AM	PM	AM	PM	AM	PM	AM	PM		
q (veh/hr)	975	825	33	17	100	508	1,250	958		
g (sec)	51	35	4	1	5	33	68	42		
c (sec)	120	120	120	120	120	120	120	120		
s (veh/hr)	3,108	3,108	1,525	1,525	3,338	3,242	3,025	3,013		
λ	0.43	0.29	0.03	0.01	0.04	0.27	0.56	0.35		
x	0.73	0.92	0.73	0.92	0.73	0.57	0.73	0.92		
M=qc	32.50	27.50	1.11	0.56	3.33	16.94	41.67	31.94		
Delay										
d	30.27	57.22	129.61	1067.60	75.72	38.34	21.01	51.11		
Junction Delay (sec)	**28.7**	**57.8**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where
r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Shing Cheong Road EB (LT)		Shing Cheong Road EB (RT)		Cheung Yip Street NB (LT & ST)		Cheung Yip Street SB (RT & ST)			
r (sec)	69	85	116	119	115	87	52	78		
N (veh)	**19**	**23**	**2**	**5**	**4**	**12**	**18**	**24**		
Average Queue length (m)	**55.8**	**68.7**	**10.4**	**31.3**	**11.1**	**36.9**	**54.7**	**72.1**		

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Wang Chiu Road / Sheung Yee Road (G)
Description: 2036 Reference Traffic Flows (With Planned Junction Improvement)

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Sheung Yee Road (LT & ST & RT)		Wang Chiu Road NB (ST)		Wang Chiu Road NB (RT)		Wang Chiu Road SB (LT & ST)		Sheung Yee Road (LT & RT)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
q (veh/hr)	1,258	1,733	492	675	517	683	875	633	467	475
g (sec)	34	41	32	40	33	40	36	24	21	19
c (sec)	140	140	140	140	140	140	140	140	140	140
s (veh/hr)	6,604	6,613	3,275	3,275	3,321	3,321	5,104	5,092	4,738	4,733
λ	0.24	0.29	0.23	0.28	0.23	0.28	0.26	0.17	0.15	0.14
x	0.78	0.89	0.66	0.73	0.66	0.73	0.66	0.73	0.65	0.73
M=qc	48.94	67.41	19.12	26.25	20.09	26.57	34.03	24.63	18.15	18.47
Delay										
d	50.51	50.93	50.63	47.06	49.84	47.06	46.95	56.18	56.71	59.68
Junction Delay (sec)	**50.4**	**51.5**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where
r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Sheung Yee Road (LT & ST & RT)		Wang Chiu Road NB (ST)		Wang Chiu Road NB (RT)		Wang Chiu Road SB (LT & ST)		Sheung Yee Road (LT & RT)	
r (sec)	106	99	108	100	107	100	104	116	119	121
N (veh)	**37**	**48**	**15**	**19**	**15**	**19**	**25**	**20**	**15**	**16**
Average Queue length (m)	**44.5**	**58.0**	**44.4**	**56.5**	**46.2**	**57.2**	**50.5**	**40.8**	**30.8**	**31.9**

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Shing Fung Road/Kai Tak Bridge Road (I)
Description: 2036 Reference Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Shing Fung Road WB (ST)		Shing Fung Road WB (RT)		Kai Tak Bridge Road SB (LT)		Kai Tak Bridge Road SB (RT)		Shing Fung Road EB (LT & ST)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
q (veh/hr)	367	192	450	292	283	575	167	175	417	358
g (sec)	41	27	51	42	34	87	19	25	30	33
c (sec)	120	120	120	120	120	120	120	120	120	120
s (veh/hr)	3,242	3,242	3,217	3,217	3,050	3,050	3,192	3,192	4,946	4,979
λ	0.34	0.23	0.42	0.35	0.28	0.72	0.16	0.21	0.25	0.28
x	0.33	0.26	0.33	0.26	0.33	0.26	0.33	0.26	0.33	0.26
M=qc	12.22	6.39	15.00	9.72	9.44	19.17	5.56	5.83	13.89	11.94
Delay										
d	29.93	38.68	23.84	28.55	34.91	5.98	45.57	40.16	36.81	34.21
Junction Delay (sec)	**32.4**	**24.2**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Shing Fung Road WB (ST)		Shing Fung Road WB (RT)		Kai Tak Bridge Road SB (LT)		Kai Tak Bridge Road SB (RT)		Shing Fung Road EB (LT & ST)	
r (sec)	79	93	69	78	86	33	101	95	90	87
N (veh)	**8**	**5**	**9**	**6**	**7**	**5**	**5**	**5**	**10**	**9**
Average Queue length (m)	**24.2**	**14.8**	**26.0**	**19.0**	**20.4**	**16.0**	**14.0**	**13.8**	**20.7**	**17.3**

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Wai Yip Street/ Shun Yip Street (A)
Description: 2036 Design Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Ès where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Wai Yip Street (EB)		Wai Yip Street (WB)		Shun Yip Street SB (LT & RT)					
	AM	PM	AM	PM	AM	PM				
q (veh/hr)	1,525	1,267	800	967	792	1,075				
g (sec)	53	41	28	31	31	43				
c (sec)	118	118	118	118	118	118				
s (veh/hr)	5,096	5,096	5,096	5,096	4,600	4,600				
λ	0.45	0.35	0.24	0.27	0.26	0.36				
x	0.66	0.71	0.66	0.71	0.66	0.64				
M=qc	49.99	41.52	26.22	31.69	25.95	35.24				
Delay										
d	25.85	34.08	41.32	40.08	39.74	31.79				
Junction Delay (sec)	**33.3**	**35.1**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where
r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Wai Yip Street (EB)		Wai Yip Street (WB)		Shun Yip Street SB (LT & RT)					
r (sec)	65	77	90	87	87	75				
N (veh)	**27**	**27**	**20**	**23**	**19**	**22**				
Average Queue length (m)	**54.8**	**54.1**	**40.0**	**46.5**	**38.4**	**44.8**				

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Ho Bun Road / Shun Yip Street (B)
Description: 2036 Design Traffic Flows (With Planned Junction Improvement)

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda x)} + \frac{x^2}{2q(1-x)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} x^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Ho Bun Road WB (RT)		Ho Bun Road WB (ST)		Ho Bun Road EB (LT & ST)					
	AM	PM	AM	PM	AM	PM				
q (veh/hr)	258	483	442	400	1,017	1,025				
g (sec)	27	39	47	33	54	42				
c (sec)	120	120	120	120	120	120				
s (veh/hr)	1,654	1,654	1,621	1,621	3,246	3,238				
λ	0.22	0.32	0.39	0.27	0.45	0.35				
x	0.70	0.90	0.70	0.90	0.70	0.90				
M=qc	8.61	16.11	14.72	13.33	33.89	34.17				
Delay										
d	47.85	61.12	33.89	69.44	27.61	46.56				
Junction Delay (sec)	**32.3**	**55.0**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where
r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Ho Bun Road WB (RT)		Ho Bun Road WB (ST)		Ho Bun Road EB (LT & ST)					
r (sec)	93	81	73	87	66	78				
N (veh)	**7**	**14**	**9**	**13**	**19**	**24**				
Average Queue length (m)	**40.6**	**81.9**	**53.7**	**75.3**	**55.9**	**73.0**				

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Kai Hing Street / Hoi Bun Road (C)
Description: 2036 Design Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Hoi Bun Road EB (ST)		Hoi Bun Road WB (ST)		Kai Hing Road NB (LT & RT)			
	AM	PM	AM	PM	AM	PM		
q (veh/hr)	1,083	1,017	450	425	350	233		
g (sec)	65	71	27	30	23	17		
c (sec)	130	130	130	130	130	130		
s (veh/hr)	3,392	3,392	3,358	3,358	3,183	3,183		
λ	0.50	0.54	0.21	0.23	0.17	0.13		
x	0.63	0.55	0.63	0.55	0.63	0.55		
M=qc	39.12	36.71	16.25	15.35	12.64	8.43		
Delay								
d	24.43	20.05	47.82	44.93	51.33	53.77		
Junction Delay (sec)	**35.0**	**31.1**						

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Hoi Bun Road EB (ST)		Hoi Bun Road WB (ST)		Kai Hing Road NB (LT & RT)			
r (sec)	65	59	103	100	107	113		
N (veh)	**19**	**17**	**13**	**12**	**10**	**7**		
Average Queue length (m)	**58.3**	**50.2**	**38.5**	**35.5**	**31.3**	**21.9**		

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Wang Chiu Road / Hoi Bun Road / Cheung Yip Street (D)
Description: 2036 Design Traffic Flows (With Planned Junction Improvement)

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda x)} + \frac{x^2}{2q(1-x)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} x^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Wang Chiu Road (ST & RT)		Hoi Bun Road WB (ST)		Hoi Bun Road WB (LT)		Cheung Yip Street NB (LT)		Cheung Yip Street NB (RT)		
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
q (veh/hr)	1,358	1,092	150	242	425	292	508	583	708	683	
g (sec)	54	54	14	24	43	30	57	63	32	32	
c (sec)	120	120	120	120	120	120	120	120	120	120	
s (veh/hr)	3,275	3,271	1,638	1,638	1,558	1,558	1,488	1,488	3,354	3,354	
λ	0.53	0.45	0.12	0.20	0.35	0.25	0.44	0.52	0.27	0.27	
x	0.78	0.75	0.78	0.75	0.78	0.75	0.78	0.75	0.78	0.75	
M=qc	45.28	36.39	5.00	8.06	14.17	9.72	16.94	19.44	23.61	22.78	
Delay											
d	24.42	29.16	71.23	53.67	41.67	48.47	34.70	26.31	43.57	42.05	
Junction Delay (sec)	**34.9**	**35.6**									

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Wang Chiu Road (ST & RT)		Hoi Bun Road WB (ST)		Hoi Bun Road WB (LT)		Cheung Yip Street NB (LT)		Cheung Yip Street NB (RT)		
r (sec)	56	66	106	96	78	90	68	57	88	87	
N (veh)	**21**	**20**	**5**	**7**	**10**	**8**	**10**	**9**	**17**	**17**	
Average Queue length (m)	**63.8**	**60.4**	**31.1**	**41.0**	**28.6**	**22.7**	**58.0**	**55.4**	**51.7**	**49.7**	

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Cheung Yip Street/ Shing Cheong Road (F)
Description: 2036 Design Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda x)} + \frac{x^2}{2q(1-x)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} x^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Shing Cheong Road EB (LT)		Shing Cheong Road EB (RT)		Cheung Yip Street NB (LT & ST)		Cheung Yip Street SB (RT & ST)			
	AM	PM	AM	PM	AM	PM	AM	PM		
q (veh/hr)	975	825	33	17	100	508	1,250	950		
g (sec)	51	35	4	1	5	33	68	41		
c (sec)	120	120	120	120	120	120	120	120		
s (veh/hr)	3,108	3,108	1,525	1,525	3,338	3,242	3,025	3,013		
λ	0.43	0.29	0.03	0.01	0.04	0.28	0.56	0.35		
x	0.73	0.91	0.73	0.91	0.73	0.57	0.73	0.91		
M=qc	32.50	27.50	1.11	0.56	3.33	16.94	41.67	31.67		
Delay										
d	30.27	55.85	129.61	1003.12	75.72	38.20	21.01	50.19		
Junction Delay (sec)	**28.7**	**56.5**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where
r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Shing Cheong Road EB (LT)		Shing Cheong Road EB (RT)		Cheung Yip Street NB (LT & ST)		Cheung Yip Street SB (RT & ST)			
r (sec)	69	85	116	119	115	87	52	79		
N (veh)	**19**	**23**	**2**	**5**	**4**	**12**	**18**	**24**		
Average Queue length (m)	**55.8**	**67.7**	**10.4**	**29.5**	**11.1**	**36.8**	**54.7**	**70.8**		

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Wang Chiu Road / Sheung Yee Road (G)
Description: 2036 Design Traffic Flows (With Planned Junction Improvement)

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda x)} + \frac{x^2}{2q(1-x)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} x^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Sheung Yee Road (LT & ST & RT)		Wang Chiu Road NB (ST)		Wang Chiu Road NB (RT)		Wang Chiu Road SB (LT & ST)		Sheung Yee Road (LT & RT)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
q (veh/hr)	1,242	1,733	492	675	508	658	833	625	467	475
g (sec)	34	42	32	40	33	39	35	24	22	20
c (sec)	140	140	140	140	140	140	140	140	140	140
s (veh/hr)	6,604	6,613	3,275	3,275	3,321	3,321	5,100	5,092	4,738	4,733
λ	0.25	0.30	0.23	0.29	0.24	0.28	0.25	0.17	0.15	0.14
x	0.77	0.88	0.65	0.72	0.65	0.72	0.65	0.72	0.64	0.72
M=qc	48.29	67.41	19.12	26.25	19.77	25.60	32.41	24.31	18.15	18.47
Delay										
d	49.82	49.54	49.89	46.36	49.44	47.31	47.32	55.88	56.17	59.14
Junction Delay (sec)	**50.0**	**50.7**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Sheung Yee Road (LT & ST & RT)		Wang Chiu Road NB (ST)		Wang Chiu Road NB (RT)		Wang Chiu Road SB (LT & ST)		Sheung Yee Road (LT & RT)	
r (sec)	106	98	108	100	107	101	105	116	118	120
N (veh)	**36**	**47**	**15**	**19**	**15**	**19**	**24**	**20**	**15**	**16**
Average Queue length (m)	**43.7**	**57.0**	**44.1**	**56.1**	**45.3**	**55.6**	**48.5**	**40.3**	**30.7**	**31.8**

JUNCTION DELAY CALCULATION Job No: 25046HK **CTA Consultants Ltd.**

Junction: Shing Fung Road/Kai Tak Bridge Road (I)
Description: 2036 Design Traffic Flows

TRRL Method (Transport Road Research Laboratory)

$$d = \frac{c(1-\lambda)^2}{2(1-\lambda X)} + \frac{X}{2q(1-X)} - 0.65\left(\frac{c}{q^2}\right)^{\frac{1}{3}} X^{(2+5\lambda)}$$

where d = average delay per vehicle on the particular arm
λ = proportion of the cycle which is effectively green for the phase under consideration i.e.f g/c
x = The degree of saturation. This is the ratio of actual flow to the maximum possible flow under the given setting of signals and equals 3600q/Es where S = saturation flow in veh/hour
c = Cycle time in seconds
g = Effective green time in seconds
q should be the flow in vehicles per second to give delay in seconds

Approach:	Shing Fung Road WB (ST)		Shing Fung Road WB (RT)		Kai Tak Bridge Road SB (LT)		Kai Tak Bridge Road SB (RT)		Shing Fung Road EB (LT & ST)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
q (veh/hr)	367	192	450	292	283	575	167	175	417	358
g (sec)	41	27	51	42	34	87	19	25	30	33
c (sec)	120	120	120	120	120	120	120	120	120	120
s (veh/hr)	3,242	3,242	3,217	3,217	3,050	3,050	3,192	3,192	4,946	4,979
λ	0.34	0.23	0.42	0.35	0.28	0.72	0.16	0.21	0.25	0.28
x	0.33	0.26	0.33	0.26	0.33	0.26	0.33	0.26	0.33	0.26
M=qc	12.22	6.39	15.00	9.72	9.44	19.17	5.56	5.83	13.89	11.94
Delay										
d	29.93	38.68	23.84	28.55	34.91	5.98	45.57	40.16	36.81	34.21
Junction Delay (sec)	**32.4**	**24.2**								

From TPDM Vol4 Table 4.2.5
Average Queue N calculated by
N=q(r/2+d) or qr,whichever the greater

where r = effective red time
q = flow (in same units as r and d)
d = average delay per vehicle

Approach:	Shing Fung Road WB (ST)		Shing Fung Road WB (RT)		Kai Tak Bridge Road SB (LT)		Kai Tak Bridge Road SB (RT)		Shing Fung Road EB (LT & ST)	
r (sec)	79	93	69	78	86	33	101	95	90	87
N (veh)	**8**	**5**	**9**	**6**	**7**	**5**	**5**	**5**	**10**	**9**
Average Queue length (m)	**24.2**	**14.8**	**26.0**	**19.0**	**20.4**	**16.0**	**14.0**	**13.8**	**20.7**	**17.3**