Annex C

Updated Traffic Impact Assessment

Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application

Revised TIA Report

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1. INTRODUCTION

1.1 Background

1.1.1 CTA Consultants Limited was commissioned as the traffic consultant to prepare a Traffic Impact Assessment (TIA) study for Redevelopment of The Salvation Army Lai King Home at Nos. 200-210 Lai King Hill Road (hereafter called "proposed development").

1.1.2 The site currently provides a total of 100 places of Day Activity Centre (DAC), 100 places of Hostel for Severely Mentally Handicapped Persons (HSMH), 20 places of Extended Care Programme (ECP) and 2 places of Residential Respite Service (RRS). No major renovation or refurbishment works have been carried out since last century, the entire building appears to be dilapidated. Water seepage and spalled concrete are easily found around the buildings.

1.1.3 It is planned to demolish the existing one 3-storey and two 4-storey main blocks, and redevelop into two 7-storey buildings (excluding LG/F) on the site. With the increase in floor areas, more facilities can be provided to serve the community after the redevelopment. The new buildings will provide a total of 178 places of DAC (including 20 places converted ECP) and 20 places of additional ECP, 178 places of Hostel for Severely Mentally Handicapped Persons (HSMH) (including 2 places (designated places) of Residential Respite Service (RRS)), 120 places of Integrated Vocational Rehabilitation Services Centre (IVRSC), 80 places of Hostel for Moderately Mentally Handicapped Persons (HMMH), 70 places of Care & Attention Home for Severely Disabled Persons (C&A/SD), and a multi-function hall.

1.1.4 The location of the proposed development is shown diagrammatically 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 PROPOSED DEVELOPMENT

2.1 Site Location

2.1.1 The proposed development is located at Nos. 200-210 Lai King Hill Road as shown in **Figure 1.1**. The site is the existing three 4-storey main blocks and it is proposed to redevelop into two 7-storey buildings (excluding LG/F).

2.2 Proposed Development

2.1.2 The development schedule for the proposed development is summarized in **Table 2.1**.

Table 2.1 Development Parameters of the Proposed Development

Type of Facilities	Existing Capacity	Proposed Capacity upon Redevelopment
Day Activity Centre ("DAC") Additional Extended Care Programme ("ECP")	100(1) 20	178(2) 20
Hostel for Severely Mentally Handicapped Persons "HSMH") • Residential Respite Service ("RSS")	100 2(3)	178 2(4)
Integrated Vocational Rehabilitation Services Centre ("IVRSC")	0	120
Hostel for Moderately Mentally Handicapped Persons "HMMH")	0	80
Care & Attention Home for Severely Disabled Persons ("C&A/SD")	0	70

Note:
(1) Includes 20 places of converted ECP.
(2) Includes reprovisioning of 100 places of DAC and 20 places of converted ECP.
(3) Refers to 2 places (casual vacancies) of RRS.
(4) Refers to 2 places (designated places) of RRS.

2.2.1 It is anticipated that the proposed development will be completed by 2029 tentatively. Therefore, design year 2032 (i.e. 3 years after the planned commencement year of the proposed development) is adopted for the Traffic Impact Assessment.

2.3 Vehicular Access

2.3.1 The existing vehicular access will be adopted for the proposed development. Location of the vehicular access is shown diagrammatically in **Figure 2.1 (Rev A)**. Swept path analysis demonstrates it is feasible to maneuver HGV in/out the proposed vehicular access is shown in **Figure SP-01 (Rev A)**.

2.3.2 The proposed routing for vehicles of proposed development is illustrated in **Figure 2.2**.

2.4 Internal Transport Facilities Provision

2.4.1 There is no relevant requirements stipulated in the latest Hong Kong Planning Standards and Guidelines (HKPSG) published by Planning Department for “DAC”, “HSMH”, "ECP”, "RRS", ""IVRSC", "HMMH" or "C&A/SD". Comments from SWD on the proposed parking provisions have been and are summarized in **Table 2.2**.

Table 2.2 Proposed Parking Provision

Parking Requirement		Loading/Unloading Requirement		
Private Car Parking Space 5m x 2.5m	**Light Bus Parking Space 8m x 3m**	**LGV 7m x 3.5m**	**M/HGV 11m x 3.5m**	**Ambulance 7.5m x 3.5m**
5(1)	6(2)	1(2)	1	1(2)

Notes:
(1) Including 1 accessible car parking space for 1-50 car parking spaces.
(2) As per SWD comments dated 11 October 2023,
Comment (A)(I)(6)(i): 4 parking spaces measuring 8mL* 3mW*3.3mH for the 4 light buses for the 178-p HSMH; 1 parking space measuring 7mL*3.5mW*3.6H for a 5.5 ton goods vehicle for the 120-p IVRSC and a parking space measuring 8mL*3mW*3.3mH for a light bus for C&A/SD are required.
Comment (A)(I)(6)(ii): A shared loading / unloading area for the private light buses and ambulance for DAC cum HSMH and C&A/SD, a shared loading /unloading area or lay-by for ambulance for HMMH, a shared loading /unloading area for 5.5 ton goods vehicle of IVRSC are required.

2.4.2 Swept path analysis demonstrates it is feasible to maneuver for the proposed critical parking spaces are shown in **Figure SP-01 (Rev A)** to **Figure SP-03 (Rev A)**.

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 within 500 meters catchment area are listed in **Table 2.3**.

Table 2.3 Road-Based Public Transport Services in the Vicinity

Service	Route	Origin-Destination	Headway (min)
Franchised Buses	269M	Tin Yan Estate - Cho Yiu	12-25
	30	Tsuen Wan (Allway Gardens) - Cheung Sha Wan	25-30
	32H	Cheung Shan - Lai Chi Kok	30-60
	42	Tsing Yi (Cheung Hong Estate) - Shun Lee	15-20
	45	Kwai Chung (Lai Yiu Estate) - Kowloon City Ferry	25-30
	46	Kwai Chung (Lai Yiu Estate) - Jordan (West Kowloon Station)	25-30
	46X	Hin Keng - Mei Foo	5-15
	N241	Tsing Yi (Cheung Wang Estate) - Hung Hom Station	25-30 (00:15 to 06:00 only)
GMB	46M	Lai Kong Street - Lai King Station (Circular)	5-15
	47M	Wonderland Villas - Lai King Station (Circular)	8-15
	87K	Hoi Kwai Road Public Transport Interchange - Kwai Fong Station	6-10
	90M	Mei Foo Station - Lai King Headland (Circular)	4-6
	91A	Kwai Fong Station - Lai Kong Street	9-15
	92M	Mei Foo Station - Wah Yuen Chuen (Circular)	5-10
	93	Wah Yuen Chuen - Tsuen Wan (Ham Tin Street)	6-15
	93A	Wonderland Villas - Tsuen Wan (Ham Tin Street)	15-25
	313	Princess Margaret Hospital - Tsuen Wan (Tso Kung Street)	6-11
	405	Lai King South - Cheung Hang (Circular)	15-20
	407	Cheung Wang - Princess Margaret Hospital	4-10
	407A	Princess Margaret Hospital - Kwai Fong Station (Hing Ning Road)	7-13
	411	Kwai Chung (Lai Kong Street) - Sham Shui Po (Un Chau Street) (Circular)	8-15
	413	Princess Margaret Hospital - Tsing Yi Public Pier	10-20

2.5.2 It is revealed that the proposed development is well-served by the comprehensive public transport services in the vicinity.

3. THE EXISTING TRAFFIC CONDITIONS

3.1 Critical Junctions

3.1.1 As shown in **Figure 3.1 (Rev B)**, 5 junctions were identified to be critical for assessment of traffic impact due to the proposed development. They are listed in below **Table 3.1** and their existing junction layout arrangements are shown in **Figure 3.2** to **Figure 3.7** respectively.

Table 3.1 Identified Critical Junction

Ref.	Junction	Method of Control	Figure No.
A1-1	Lai King Hill Road / Joint Street	Priority	3.2
A1-2	Lai King Hill Road / Bus Terminal Exit	Priority	3.2
A2	Joint Street / Lai Cho Road	Priority	3.2
B	Lai King Hill Road / King Cho Road (Near Lai King Estate)	Priority	3.3
C	Lai King Hill Road / King Cho Road (Near Lai King Ventilation Building)	Priority	3.4
D	Lai King Hill Road / Kwai Chung Hospital Road	Priority	3.5
E	Lai King Hill Road / Kwai Chung Interchange	Signal	3.6
F	Kwai Fuk Road / Kwai Yi Road / Container Port Road	Roundabout	3.7

3.1.2 In order to establish the existing traffic condition in the above-mentioned critical junctions, traffic survey in the form of manual classified count was conducted during AM and PM peak periods during 7:30am to 9:30am and 5:30pm to 7:30pm on a typical weekday on 30 March 2023.

3.1.3 Analysis of the observed traffic data indicates that the AM and PM peak hour flows occurred from 7:45am to 8:45am and 5:45pm to 6:45pm respectively. The existing traffic flows is presented in **Figure 3.8 (Rev B)**.

3.1.4 Existing performance of the identified critical junction and road links are 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 Operational Performance of Identified Critical Junctions in 2023

Ref.	Junction	Method of Control	Year 2023 RC/DFC (1)	
			AM Peak	PM Peak
A1-1	Lai King Hill Road / Joint Street	Priority	0.34	0.38
A1-2	Lai King Hill Road / Bus Terminal Exit	Priority	0.06	0.10
A2	Joint Street / Lai Cho Road	Priority	0.45	0.35
B	Lai King Hill Road / King Cho Road (Near Lai King Estate)	Priority	0.67	0.72
C	Lai King Hill Road / King Cho Road (Near Lai King Ventilation Building)	Priority	0.58	0.41
D	Lai King Hill Road / Kwai Chung Hospital Road	Priority	0.66	0.38
E	Lai King Hill Road / Kwai Chung Interchange	Signal	43%	63%
F	Kwai Fuk Road / Kwai Yi Road / Container Port Road	Roundabout	0.58	0.56

Notes: (1) RC = Reserve Capacity
DFC = Design Flow/Capacity ratio 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.

Table 3.3 Volume to Capacity (V/C) Ratio Assessment of Identified Road Links in 2023

Road Link	Direction	Capacity (pcu/hr) (1)(2)	Year 2023 Observed Traffic Flow			
			AM Peak Hour		PM Peak Hour	
			Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C
Lai King Hill Road (Between Joint Street and King Cho Road)	Northeast bound	1,450	540	0.37	490	0.34
	Southwest bound	1,450	610	0.42	550	0.38
Lai King Hill Road (Between King Cho Road near OUHK - Cita Lai King Learning Centre and Proposed Site)	Northeast bound	1,450	460	0.32	370	0.26
	Southwest bound	1,450	610	0.42	560	0.39
Lai King Hill Road (Between Proposed Site and King Cho Road near Cho Yiu Chuen)	Northeast bound	1,450	460	0.32	390	0.27
	Southwest bound	1,450	650	0.45	580	0.40
Lai King Hill Road (Between King Cho Road near Cho Yiu Chuen and Kwai Chung Hospital Road)	Northeast bound	1,450	570	0.39	560	0.39
	Southwest bound	1,450	810	0.56	670	0.46
Lai King Hill Road	Northeast	1,450	710	0.49	540	0.37

Road Link	Direction	Capacity (pcu/hr) (1)(2)	Year 2023 Observed Traffic Flow			
			AM Peak Hour		PM Peak Hour	
			Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C
(Between Kwai Chung Hospital Road and Kwai Chung Interchange)	bound					
	Southwest bound	1,450	730	0.50	700	0.48
Lai King Hill Road (Between Kwai Chung Interchange and Access Road to FSD New Territories Workshop)	Northeast bound	1,450	620	0.43	510	0.35
	Southwest bound	1,450	710	0.49	690	0.48
Kwai Fuk Road (Between Container Port Road/Kwai Yi Road/Kwai Fuk Road Interchange and Joint Street)	Northeast bound	1,450	500	0.34	530	0.37
	Southwest bound	1,450	670	0.46	590	0.41

Notes:
(1) Capacity based on Table 2.4.1.1 of Section 2.4, Chapter 2, Volume 2, T.P.D.M.
(2) PCU factor of 1.32 has been derived from the result of traffic count survey. Lai King Hill Road and Kwai Fuk Road are district distributor of approximately 10m wide, therefore capacity per direction = 2,200÷2x1.32 = 1,450pcu/hr.
(3) V/C ratio – volume to capacity ratio for road link. A v/c ratio ≤ 1.0 means that a road has sufficient capacity to cope with the anticipated volume of vehicular traffic. A v/c ratio > 1.0 indicates the onset of congestion. A v/c ratio > 1.2 indicates more serious congestion with traffic speeds deteriorating progressively when there is further increase in traffic.

3.1.6 The assessment results in **Tables 3.3** indicate that all critical links are at present operating with ample capacities.

4. TRAFFIC IMPACT ASSESSMENT

4.1 Design Year

4.1.1 The proposed development is anticipated to be completed by year 2029 tentatively. Year 2032 (i.e. 3 years after completion) is therefore adopted as the design year for this TIA.

4.2 Traffic Forecast

4.2.1 The traffic growth can be estimated by applying growth factor, based on the following information sources:

I. Historical traffic growth in Annual Traffic Census (ATC) published by the Transport Department (TD).

II. Territorial planning assumptions prepared by the Planning Department.

Annual Traffic Census

4.2.2 Numerous of traffic count stations are located in the vicinity of the proposed development. The traffic counts reported in the Annual Traffic Census (ATC), which is published by Transport Department, over a period of six years, i.e. 2016 to 2021 are summarized in **Table 4.1**.

Table 4.1 Historical Traffic Data from Annual Traffic Census (ATC)

ATC Stn	Road Name	Annual Average Daily Traffic (AADT)						Avg. Annual Growth Rate
		2016	2017	2018	2019	2020	2021	
5427	Lai King Hill Rd (From Joint St to Kwai Fuk Rd)	16,830*	17,140*	17,400*	19,320	17,720	18,410*	1.81%
5443	Lai King Hill Rd (From Lai Wan Rd to Kwai Chung INT slip rds)	6,600*	6,720*	6,820*	7,590	7,590	7,880*	3.61%
5476	Lai King Hill Rd slip rds C & D (From Lai King Hill RA to Kwai Chung Rd)	10,840*	10,890*	11,190*	11,430	12,210	11,870*	1.83%
5628	Lai King Hill Rd (From King Cho Rd southern junction to Joint St)	15,770	16,060*	16,300*	16,240*	16,590	18,570	3.32%
6204	Lai King Hill Rd (From Kwai Chung INT slip rds to King Cho Rd)	17,020	17,470	16,860	16,450	16,140	16,050	-1.17%
6642	Lai Cho Road (From Joint Street to Lim Cho Street)	3,010	3,220	3,130	2,400	3,000	2,740	-1.86%
Total		**70,070**	**71,500**	**71,700**	**73,430**	**73,250**	**75,520**	**1.51%**

Note: *AADT estimated by Growth factor

Planning Data

4.2.3 Reference has also been made to the latest 2019-based Territorial Population Employment Data Matrices (TPEDM) planning data published by the Planning Department for years 2019 and 2031 in the study district. The average annual growth rates in terms of population and employment from 2019 to 2031 are tabulated in **Table 4.2**.

Table 4.2 TPEDM Planning Data from 2019 to 2031

Zone	Population			Avg. Annual Growth Rate	Employment			Avg. Annual Growth Rate
	2019	2026	2031		2019	2026	2031	
Kwai Chung	319,150	315,800	319,700	0.01%	195,950	192,350	183,600	-0.54%

4.2.4 It is indicated that the average annual growth rate of population in the study area from 2019 to 2031 under the 2019-based Territorial Planning Data is +0.01% per year while the growth rate of employment is -0.54% per year.

Adopted Growth Rate

4.2.5 A.A.D.T. of ATC indicates that the traffic flow of the local road network has an average annual growth rate of +1.51% from year 2016 to year 2021.

4.2.6 Whilst, the planning data indicates that the population and employment in the area are expected to develop with an average annual growth rate of +0.01% and -0.54% respectively from 2019 to 2031.

4.2.7 As a conservative approach, annual growth rate **+1.51%** p.a. is adopted.

4.3 Traffic Generations of Adjacent New Developments

4.3.1 To fully reflect the growth traffic, trip generation of the future vicinity developments have been taken into consideration. The estimated peak hour trips of the planned adjacent development is detailed in **Figure 4.1 (Rev A)** and **Table 4.3**.

Table 4.3 Planned Adjacent Developments in the Vicinity and the Estimated Trip Generations and Attractions

Approved Planning Application	Description	Development Parameter	AM Peak		PM Peak	
			GEN (pcu/hr)	ATT (pcu/hr)	GEN (pcu/hr)	ATT (pcu/hr)
A/KC/445	Public rental housing development at Lai Cho Road	819 flats	35(1)	27(1)	19(1)	25(1)
A/KC/447	Proposed Minor Relaxation of Domestic Plot Ratio Restrict ion for Public Housing Development	540 flats	29(1)	17(1)	12(1)	15(1)
A/KC/451	Redevelopment of Kwai Chung Hospital	1000 beds + 96 consultation rooms	143(1)	48(1)	32(1)	77(1)
A/KC/470	Expansion of Lai King Building in Princess Margaret Hospital	~850 beds	76(1)	54(1)	54(1)	54(1)
A/KC/489	Proposed Comprehensive Development including Flat and Community Facility in "Comprehensive Development Area" Zone at Various Lots in S.D.4 and Adjoining Government Land, Kau Wa Keng, Kwai Chung	5,973 flats + Proposed Feeder Service	513(1)	302(1)	222(1)	287(1)
-	Lai Kong Street private housing development	410 flats (av. flat size: 60m^2)	0.0718(2)	0.0425(2)	0.0286(2)	0.037(2)
			30	18	12	16

Note:
(1) Extracted from TIA report of the relevant application.
(2) Trip rate as stipulated n TPDM Volume 1 Annex C Table 1.

4.4 Planned Junction Layout under Development Projects

4.4.1 According to the approved TIA report of the adjacent development A/KC/489, Junction Lai King Hill Road / Kwai Chung Interchange (E) will be modified and the detail is presented in **Figure 4.2**. It is intended to be carried out before year 2028.

4.5 Reference Traffic Flows

4.5.1 The reference traffic flow is estimated by applying the adopted growth rate to the observed traffic flow in the current year, and the 2032 reference traffic flows can be computed with the following calculation:

2032 Reference Traffic Flows (Without Proposed Development) = (**2023 Observed Traffic Flows** x **Adopted Growth Factor (i.e. +1.51% p.a. for 9 year)**) + **Traffic Flows of Planned Adjacent Development**

4.5.2 The 2032 reference traffic flows are shown in **Figure 4.3 (Rev B)**.

4.6 Traffic Generations and Attractions

4.6.1 To estimate the trip generations of the proposed development users, reference has been made to the trip generation rates of the existing Salvation Army Lai King House and sites of similar nature from in-house database. The adopted trip generation rates and the estimated net generation and attraction due to the proposed development users are summarized in **Table 4.4**.

Table 4.4 Adopted Generation and Attraction Trip Rates of Proposed Development Users

Reference Sites	AM Peak		PM Peak	
	Generation (pcu/hr/bed)	Attraction (pcu/hr/bed)	Generation (pcu/hr/bed)	Attraction (pcu/hr/bed)
Existing Salvation Army Lai King House	0.03	0.06	-	-
Providence Garden for Rehab	0.10	0.08	-	-
Hong Chi Fanling Integrative Rehabilitation Complex	0.07	0.08	-	-
Harmony Manor - Scenic Court (HSMH)	-	0.08	0.08	0.10
Adopted Rate	**0.10**	**0.08**	**0.08**	**0.10**

4.6.2 Based on **Table 4.4**, the estimated traffic generation and attraction due to the proposed development are summarized in **Table 4.5**.

Table 4.5 Estimated Net Traffic Generation and Attraction of Proposed Development

Additional No. of Places	AM Peak		PM Peak	
	Generation (pcu/hr)	Attraction (pcu/hr)	Generation (pcu/hr)	Attraction (pcu/hr)
448-100 = 348	35	28	28	35

4.6.3 It is anticipated that the proposed development would generate and attract +35 pcu/hr and +28 pcu/hr respectively during AM peak hour, and generate and attract +28 pcu/hr and +35 pcu/hr respectively during PM peak hour.

4.7 Design Traffic Forecasts

4.7.1 The future traffic generations of the proposed development were then assigned onto the road network and superimposed onto the 2032 reference traffic flows (without proposed development) to derive the 2032 design traffic forecasts (with proposed development).

2032 Design Traffic Flows (with proposed development) = **2032 Reference Traffic Flows (without proposed development)** + **Proposed Development Traffic Flows**

4.7.2 Year 2032 design traffic flows (with proposed development) and the development traffic flows are shown in **Figure 4.4 (Rev B)** and **Figure 4.5 (Rev B)** 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 junctions and road links for both reference and design scenarios in year 2032 were carried out. The results are summarized in **Table 5.1**, **Table 5.3**, **Table 5.4** and the junction calculation sheets are attached in **Appendix A**.

Table 5.1 Junction Performance of Identified Critical Junction in Year 2032 (With and Without Proposed Site)

Ref.	Junction	Method of Control		Year 2032 RC/DFC (1)			
				Reference Scenario (Without Proposed Site)		Design Scenario (With Proposed Site)	
				AM Peak	PM Peak	AM Peak	PM Peak
A1-1	Lai King Hill Road / Joint Street	Priority	With A/KC/489	0.59	0.47	0.60	0.48
A1-2	Lai King Hill Road / Bus Terminal Exit	Priority	With A/KC/489	0.07	0.10	0.07	0.10
A2	Joint Street / Lai Cho Road	Priority	With A/KC/489	0.54	0.40	0.54	0.40
B	Lai King Hill Road / King Cho Road (Near Lai King Estate)	Priority	With A/KC/489	0.82	0.79	0.82	0.80
			Without A/KC/489	0.79	0.78	0.80	0.79
C	Lai King Hill Road / King Cho Road (Near Lai King Ventilation Building)	Priority	With A/KC/489	0.77	0.48	0.78	0.49
D	Lai King Hill Road / Kwai Chung Hospital Road	Priority	With A/KC/489	**0.93**	0.42	**0.95**	0.46
E	Lai King Hill Road / Kwai Chung Interchange (Without improvement)	Signal	With A/KC/489	**0%**	25%	**-1%**	23%
			Without A/KC/489	37%	58%	35%	56%
F	Kwai Fuk Road / Kwai Yi Road / Container Port Road	Roundabout	With A/KC/489	0.73	0.62	0.73	0.63

Notes: (1) RC = Reserve Capacity
DFC = Design Flow/Capacity ratio for Priority Junction

5.1.2 The assessment results in **Table 5.1** revealed that all critical junctions would still operate within their capacities in both reference and design year 2032 during the peak

hours, except Junction Lai King Hill Road / Kwai Chung Hospital Road (D) and Junction Lai King Hill Road / Kwai Chung Interchange (E).

5.1.3 It is anticipated that Junction D will have negative reserve capacity during AM peak hour in Year 2032 without and with the proposed development.

5.1.4 Without junction modification, it is anticipated that Junction E will have negative reserve capacity during AM peak hour in Year 2032 without and with the proposed development. According to approved TIA report of A/KC/489, junction modification work is intended to be carried out before year 2028, i.e. before the completion of the proposed development in year 2029. Capacity analysis of Junction E with junction modification was carried out for both reference and design scenarios. The results are summarized in **Table 5.2** and the junction calculation sheets are also attached in **Appendix A**.

Table 5.2 Junction Performance of Modified Junction E in Year 2032 (With and Without Proposed Site)

Ref.	Junction	Method of Control	Year 2032 RC/DFC (1)			
			Reference Scenario (Without Proposed Site)		Design Scenario (With Proposed Site)	
			AM Peak	PM Peak	AM Peak	PM Peak
E	Lai King Hill Road / Kwai Chung Interchange (With Junction Modification)	Signal	16%	46%	15%	45%

Notes: (1) RC = Reserve Capacity
DFC = Design Flow/Capacity ratio for Priority Junction

5.1.5 The assessment results in **Table 5.2** revealed that Junction E would operate within its capacities during the peak hours in both reference and design year with junction modification.

Table 5.3 Volume to Capacity (V/C) Ratio Assessment of Identified Road Links in 2032 (Without Proposed Site)

Road Link	Direction	Capacity (pcu/hr) (1)(2)	Year 2032 Reference Scenario (Without Proposed Site)			
			AM Peak Hour		PM Peak Hour	
			Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C
Lai King Hill Road (Between Joint Street and King Cho Road)	Northeast bound	1,450	650	0.45	540	0.37
	Southwest bound	1,450	740	0.51	610	0.42
Lai King Hill Road (Between King Cho Road near OUHK - Cita Lai King Learning Centre and Proposed Site)	Northeast bound	1,450	570	0.39	420	0.29
	Southwest bound	1,450	750	0.52	620	0.43
Lai King Hill Road (Between Proposed Site and King Cho Road near Cho Yiu Chuen)	Northeast bound	1,450	560	0.39	440	0.30
	Southwest bound	1,450	800	0.55	630	0.43
Lai King Hill Road (Between King Cho Road near Cho Yiu Chuen and Kwai Chung Hospital Road)	Northeast bound	1,450	720	0.50	640	0.44
	Southwest bound	1,450	1,010	0.70	750	0.52
Lai King Hill Road (Between Kwai Chung Hospital Road and Kwai Chung Interchange)	Northeast bound	1,450	900	0.62	620	0.43
	Southwest bound	1,450	930	0.64	790	0.54
Lai King Hill Road (Between Kwai Chung Interchange and Access Road to FSD New Territories Workshop)	Northeast bound	1,450	1,070	0.74	690	0.48
	Southwest bound	1,450	1,040	0.72	910	0.63
Kwai Fuk Road (Between Container Port Road/Kwai Yi Road/Kwai Fuk Road Interchange and Joint Street)	Northeast bound	1,450	680	0.47	630	0.43
	Southwest bound	1,450	840	0.58	680	0.47

Notes:

(1) Capacity based on Table 2.4.1.1 of Section 2.4, Chapter 2, Volume 2, T.P.D.M.

(2) PCU factor of 1.32 has been derived from the result of traffic count survey. Lai King Hill Road and Kwai Fuk Road are district distributor of approximately 10m wide, therefore capacity per direction = 2,200÷2x1.32 = 1,450pcu/hr.

(3) V/C ratio – volume to capacity ratio for road link. A v/c ratio ≤ 1.0 means that a road has sufficient capacity to cope with the anticipated volume of vehicular traffic. A v/c ratio > 1.0 indicates the onset of congestion. A v/c ratio > 1.2 indicates more serious congestion with traffic speeds deteriorating progressively when there is further increase in traffic.

Table 5.4 Volume to Capacity (V/C) Ratio Assessment of Identified Road Links in 2032 (With Proposed Site)

Road Link	Direction	Capacity (pcu/hr)[(1)(2)]	Year 2032 Design Scenario (With Proposed Site)			
			AM Peak Hour		PM Peak Hour	
			Flow (pcu/hr)	V/C	Flow (pcu/hr)	V/C
Lai King Hill Road (Between Joint Street and King Cho Road)	Northeast bound	1,450	670	0.46	550	0.38
	Southwest bound	1,450	750	0.52	620	0.43
Lai King Hill Road (Between King Cho Road near OUHK - Cita Lai King Learning Centre and Proposed Site)	Northeast bound	1,450	590	0.41	430	0.30
	Southwest bound	1,450	760	0.52	630	0.43
Lai King Hill Road (Between Proposed Site and King Cho Road near Cho Yiu Chuen)	Northeast bound	1,450	580	0.40	450	0.31
	Southwest bound	1,450	820	0.57	650	0.45
Lai King Hill Road (Between King Cho Road near Cho Yiu Chuen and Kwai Chung Hospital Road)	Northeast bound	1,450	740	0.51	650	0.45
	Southwest bound	1,450	1,030	0.71	770	0.53
Lai King Hill Road (Between Kwai Chung Hospital Road and Kwai Chung Interchange)	Northeast bound	1,450	910	0.63	630	0.43
	Southwest bound	1,450	940	0.65	800	0.55
Lai King Hill Road (Between Kwai Chung Interchange and Access Road to FSD New Territories Workshop)	Northeast bound	1,450	1,080	0.74	700	0.48
	Southwest bound	1,450	1,050	0.72	920	0.63
Kwai Fuk Road (Between Container Port Road/Kwai Yi Road/Kwai Fuk Road Interchange and Joint Street)	Northeast bound	1,450	700	0.48	640	0.44
	Southwest bound	1,450	850	0.59	690	0.48

Notes:

(1) Capacity based on Table 2.4.1.1 of Section 2.4, Chapter 2, Volume 2, T.P.D.M.

(2) PCU factor of 1.32 has been derived from the result of traffic count survey. Lai King Hill Road and Kwai Fuk Road are district distributor of approximately 10m wide, therefore capacity per direction = 2,200÷2x1.32 = 1,450pcu/hr.

(3) V/C ratio – volume to capacity ratio for road link. A v/c ratio ≤ 1.0 means that a road has sufficient capacity to cope with the anticipated volume of vehicular traffic. A v/c ratio > 1.0 indicates the onset of congestion. A v/c ratio > 1.2 indicates more serious congestion with traffic speeds deteriorating progressively when there is further increase in traffic.

5.1.6 The assessment results in **Table 5.3** and **Table 5.4** revealed that all critical links would still operate within their capacities in both reference scenario (without proposed development) and design scenario (with proposed development) in 2032 during the peak hours.

6. PEDESTRIAN IMPACT ASSESSMENT

6.1 Survey on Pedestrian Flows

6.1.1 The pedestrian connectivity and index plan at footpath sections and pedestrian crossing of access road to the proposed development are shown in **Figure 6.1** and **Figure 6.2** respectively.

6.1.2 In order to establish the existing pedestrian condition of critical footpath in the above-mentioned critical section, pedestrian survey was carried out during AM and PM peak periods during 7:30am to 9:30am and 5:30pm to 7:30pm on a typical weekday, on 9 November 2023.

6.1.3 The existing pedestrian flows is presented in **Figure 6.3**, and the level-of-service (LOS) for existing operational performances of the identified critical section and pedestrian crossing are listed in **Table 6.1** and **Table 6.2** respectively.

Table 6.1 Operational Performance of Critical Footpath in Existing Scenario

Critical Section	Total Footpath Width (m)	Effective Width (m)[1]	Year 2023					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (ped/hr)[2]	Two-way Pedestrian Flow Rate (ped/min/m)[3]	LOS	Two-way Pedestrian Flow (ped/hr)[2]	Two-way Pedestrian Flow Rate (ped/min/m)[3]	LOS
A	2.9	1.9	185	1.6	A	160	1.4	A
B	1.7	0.7	625	14.9	A	420	10.0	A
D	1.5	0.5	465	15.5	A	175	5.8	A

Notes:
(1) Effective Width = Total Footpath Width – Death Width (0.5m from railings).
(2) Two-way Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow / 60 min / Effective Width.
(3) LOS details extracted from the HCM are tabulated in TPDM Volume 6 Chapter 10 Clause 10.4.2.3.

Table 6.2 Operational Performance of Critical Pedestrian Crossing in Existing Scenario

Crossing	Year 2023			
	AM Peak Hour		PM Peak Hour	
	Crossing Demand	Crossing Capacity(1)	Crossing Demand	Crossing Capacity(1)
C	685	3,260	135	3,260

Note:
(1) Crossing capacity according to TPDM Volume 2, Table 3.7.2.1.

6.1.4 The results of assessment shown in **Table 6.1** and **Table 6.2** indicate that the critical section of footpath and pedestrian crossing are operating with ample reserved capacity during AM and PM peak hours.

6.2 Future Pedestrian Condition

6.2.1 Based on the observed flows and the adopted growth rate of +1.51%, future pedestrian reference flows at the critical section (without proposed development) in Year 2032 are estimated and summarized in **Table 6.3**, **Table 6.4** and **Figure 6.4**.

Table 6.3 Operational Performance of Critical Footpath in Year 2032 Reference Scenario (Without Proposed Development)

Critical Section	Total Footpath Width (m)	Effective Width (m)(1)	Year 2032 Reference Scenario (Without Proposed Development)					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (ped/hr)(2)	Two-way Pedestrian Flow Rate (ped/min/m)(3)	LOS	Two-way Pedestrian Flow (ped/hr)(2)	Two-way Pedestrian Flow Rate (ped/min/m)(3)	LOS
A	2.9	1.9	215	1.9	A	180	1.6	A
B	1.7	0.7	715	17.0	B	480	11.4	A
D	1.5	0.5	530	17.7	B	200	6.7	A

Notes:
(1) Effective Width = Total Footpath Width – Death Width (0.5m from railings).
(2) Two-way Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow / 60 min / Effective Width.
(3) LOS details extracted from the HCM are tabulated in TPDM Volume 6 Chapter 10 Clause 10.4.2.3.

Table 6.4 Operational Performance of Critical Pedestrian Crossing in Year 2032 Reference Scenario (Without Proposed Development)

Crossing	Year 2032 Reference Scenario (Without Proposed Development)			
	AM Peak Hour		PM Peak Hour	
	Crossing Demand	Crossing Capacity(1)	Crossing Demand	Crossing Capacity(1)
C	780	3,260	155	3,260

Note:
(1) Crossing capacity according to TPDM Volume 2, Table 3.7.2.1.

6.2.2 In order to estimate the pedestrian generation and attraction of the proposed development, reference has been made to the trip generation rates from the existing Salvation Army Lai King Home as shown in **Table 6.5**.

Table 6.5 Pedestrian Generation and Attraction Rate of Existing Salvation Army Lai King Home

AM Peak		PM Peak	
Generation (ped/hr/place)	Attraction (ped/hr/place)	Generation (ped/hr/place)	Attraction (ped/hr/place)
0.12	0.42	0.17	0.05

6.2.3 Based on the trip rate in **Table 6.5** and the development parameters listed in **Table 2.1**, the estimated pedestrian generation and attraction due to the proposed development are summarized in **Table 6.6**.

Table 6.6 Estimated Pedestrian Generation and Attraction of Proposed Development

Additional No. of Places	AM Peak		PM Peak	
	Generation (ped/hr)	Attraction (ped/hr)	Generation (ped/hr)	Attraction (ped/hr)
348 places	42	147	60	18

6.2.4 The assessment of the design scenario is summarized in **Table 6.7**, **Table 6.8** and **Figure 6.5**.

Table 6.7 Operational Performance of Critical Footpath in Year 2032 Design Scenario (With Proposed Development)

Critical Section	Total Footpath Width (m)	Effective Width (m)[1]	Year 2032 Design Scenario (With Proposed Development)					
			AM Peak			PM Peak		
			Two-way Pedestrian Flow (ped/hr)[2]	Two-way Pedestrian Flow Rate (ped/min/m)[3]	LOS	Two-way Pedestrian Flow (ped/hr)[2]	Two-way Pedestrian Flow Rate (ped/min/m)[3]	LOS
A	2.9	1.9	400	3.5	A	260	2.3	A
B	1.7	0.7	905	21.5	B	560	13.3	A
D	1.5	0.5	625	20.8	B	240	8.0	A

Notes:
(1) Effective Width = Total Footpath Width – Death Width (0.5m from railings).
(2) Two-way Pedestrian Flow Rate (ped/min/m) = Peak Pedestrian Flow / 60 min / Effective Width.
(3) LOS details extracted from the HCM are tabulated in TPDM Volume 6 Chapter 10 Clause 10.4.2.3.

Table 6.8 Operational Performance of Critical Pedestrian Crossing in Year 2032 Design Scenario (With Proposed Development)

Crossing	Year 2032 Design Scenario (With Proposed Development)			
	AM Peak Hour		PM Peak Hour	
	Crossing Demand	Crossing Capacity[1]	Crossing Demand	Crossing Capacity[1]
C	875	3,260	195	3,260

Note:
(1) Crossing capacity according to TPDM Volume 2, Table 3.7.2.1.

6.2.5 It is revealed from the assessment results in **Table 6.3** to **Table 6.8** that the critical section of footpath and pedestrian crossing would all operate with ample reserved capacity during AM and PM peak hours in design year 2032.

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 (TIA) and provide technical justifications in supporting the planning application 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 2023. Current operational performance of the critical junctions has been assessed. The results reveal that all critical junctions are at present operating within its capacities.

7.1.3 Assessment of operational performance of the critical junctions 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 2032 during the peak hours, except Junction Lai King Hill Road / Kwai Chung Hospital Road (D) and Junction Lai King Hill Road / Kwai Chung Interchange (E).

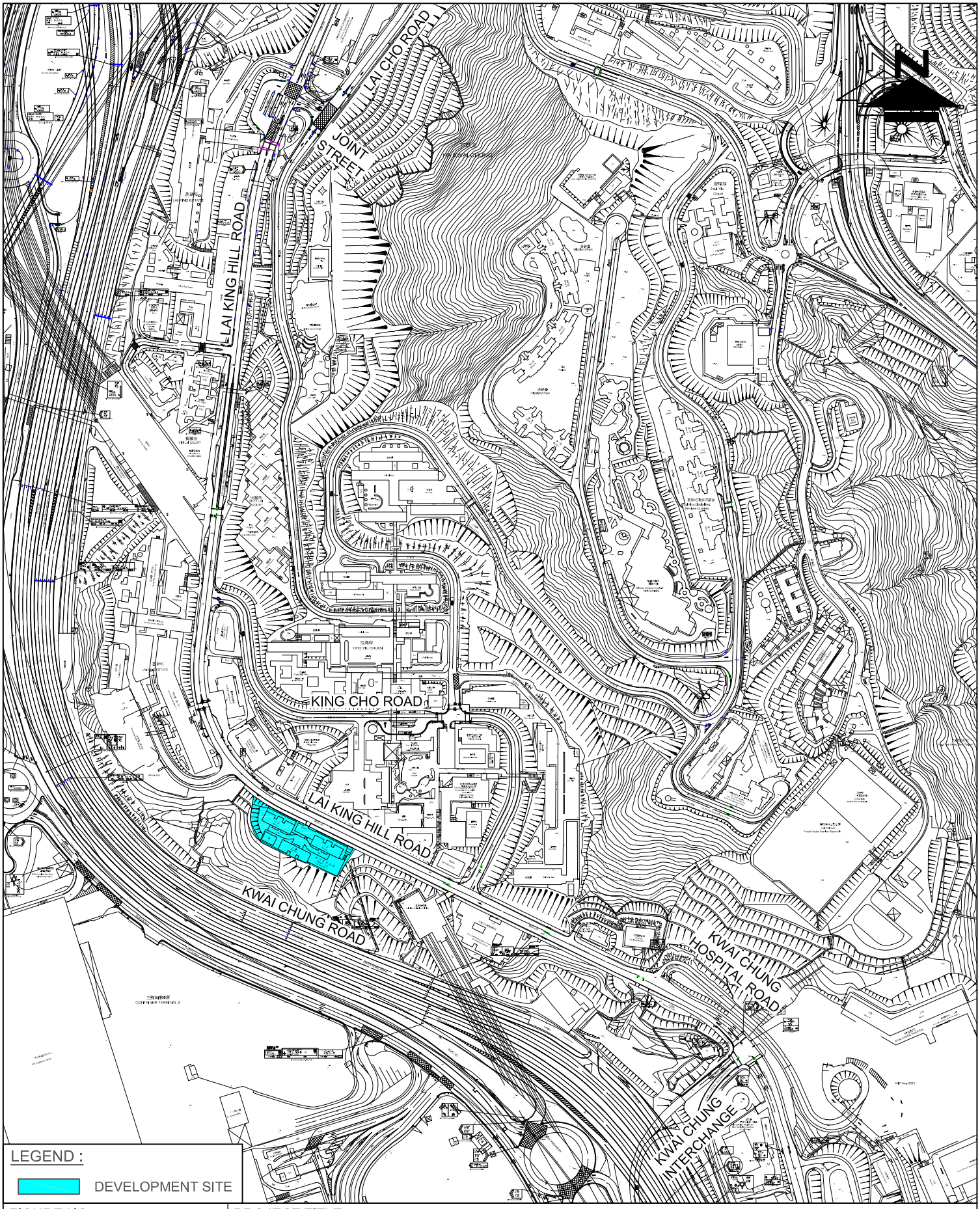
7.1.4 It is anticipated that Junction D will have negative reserve capacity during AM peak hour in Year 2032 without and with the proposed development.

7.1.5 Without junction modification, it is anticipated that Junction E will have negative reserve capacity during AM peak hour in Year 2032 without and with the proposed development. According to approved TIA report of A/KC/489, junction modification work is intended to be carried out before year 2028, i.e. before the completion of the proposed development in year 2029. The assessment results revealed that Junction E would operate within its capacities during the peak hours in both reference and design year with junction modification.

7.2 Conclusion

7.2.1 In conclusion, this TIA has demonstrated that the related traffic trips related to the proposed development can be absorbed by the nearby road network and no insurmountable traffic impact will be induced.

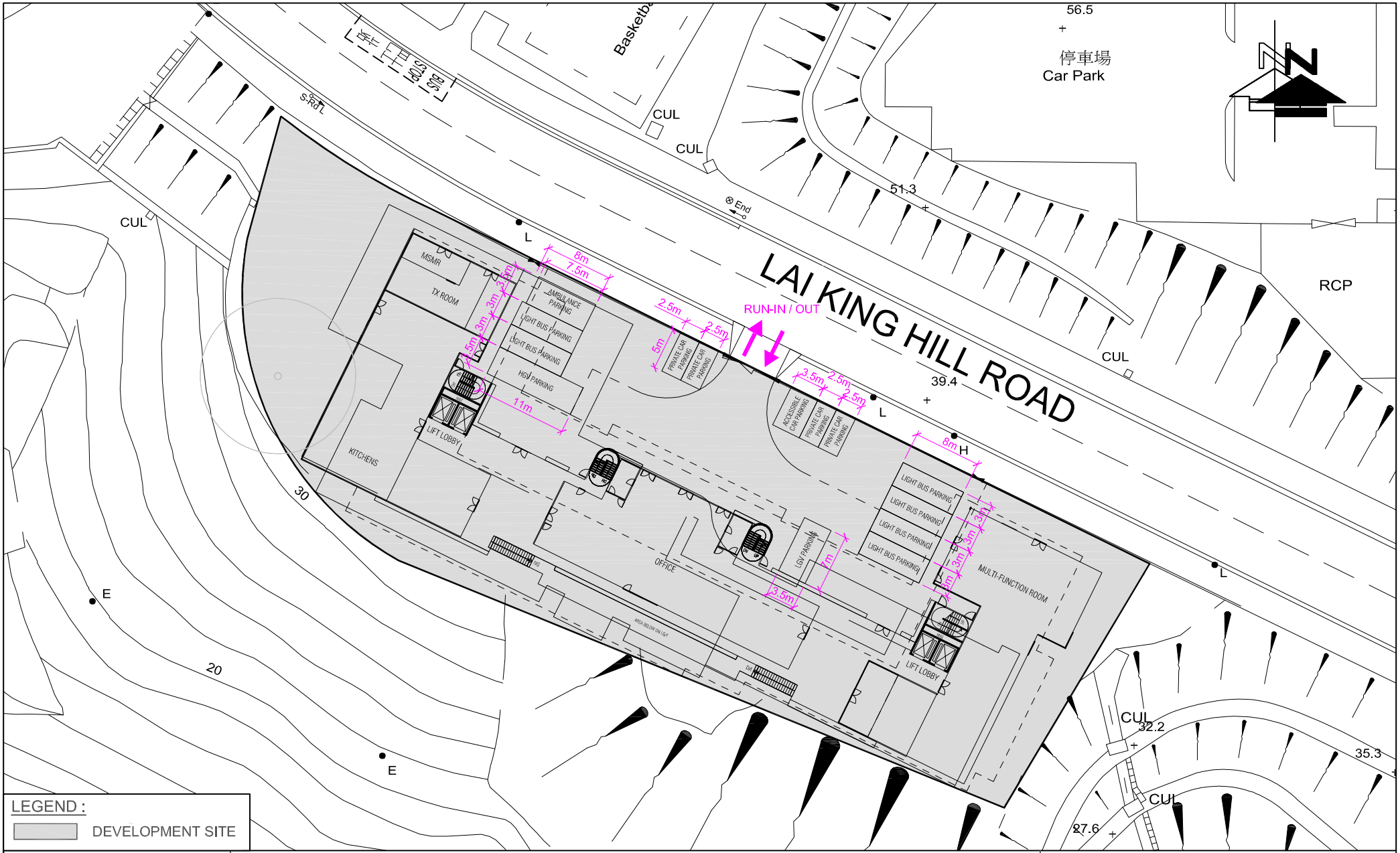
7.2.2 Therefore, the proposed development is considered feasible from traffic engineering point of view.



LEGEND :

DEVELOPMENT SITE

FIGURE NO.: 1.1	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: SITE LOCATION PLAN
SCALE: 1 : 5000 @A4 / DATE: 16 SEP 2022	CTA Consultants Limited 志達顧問有限公司



LEGEND :

DEVELOPMENT SITE

FIGURE NO.: 2.1(REV A)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: LAYOUT PLAN OF PROPOSED DEVELOPMENT	
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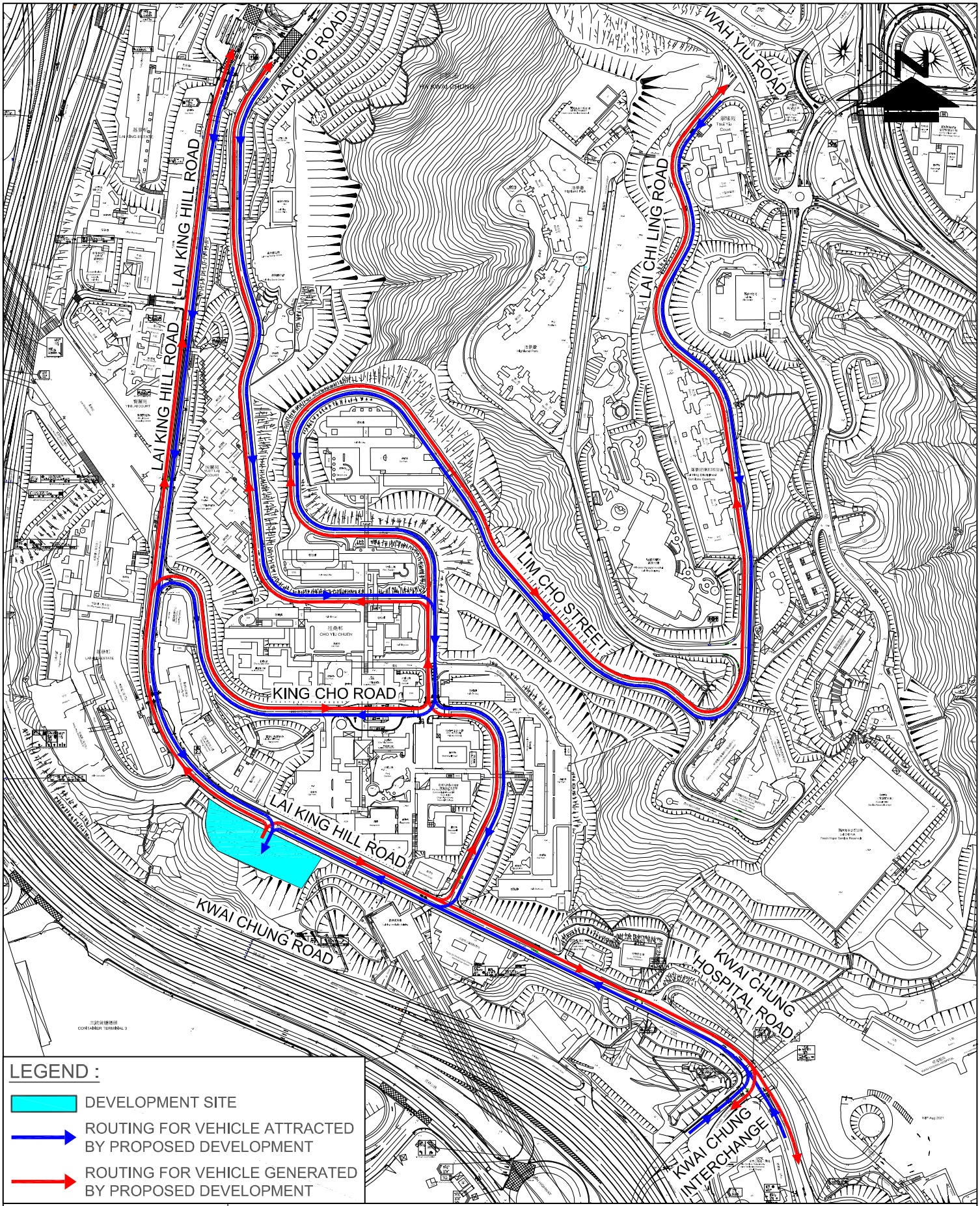

FIGURE NO.: 2.2	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: PROPOSED ROUTING FOR VEHICLES OF PROPOSED DEVELOPMENT
SCALE: 1 : 4500 @A4 / DATE: 21 NOV 2023	CTA Consultants Limited 志達顧問有限公司

FIGURE NO.: 3.1(REV B)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: AREA OF INFLUENCE
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CTA Consultants Limited
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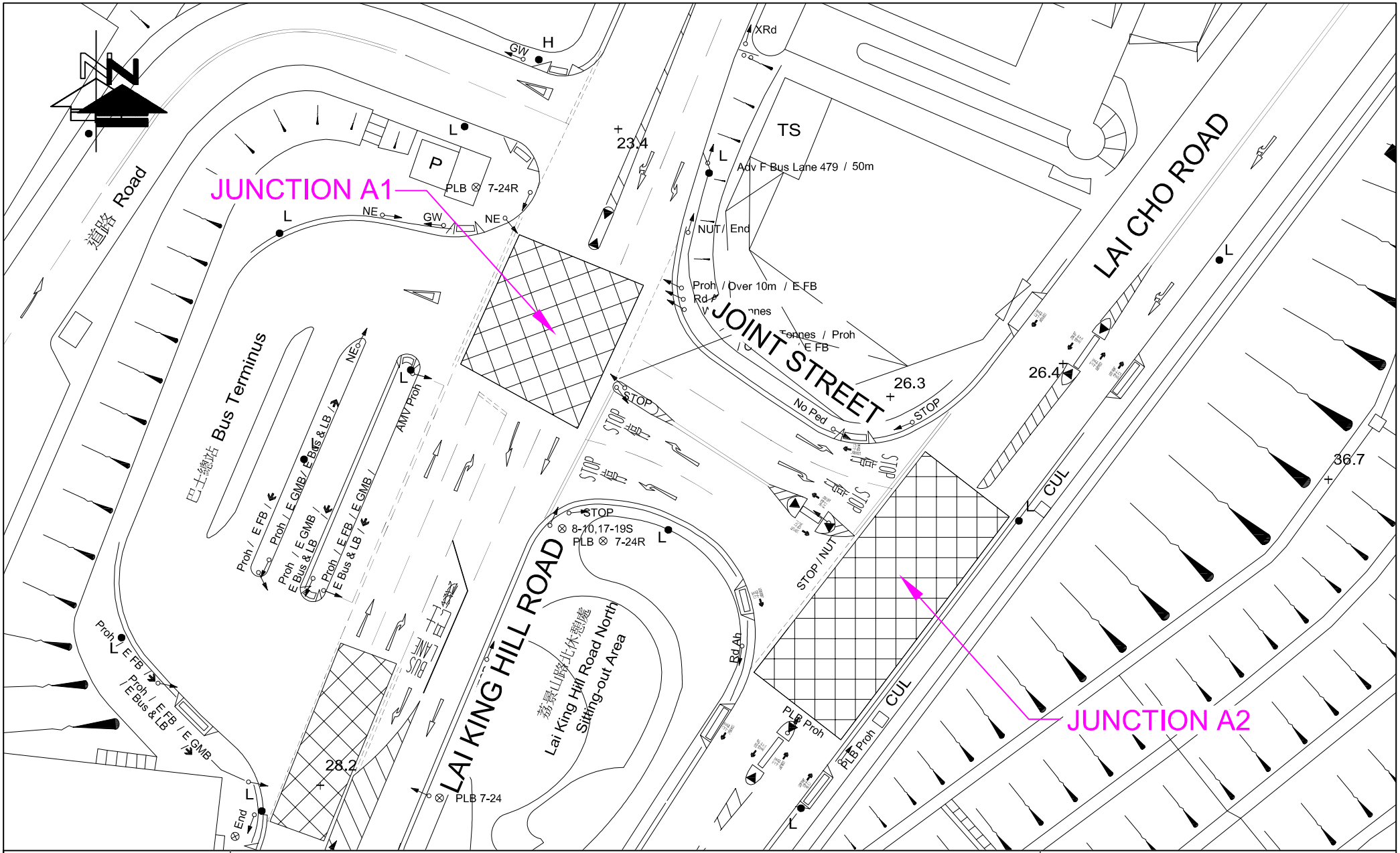

FIGURE NO.: 3.2	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF LAI KING HILL ROAD / JOINT STREET / LAI CHO ROAD (A1 & A2)	
SCALE: 1 : 500 @A4 / DATE: 16 SEP 2022		

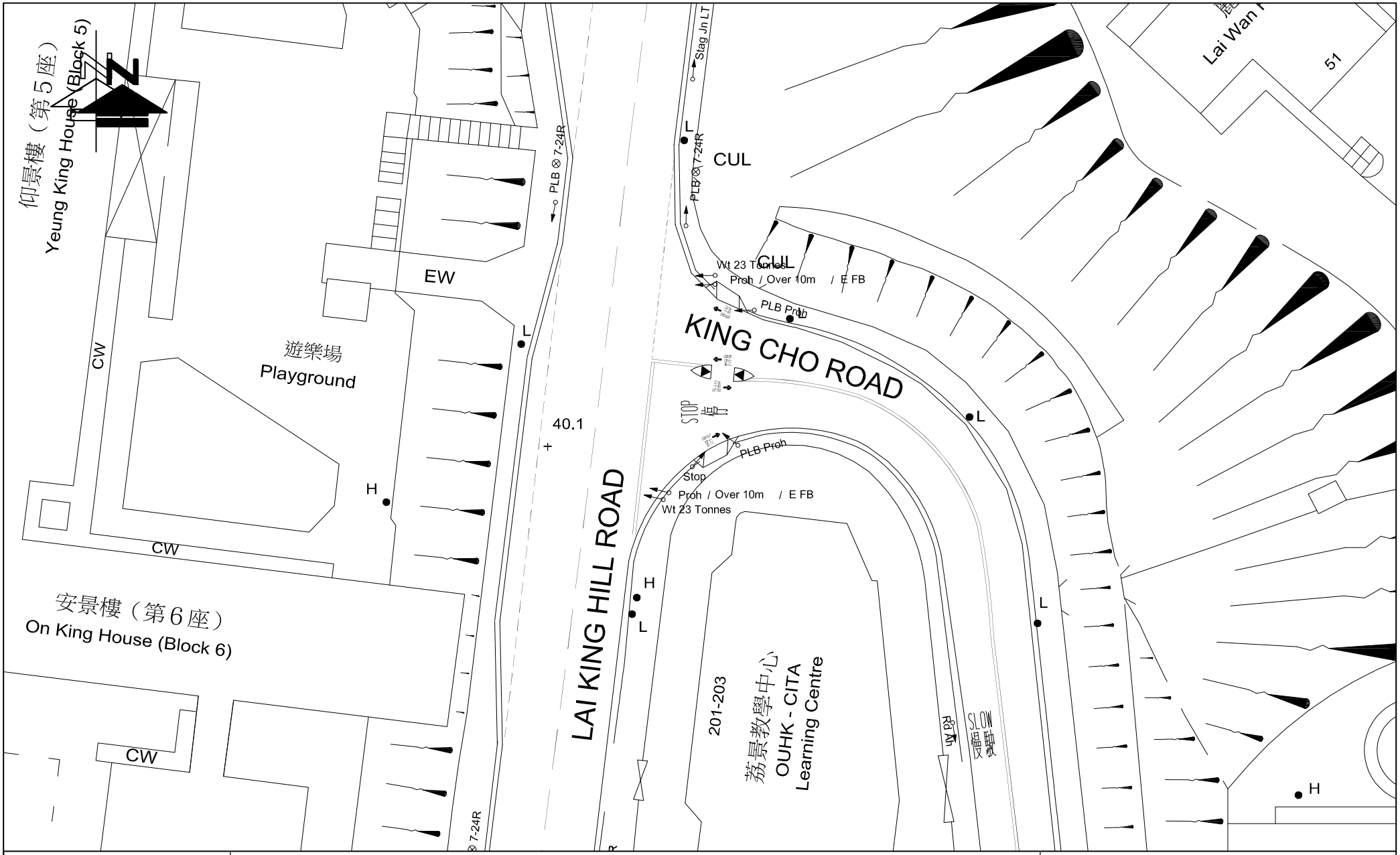

FIGURE NO.: 3.3	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF LAI KING HILL ROAD / KING CHO ROAD (NEAR LAI KING ESTATE) (B)	
SCALE: 1 : 500 @A4 / DATE: 16 SEP 2022		

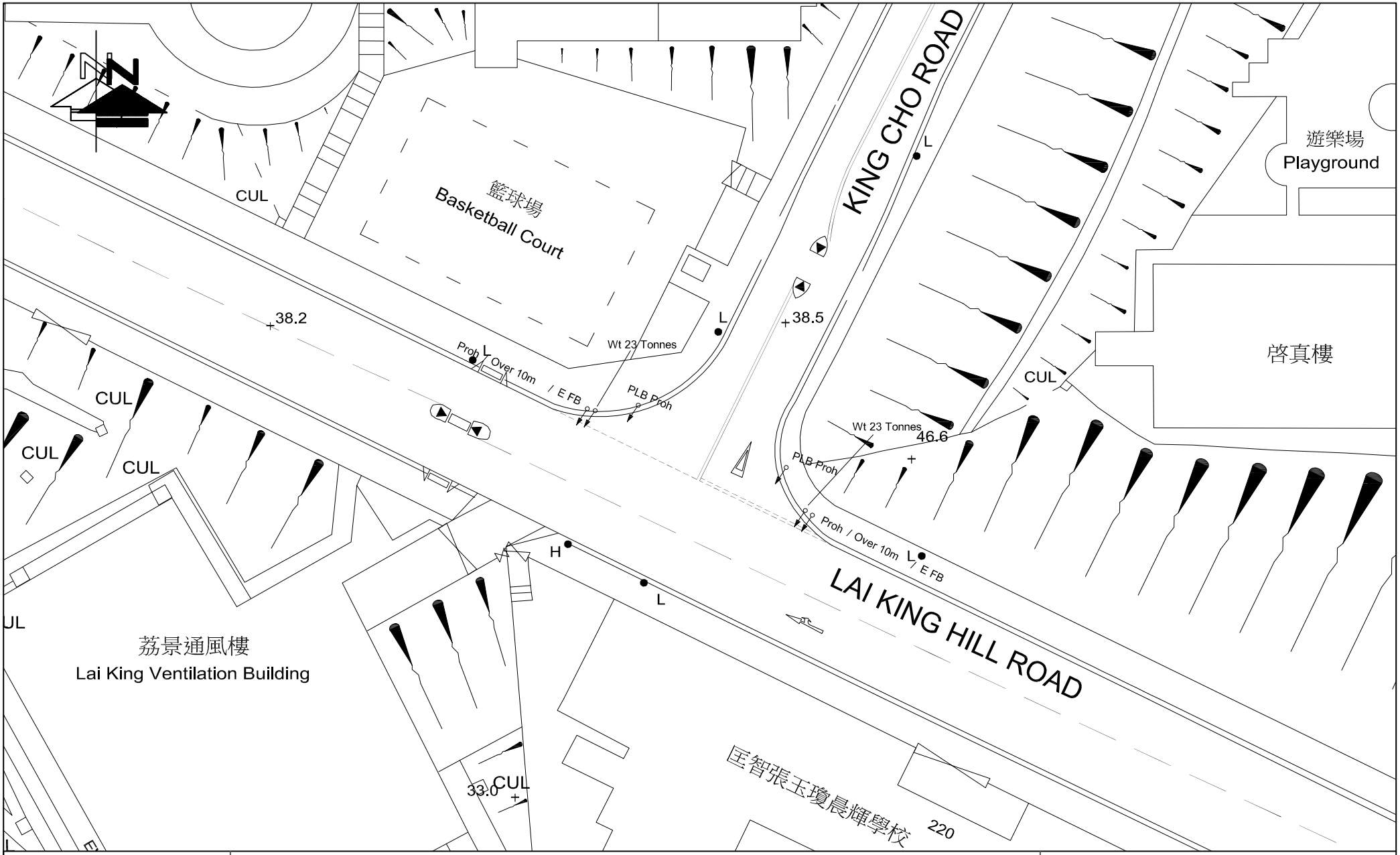

FIGURE NO.: 3.4	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF LAI KING HILL ROAD / KING CHO ROAD (NEAR LAI KING VENTILATION BUILDING) (C)	
SCALE: 1 : 500 @A4 / DATE: 16 SEP 2022		

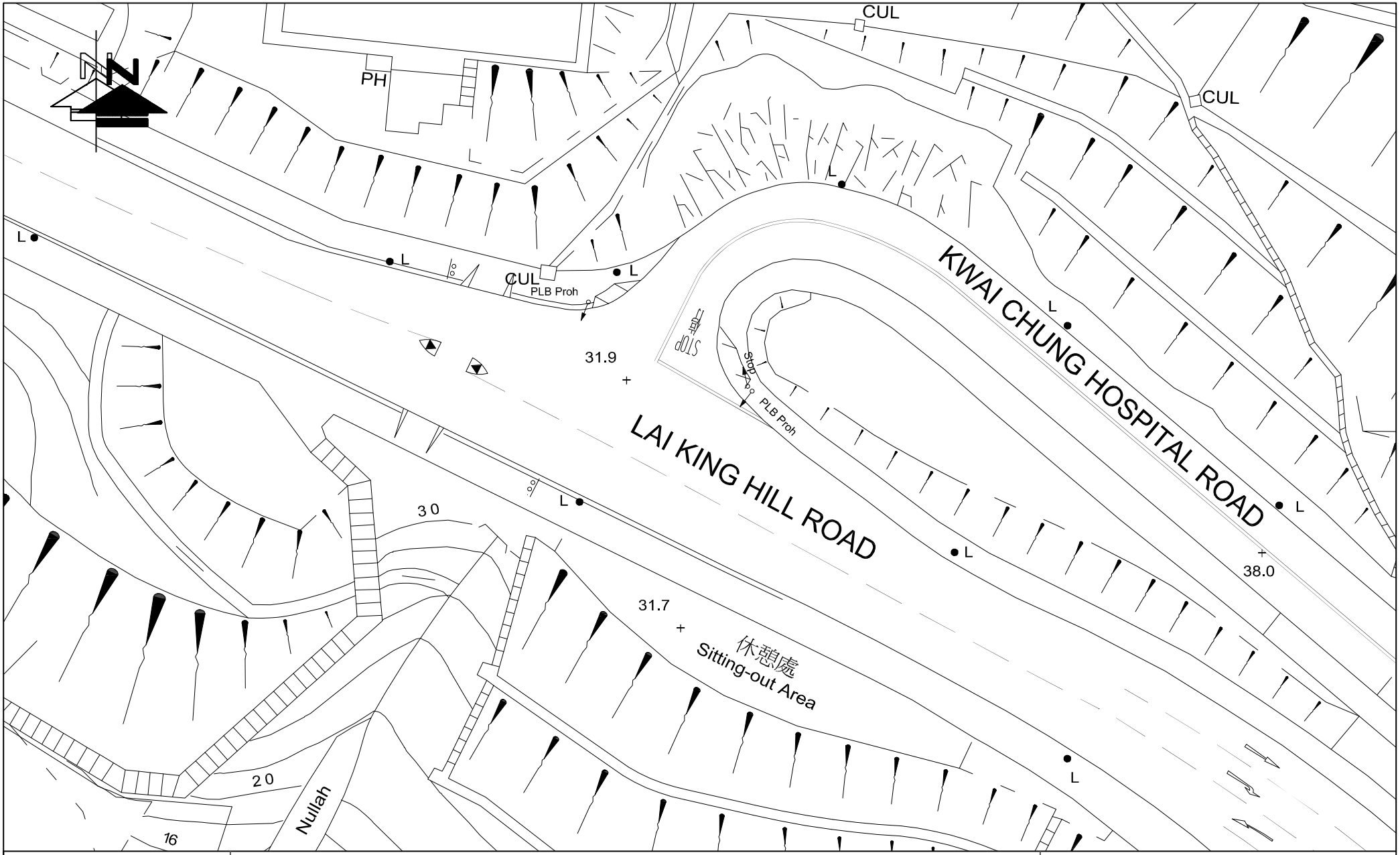

FIGURE NO.: 3.5	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF LAI KING HILL ROAD / KWAI CHUNG HOSPITAL ROAD (D)	
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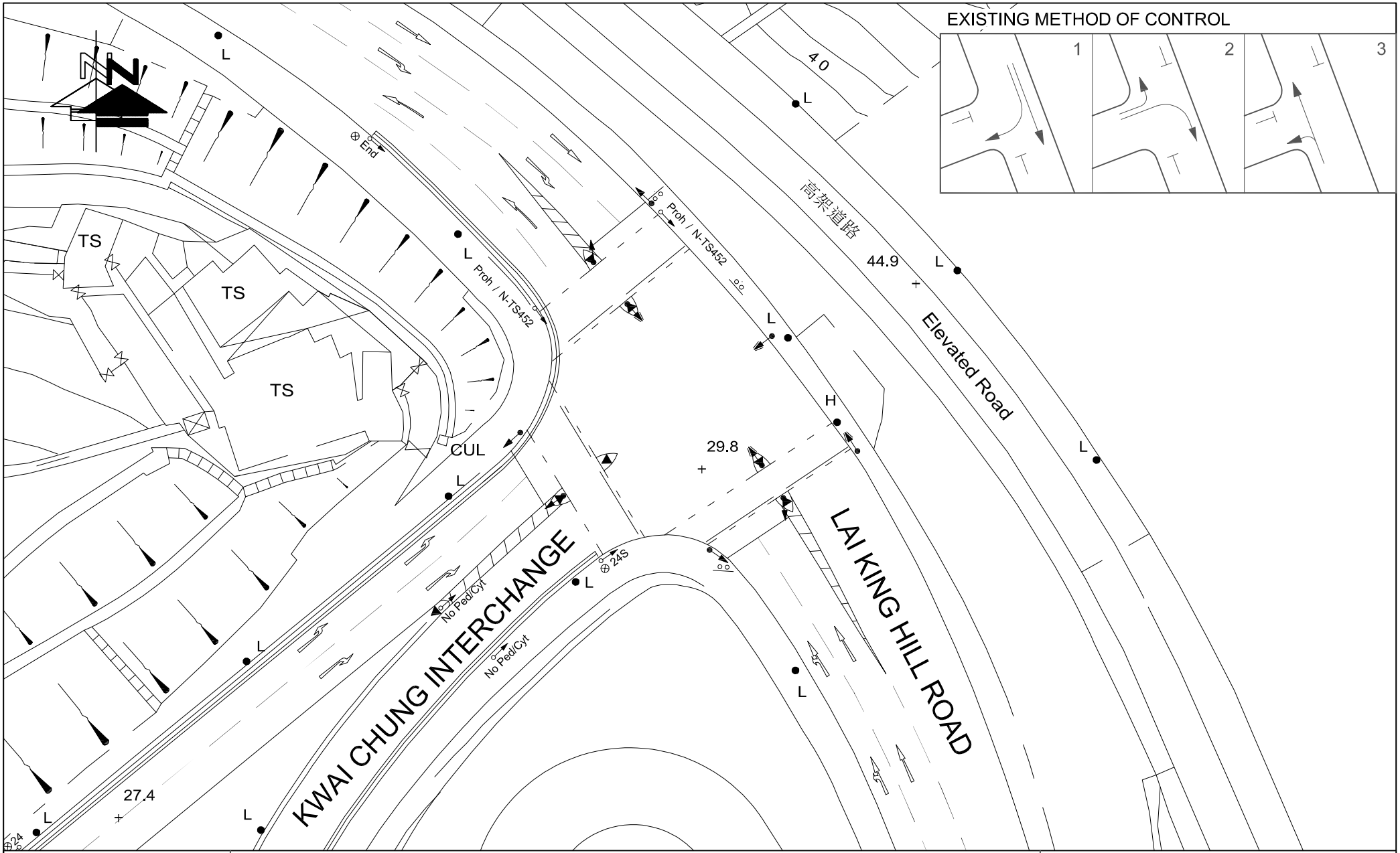

FIGURE NO.: 3.6	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF LAI KING HILL ROAD / KWAI CHUNG INTERCHANGE (E)	
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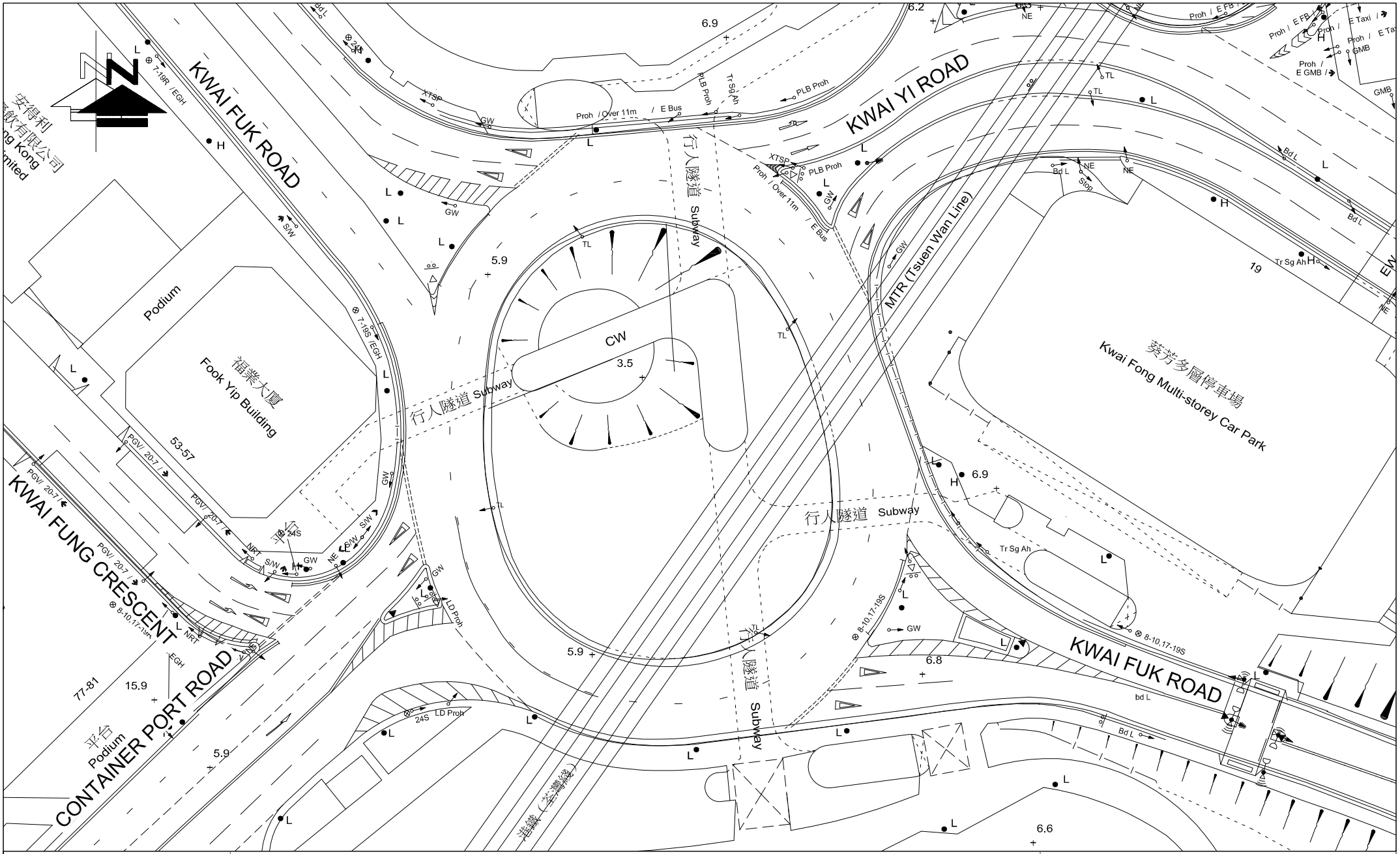

FIGURE NO.: 3.7	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: EXISTING JUNCTION LAYOUT OF KWAI FUK ROAD / KWAI YI ROAD / CONTAINER PORT ROAD (F)	
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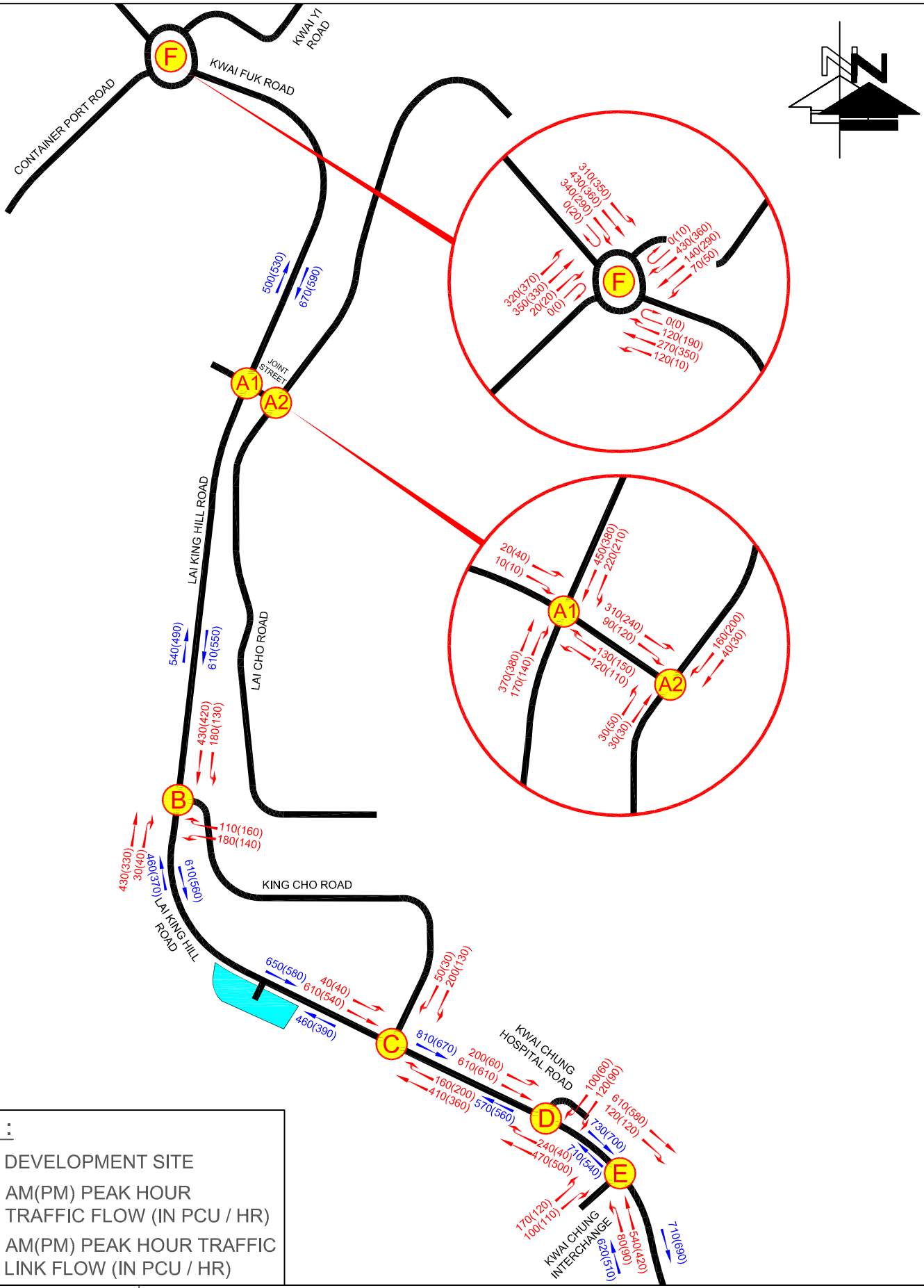
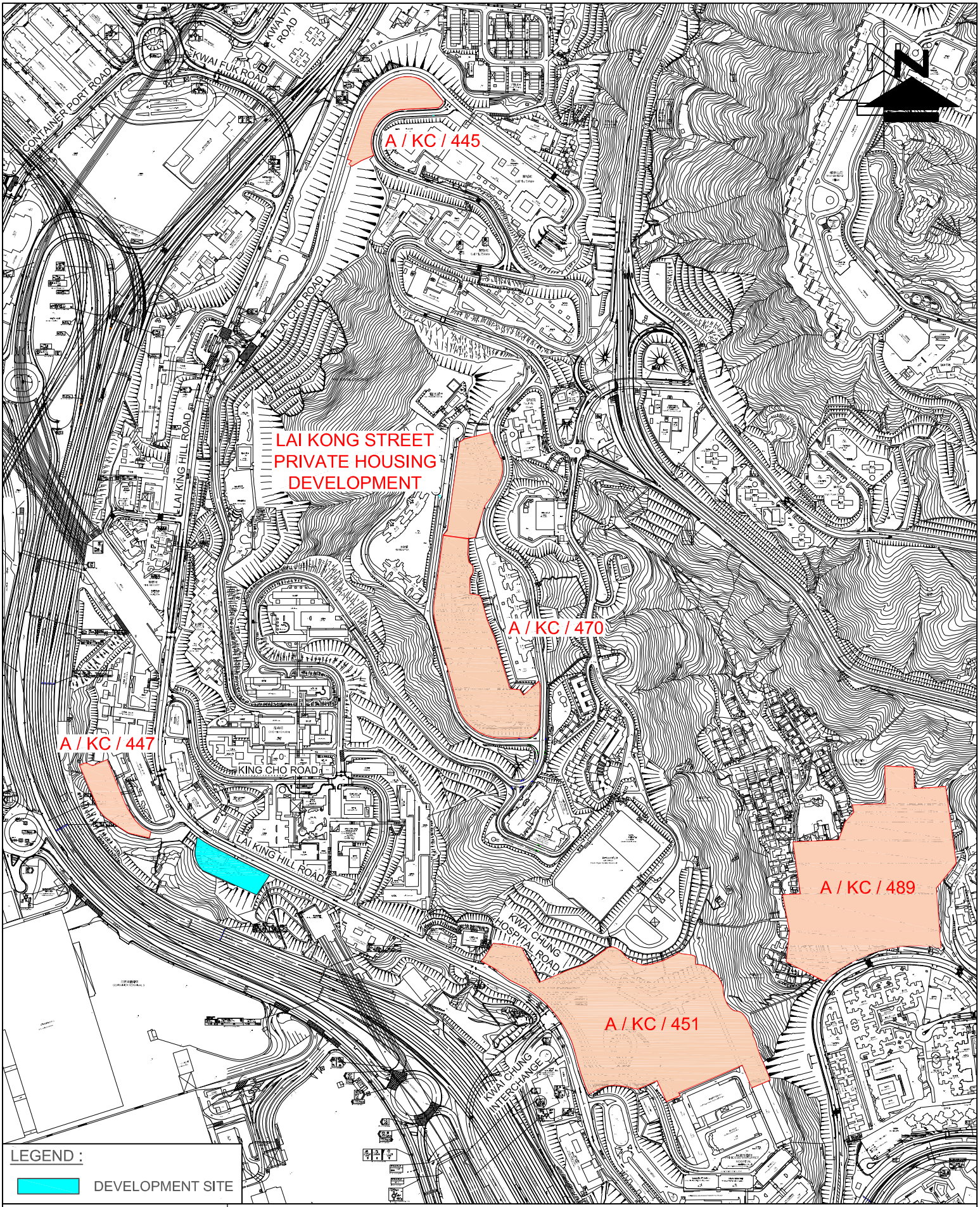


LEGEND :

- DEVELOPMENT SITE
- 420(390) AM(PM) PEAK HOUR TRAFFIC FLOW (IN PCU / HR)
- 420(390) AM(PM) PEAK HOUR TRAFFIC LINK FLOW (IN PCU / HR)

FIGURE NO.: 3.8 (REV B)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: 2023 OBSERVED TRAFFIC FLOWS
SCALE: N. T. S. @A4	DATE: 30 MAY 2024

CTA Consultants Limited 志達顧問有限公司



LEGEND :

DEVELOPMENT SITE

FIGURE NO.: 4.1(REV A)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	
PROJECT NO.: 21149HK	DRAWING TITLE: PLANNED MAJOR DEVELOPMENT IN THE VICINITY	CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 7000 @A4	DATE: 20 NOV 2023	

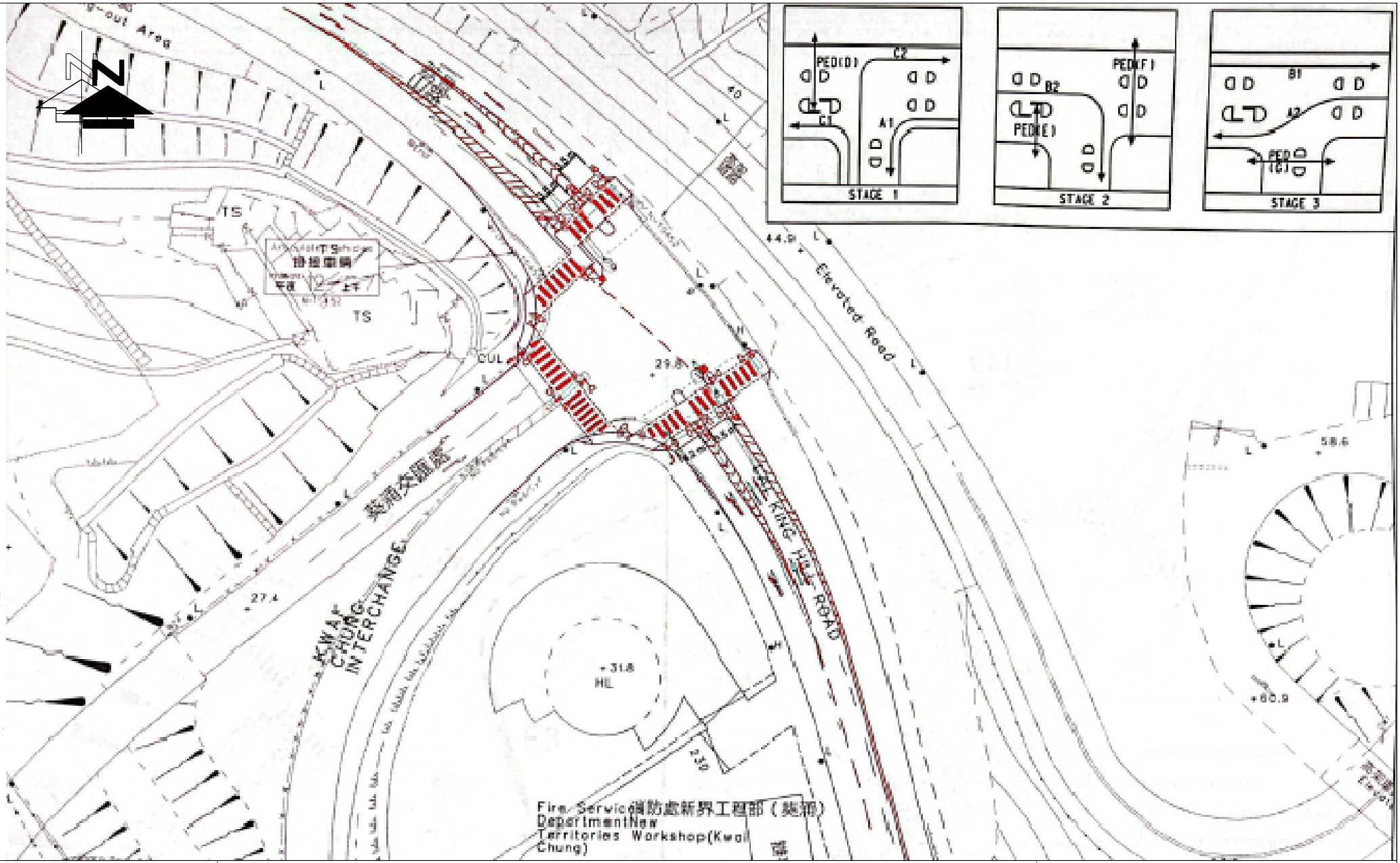
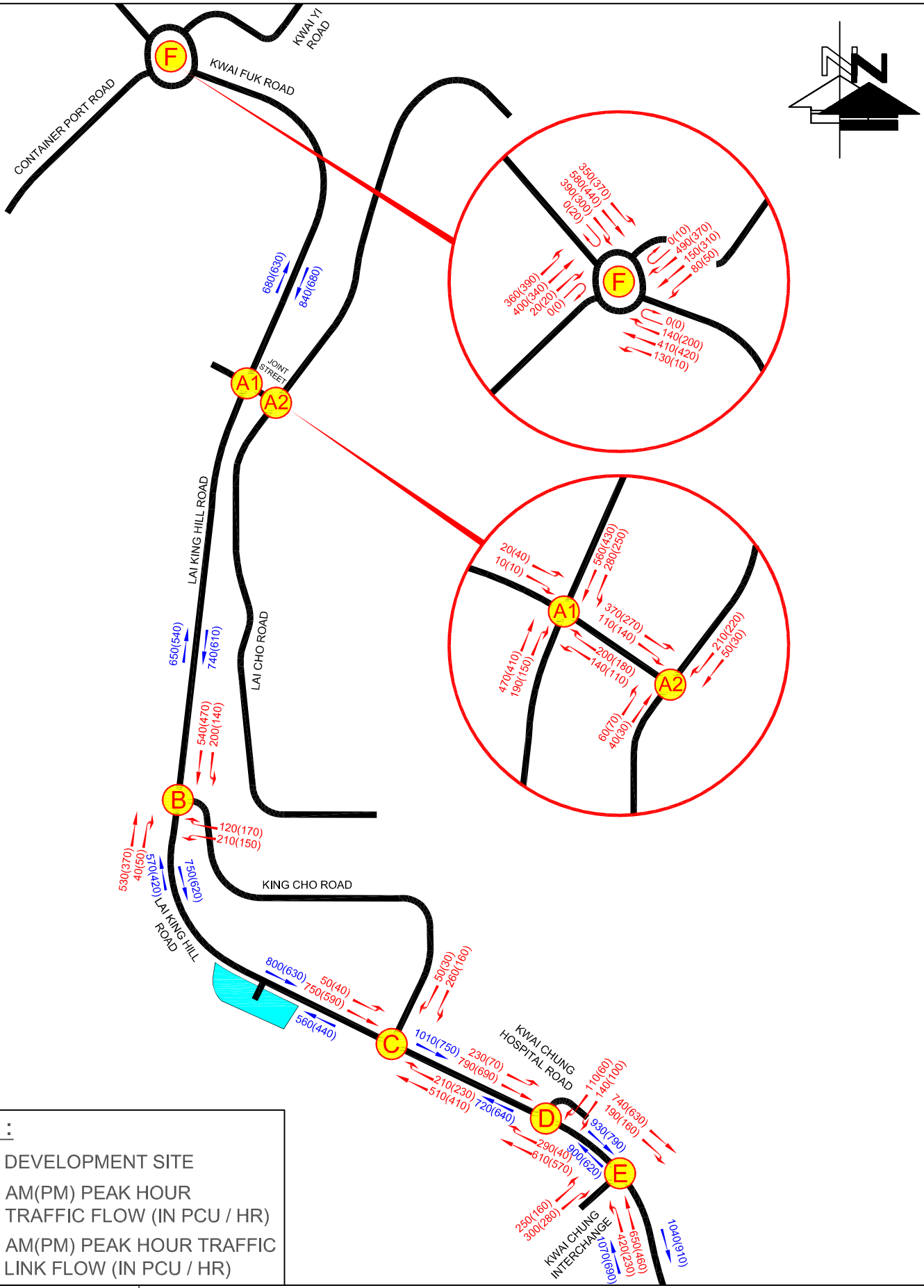


FIGURE NO.: 4.2	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application		
PROJECT NO.: 21149HK	DRAWING TITLE: PLANNED JUNCTION LAI KING HILL ROAD / KWAI CHUNG INTERCHANGE (K) CARRIED OUT UNDER A/KC/489		CTA Consultants Limited 志達顧問有限公司
SCALE: 1 : 550 @A4	DATE: 07 AUG 2023		

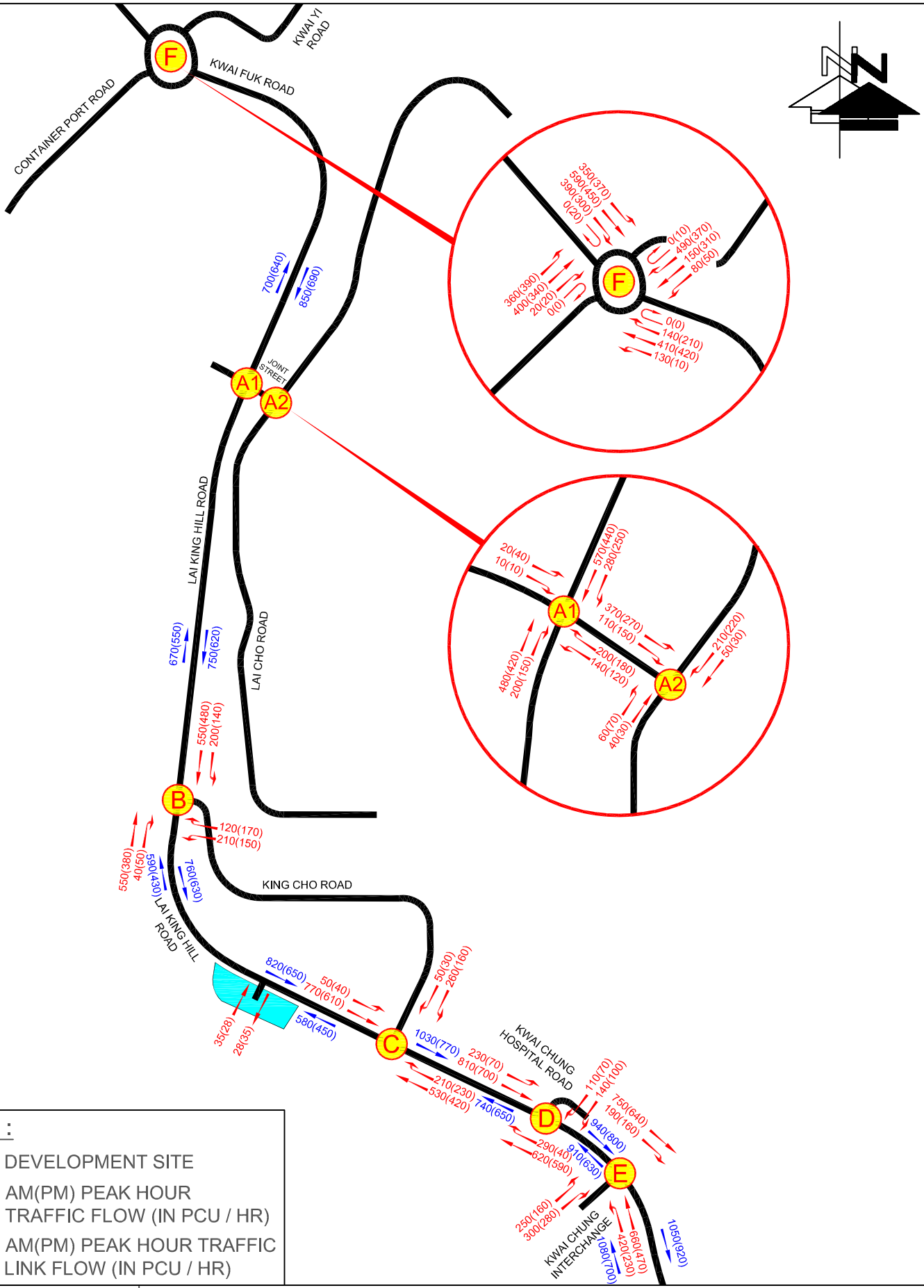


LEGEND :

- DEVELOPMENT SITE
- 420(390) AM(PM) PEAK HOUR TRAFFIC FLOW (IN PCU / HR)
- 420(390) AM(PM) PEAK HOUR TRAFFIC LINK FLOW (IN PCU / HR)

FIGURE NO.: 4.3 (REV B)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: 2032 REFERENCE TRAFFIC FLOWS
SCALE: N. T. S. @A4	DATE: 30 MAY 2024

CTA Consultants Limited 志達顧問有限公司

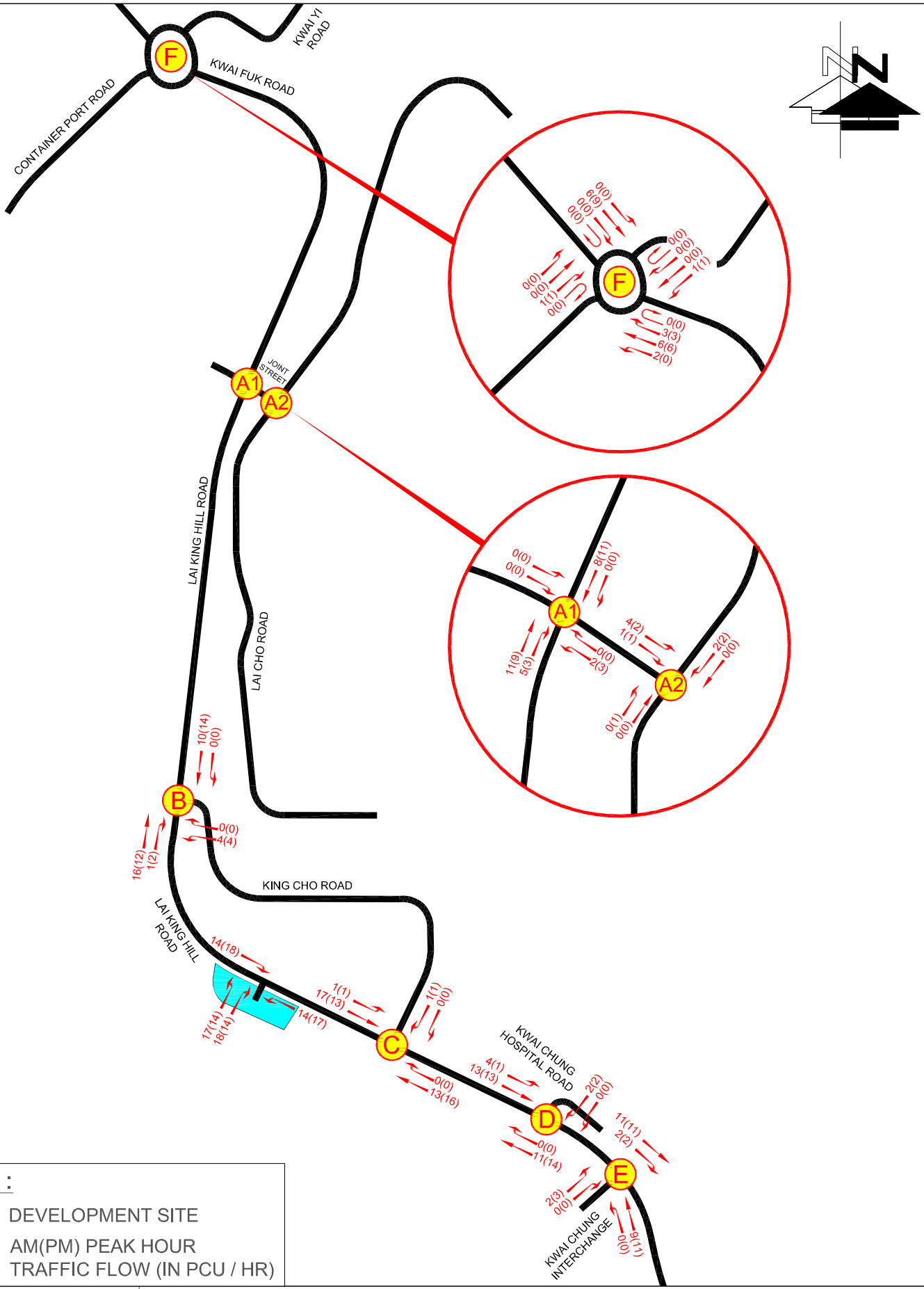


LEGEND :

- DEVELOPMENT SITE
- 420(390) AM(PM) PEAK HOUR TRAFFIC FLOW (IN PCU / HR)
- 420(390) AM(PM) PEAK HOUR TRAFFIC LINK FLOW (IN PCU / HR)

FIGURE NO.: 4.4 (REV B)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: 2032 DESIGN TRAFFIC FLOWS
SCALE: N. T. S. @A4	DATE: 30 MAY 2024

CTA Consultants Limited 志達顧問有限公司

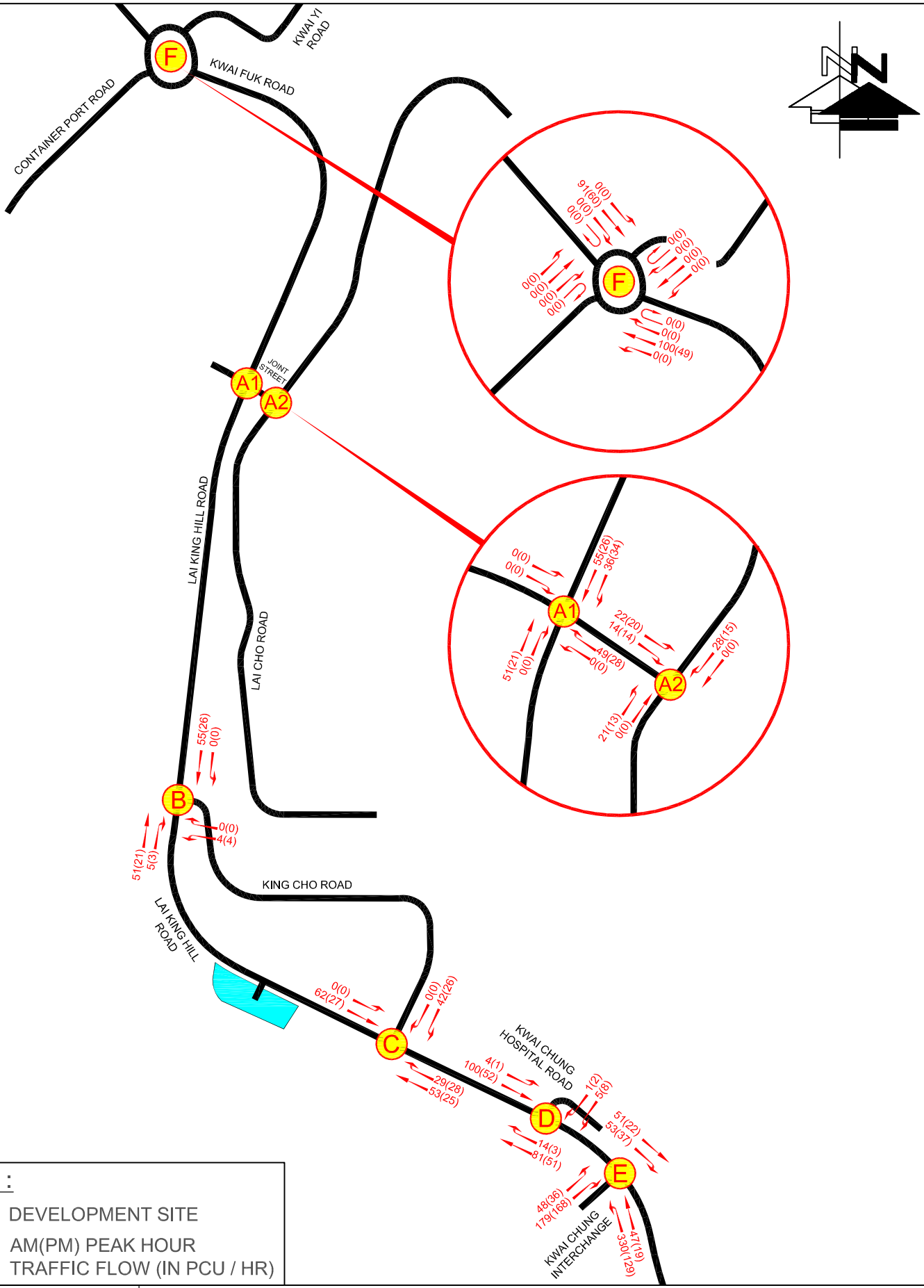


LEGEND :

DEVELOPMENT SITE

420(390) AM(PM) PEAK HOUR TRAFFIC FLOW (IN PCU / HR)

FIGURE NO.: 4.5 (REV B)	PROJECT TITLE:	Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE:	PROPOSED DEVELOPMENT TRAFFIC FLOWS
SCALE: N. T. S. @A4 / DATE: 27 MAY 2024		CTA Consultants Limited 志達顧問有限公司



LEGEND :

DEVELOPMENT SITE

420(390) AM(PM) PEAK HOUR TRAFFIC FLOW (IN PCU / HR)

FIGURE NO.: 4.6 (REV A)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: ADJACENT DEVELOPMENT TRAFFIC FLOWS
SCALE: N. T. S. @A4 / DATE: 13 MAR 2024	CTA Consultants Limited 志達顧問有限公司

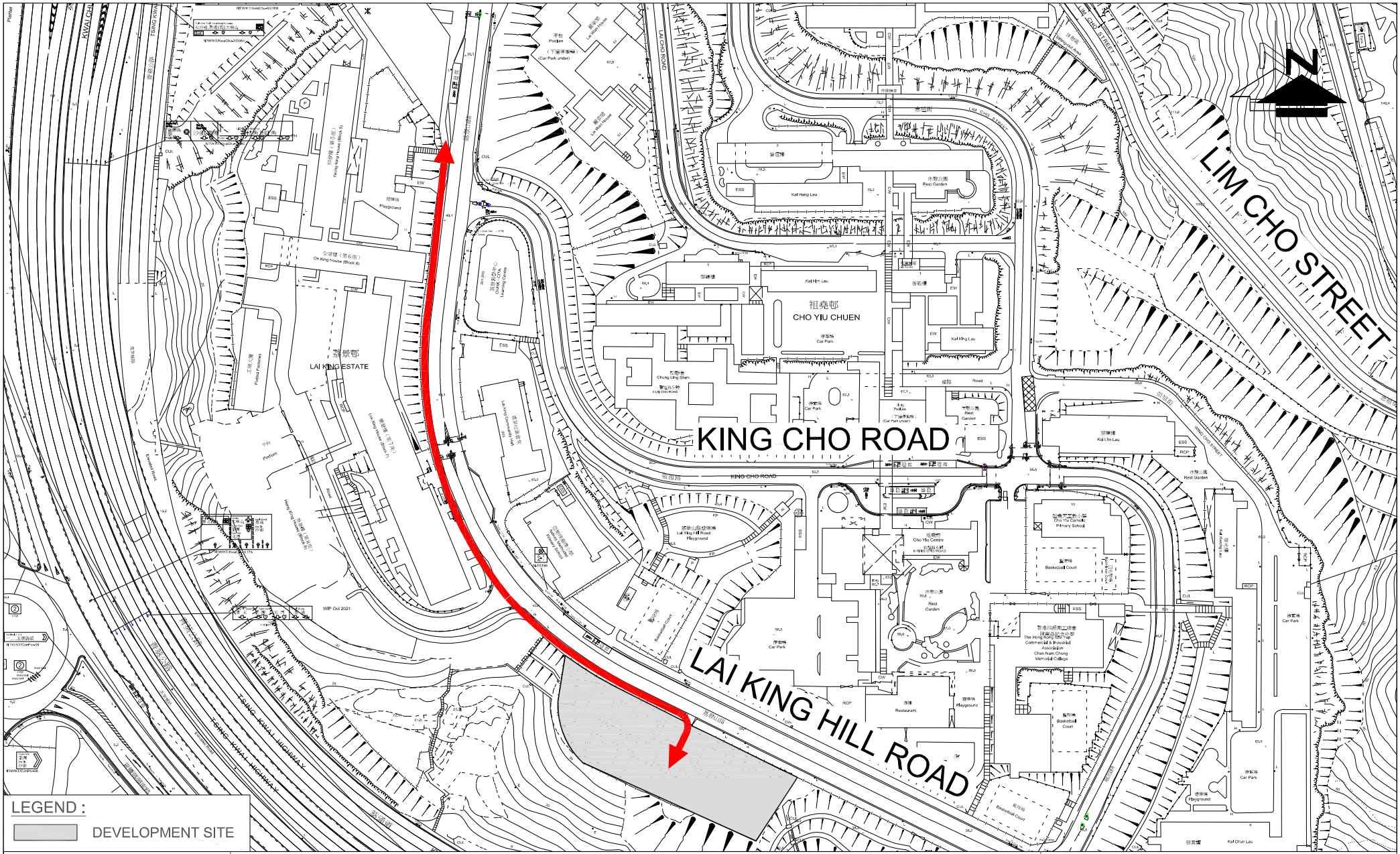
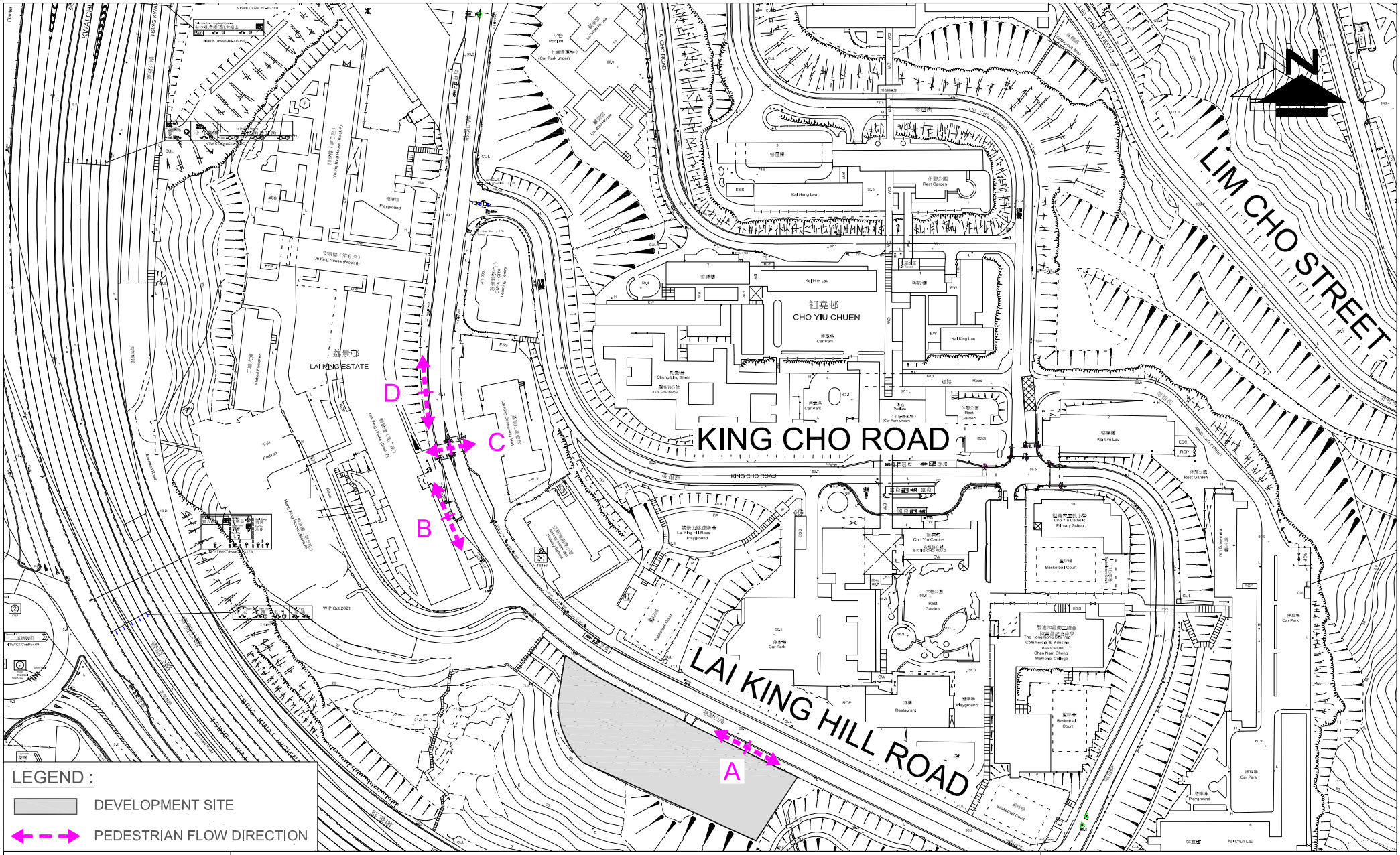


FIGURE NO.: 6.1	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: PEDESTRIAN CONNECTIVITY	
SCALE: 1 : 2250 @A4	DATE: 6 JUN 2024	



LEGEND :

DEVELOPMENT SITE

PEDESTRIAN FLOW DIRECTION

FIGURE NO.: 6.2	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: INDEX PLAN OF PEDESTRIAN ASSESSMENT	
SCALE: 1 : 2250 @A4	DATE: 6 JUN 2024	

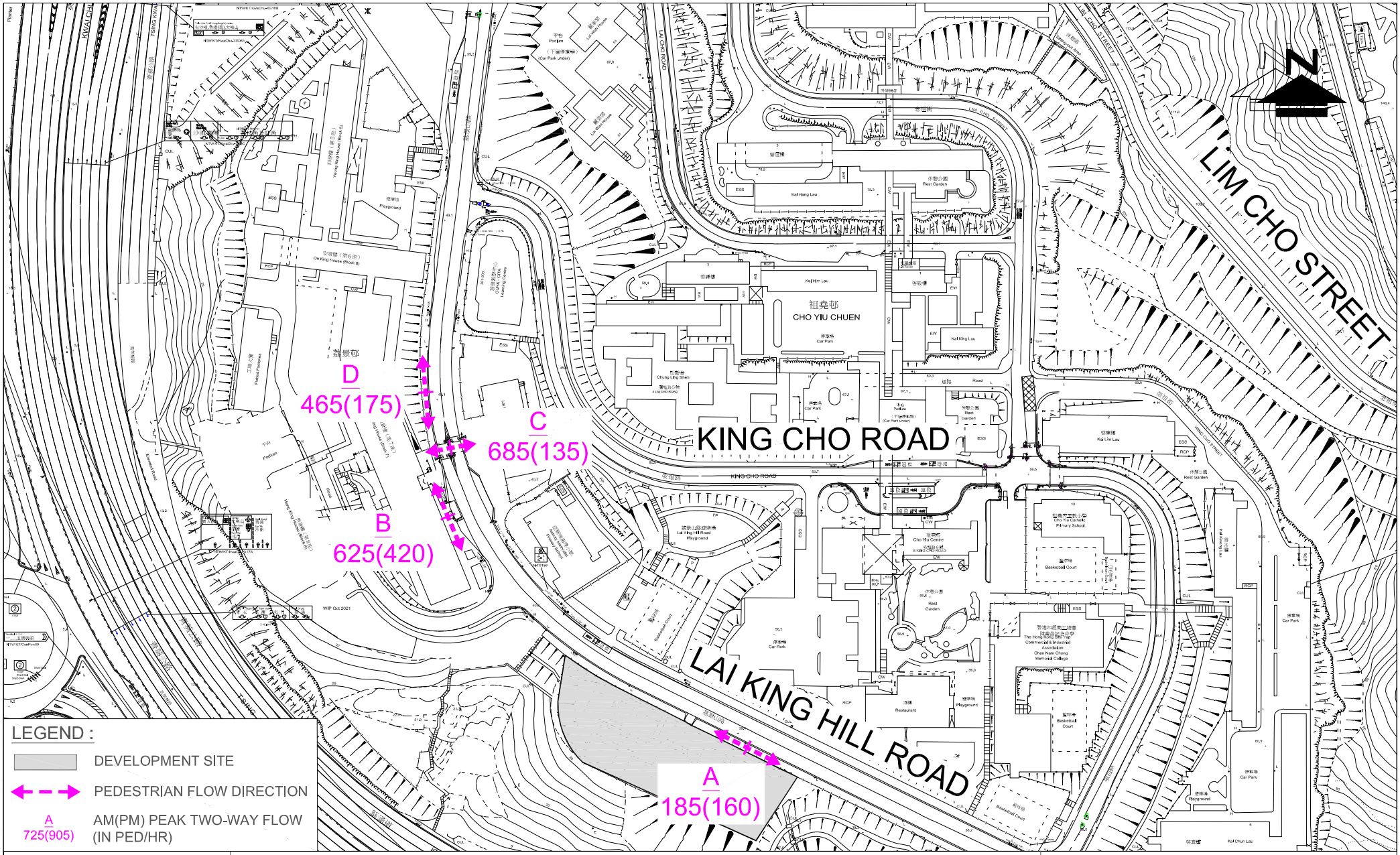


FIGURE NO.: 6.3	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: 2023 EXISTING PEDESTRIAN FLOWS	
SCALE: 1 : 2250 @A4	DATE: 6 JUN 2024	

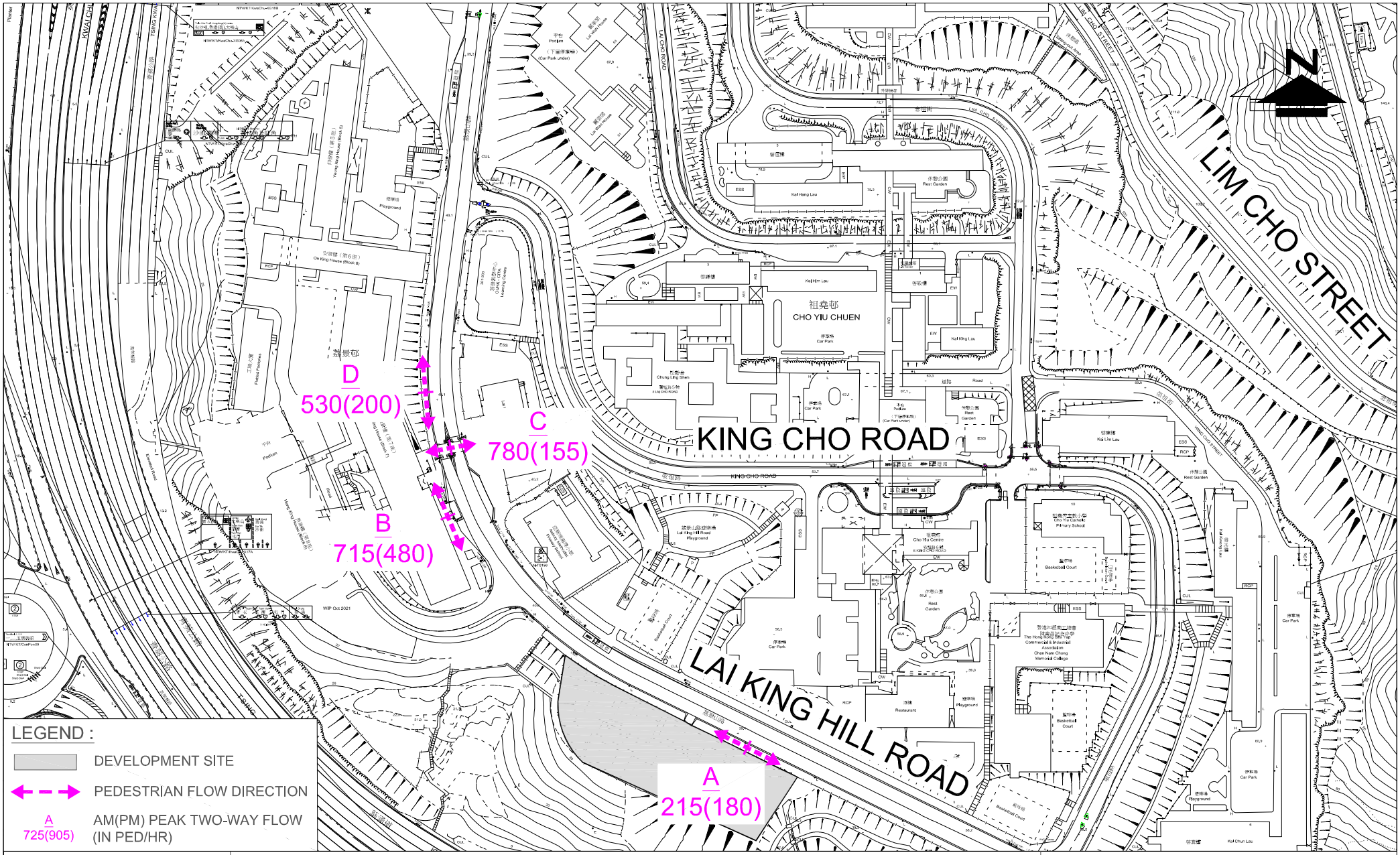


FIGURE NO.: 6.4	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: 2032 REFERENCE PEDESTRIAN FLOWS	
SCALE: 1 : 2250 @A4	DATE: 6 JUN 2024	

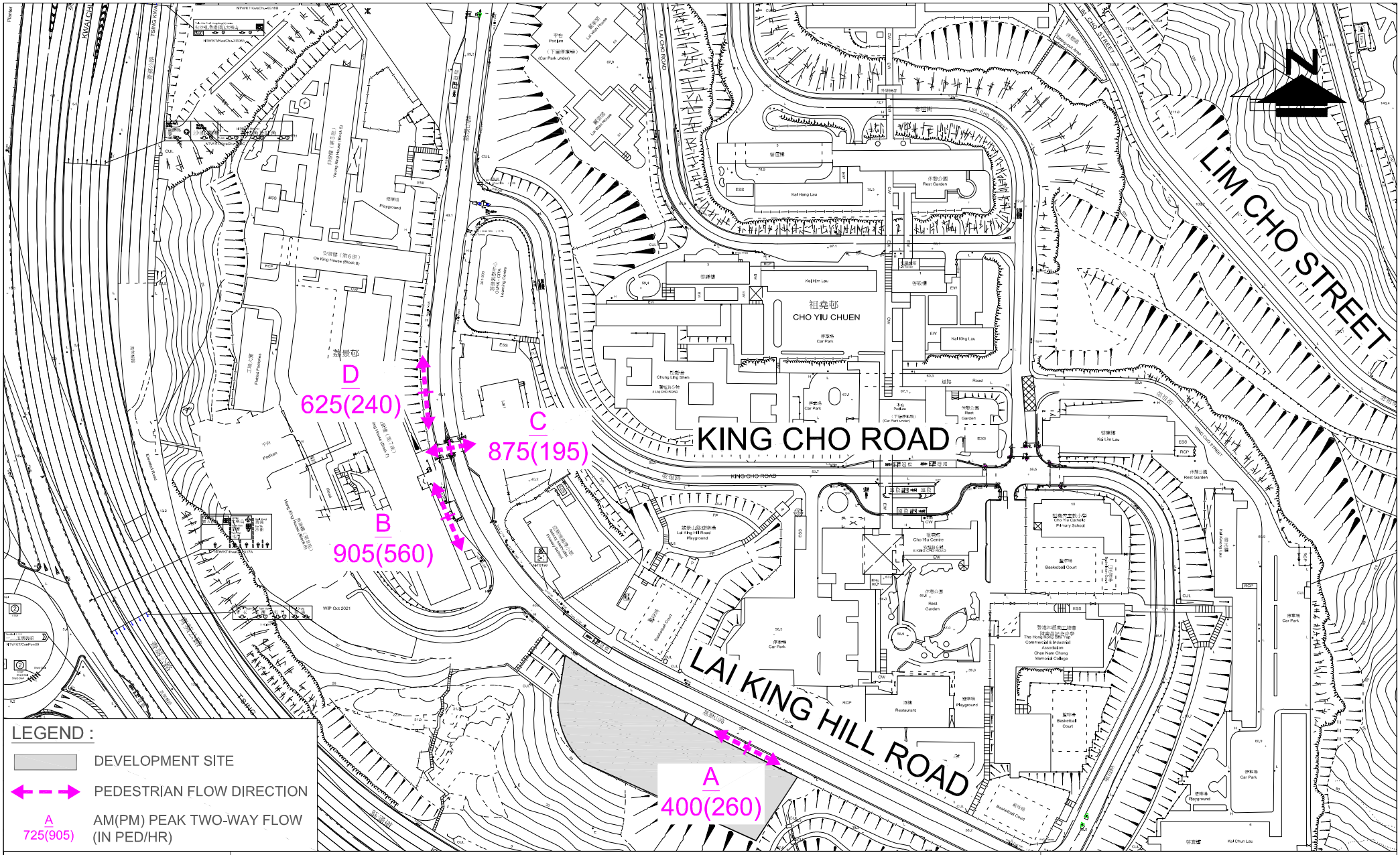


FIGURE NO.: 6.5	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application	CTA Consultants Limited 志達顧問有限公司
PROJECT NO.: 21149HK	DRAWING TITLE: 2032 DESIGN PEDESTRIAN FLOWS	
SCALE: 1 : 2250 @A4	DATE: 6 JUN 2024	

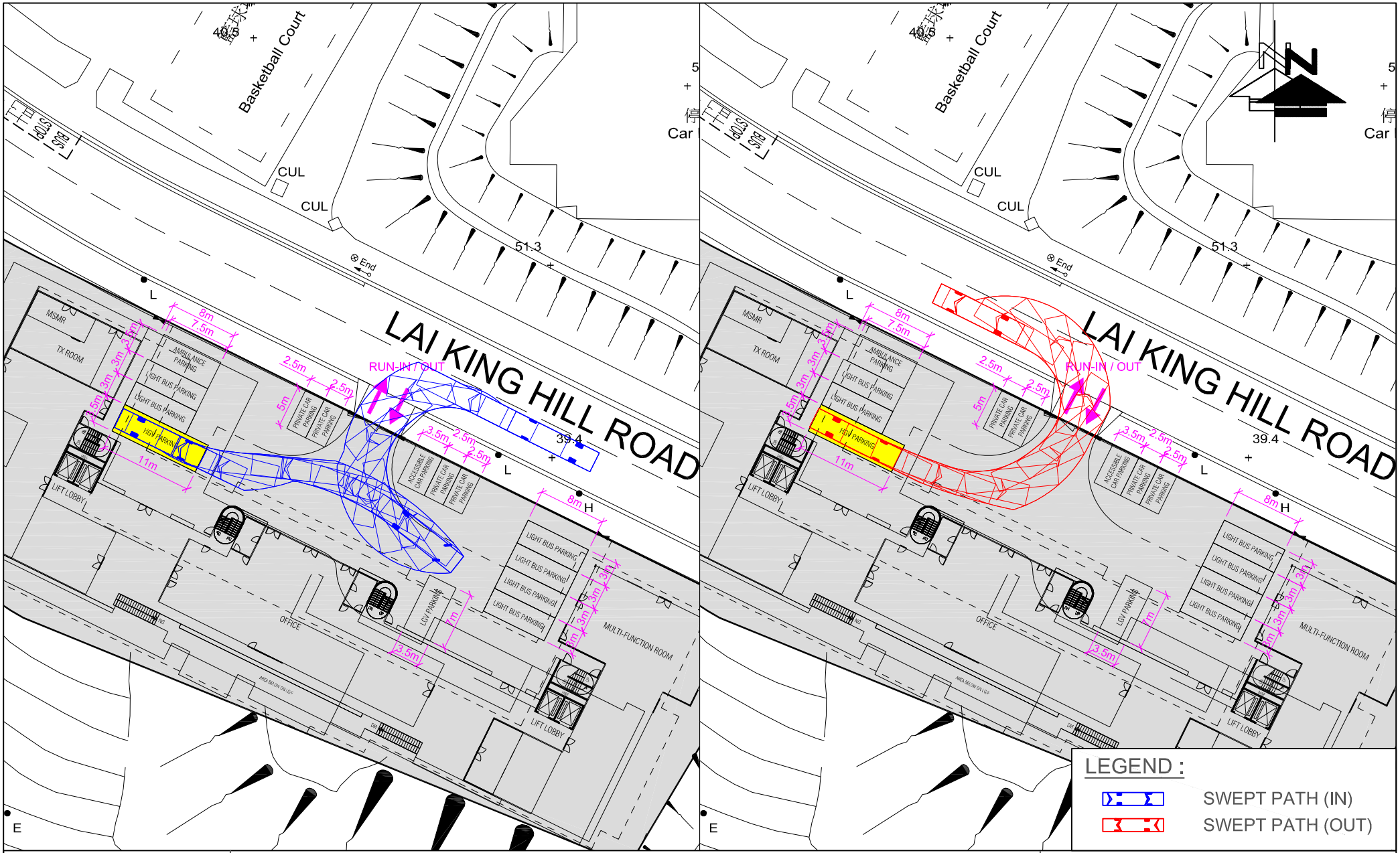


FIGURE NO.: SP-01(REV A)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: SWEPT PATH ANALYSIS FOR HGV (11m x 2.5m)
SCALE: 1 : 600 @A4	DATE: 13 MAR 2024

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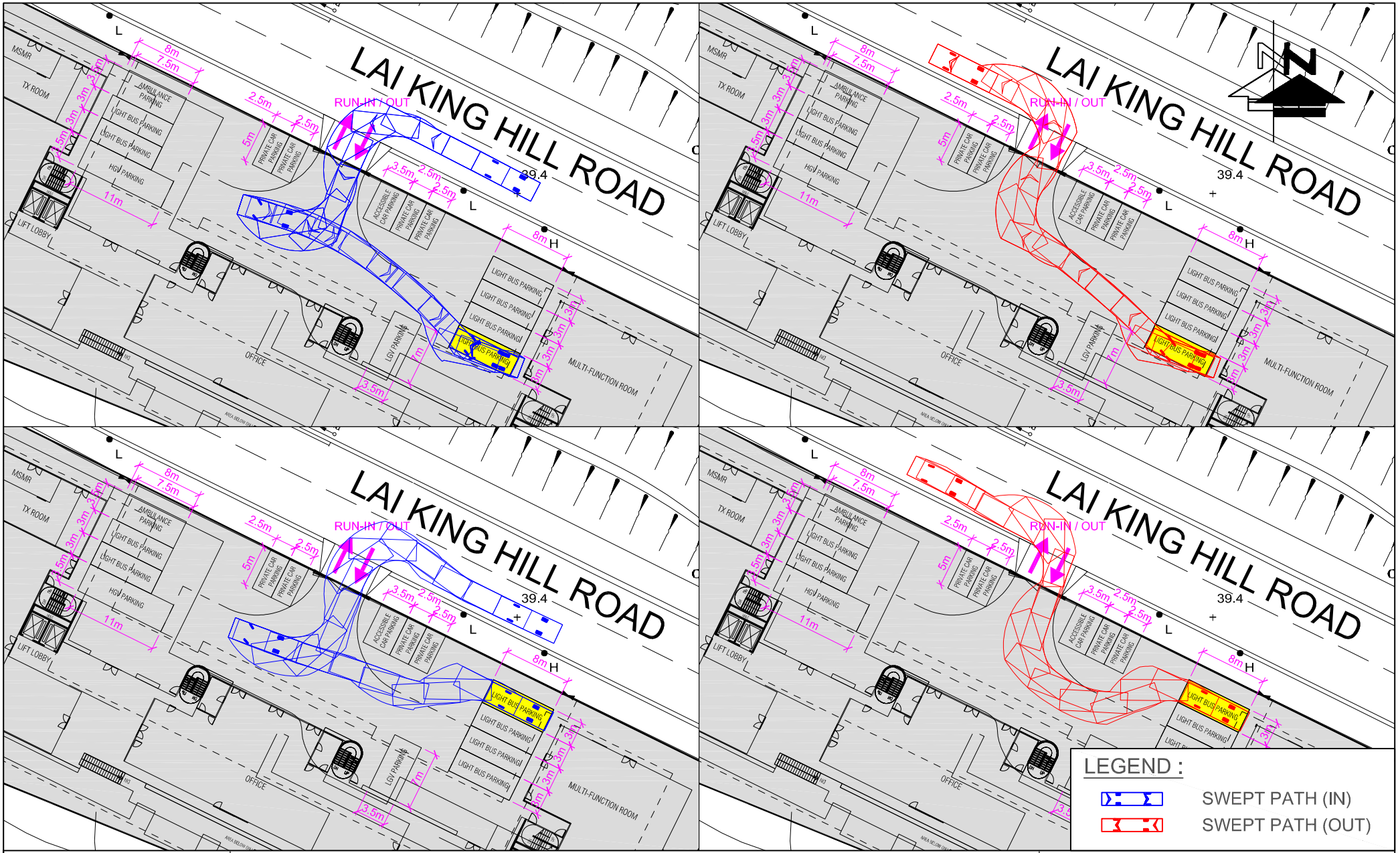

FIGURE NO.: SP-02(REV A)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: SWEPT PATH ANALYSIS FOR LIGHT BUS (8m x 2.5m)
SCALE: 1 : 600 @A4	DATE: 13 MAR 2024

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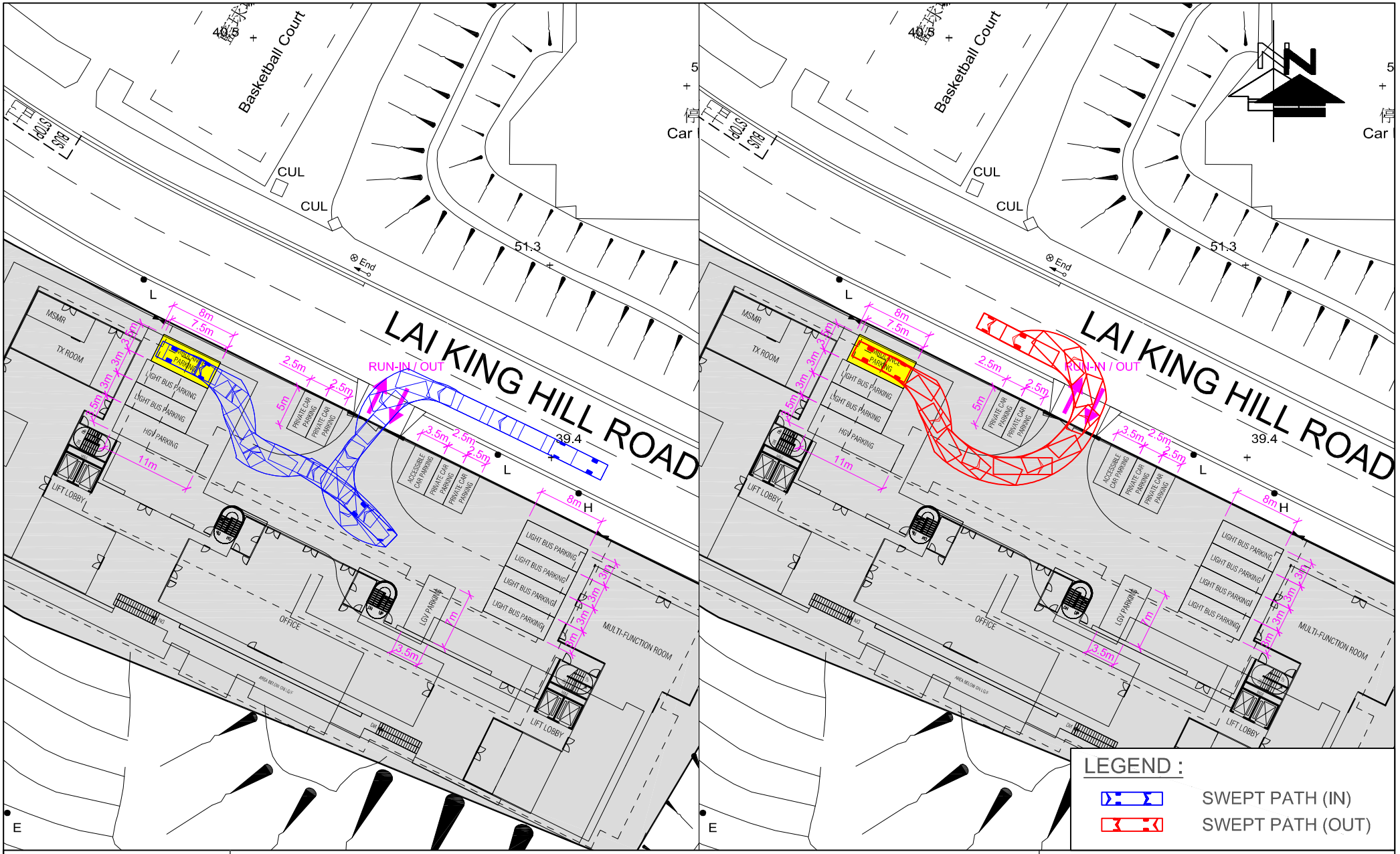

FIGURE NO.: SP-03(REV A)	PROJECT TITLE: Proposed Minor Relaxation of Building Height Restriction for the Permitted Social Welfare Facility (Redevelopment of The Salvation Army Lai King Home) at Nos. 200 - 210 Lai King Hill Road, Kwai Chung, New Territories – S16 Planning Application
PROJECT NO.: 21149HK	DRAWING TITLE: SWEPT PATH ANALYSIS FOR AMBULANCE (6.9m x 1.9m)
SCALE: 1 : 600 @A4	DATE: 13 MAR 2024

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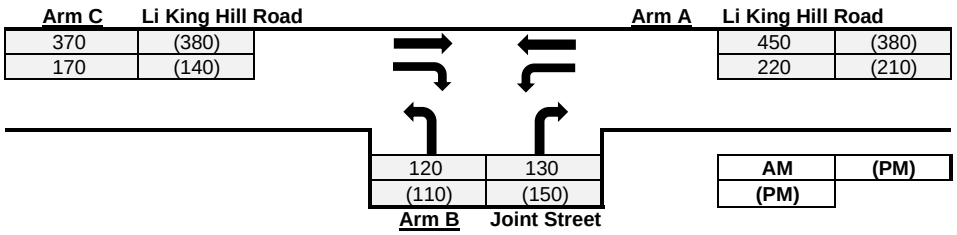
APPENDIX A

JUNCTION CALCULATION SHEETS

Priority Junction Calculation

Junction :	Li King Hill Road/ Joint Street (Jn A1-1)	Job No.:	21149HK
Scenario :	2023 Observed Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	13	V-rBA	50	w-BA	3.8	D	0.893
W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	4	F	0.968
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	V-rCB	50			Y	0.552

Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	370	380	Q-BA	378	398	
	q-CB	170	140	Q-BC	594	608	
	q-AB	220	210	Q-CB	591	606	
	q-AC	450	380	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	130	150	Q-BAC	N/A	N/A	(If Minor Road Share LT&RT)
	q-BC	120	110				
	f	0.480	0.423				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	0.34	0.38
	B-C	0.20	0.18
	C-B	0.29	0.23
	C-A	N/A	N/A
	B-AC	N/A	N/A
	Critical DFC	**0.34**	**0.38**

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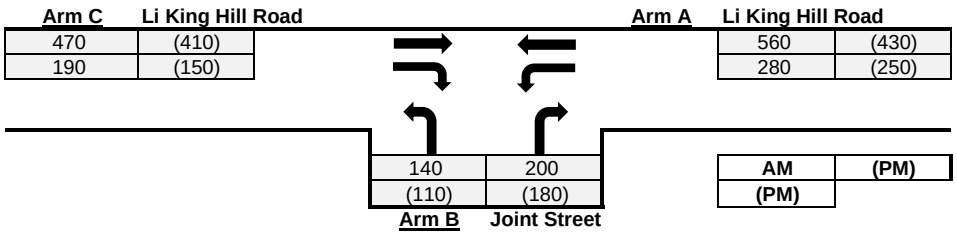
Priority Junction Calculation

Junction :	Li King Hill Road/ Joint Street (Jn A1-1)	Job No.:	21149HK
Scenario :	2032 Reference Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	13	V-rBA	50	w-BA	3.8	D	0.893
W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	4	F	0.968
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	V-rCB	50			Y	0.552

Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	470	410	Q-BA	338	381	
	q-CB	190	150	Q-BC	569	596	
	q-AB	280	250	Q-CB	558	589	
	q-AC	560	430	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	200	180	Q-BAC	N/A	N/A	(If Minor Road Share LT&RT)
	q-BC	140	110				
	f	0.412	0.379				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	0.59	0.47
	B-C	0.25	0.18
	C-B	0.34	0.25
	C-A	N/A	N/A
	B-AC	N/A	N/A
	Critical DFC	**0.59**	**0.47**

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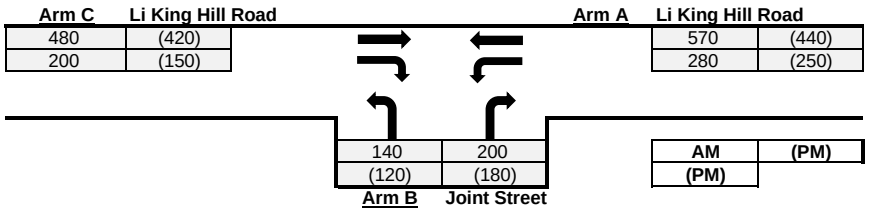
Priority Junction Calculation

Junction :	Li King Hill Road/ Joint Street (Jn A1-1)	Job No.:	21149HK
Scenario :	2032 Design Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-lBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-lBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	13	V-rBA	50	w-BA	3.8	D	0.893
W-CR	0	V-lBA	50	w-BC	3.6	E	0.933
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	4	F	0.968
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	V-rCB	50			Y	0.552

Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	480	420	Q-BA	333	378	
	q-CB	200	150	Q-BC	567	594	
	q-AB	280	250	Q-CB	556	587	
	q-AC	570	440	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	200	180	Q-BAC	N/A	N/A	(If Minor Road Share LT&RT)
	q-BC	140	120				
	f	0.412	0.400				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	0.60	0.48
	B-C	0.25	0.20
	C-B	0.36	0.26
	C-A	N/A	N/A
	B-AC	N/A	N/A
	Critical DFC	**0.60**	**0.48**

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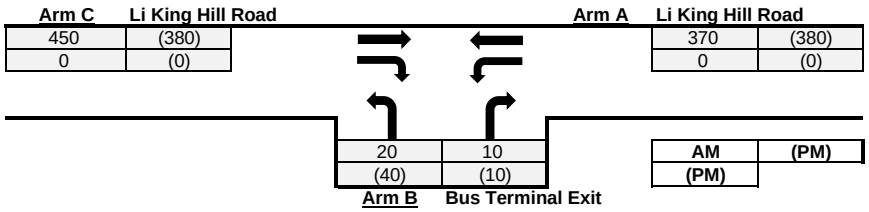
Priority Junction Calculation

Junction :	Li King Hill Road/Bus Terminal Exit(Jn A1-2)	Job No.:	21149HK
Scenario :	2023 Observed Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	13	V-rBA	50	w-BA	2.3	D	0.769
W-CR	0	V-IBA	50	w-BC	2.3	E	0.818
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	0	F	0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.552

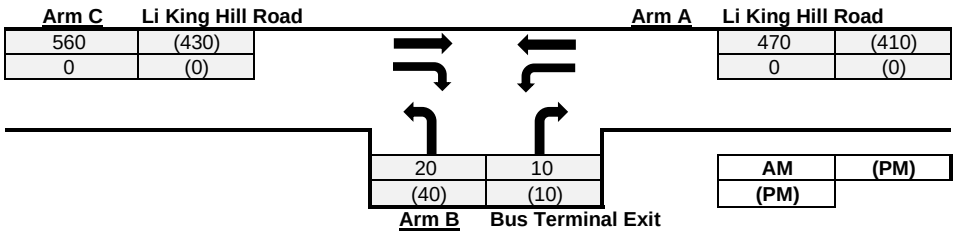
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**		**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	450	380		Q-BA	381	387	
	q-CB	0	0		Q-BC	549	547	
	q-AB	0	0		Q-CB	413	412	
	q-AC	370	380		Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	10	10		Q-BAC	479	505	(If Minor Road Share LT&RT)
	q-BC	20	40					
	f	0.667	0.800					

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.00	0.00
	C-A	N/A	N/A
	B-AC	0.06	0.10
	Critical DFC	**0.06**	**0.10**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Li King Hill Road/Bus Terminal Exit(Jn A1-2)	Job No.:	21149HK
Scenario :	2032 Reference Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	13	V-rBA	50	w-BA	2.3	D	0.769
W-CR	0	V-IBA	50	w-BC	2.3	E	0.818
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	0	F	0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.552

Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	560	430	Q-BA	355	377	
	q-CB	0	0	Q-BC	532	542	
	q-AB	0	0	Q-CB	400	408	
	q-AC	470	410	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	10	10	Q-BAC	456	499	(If Minor Road Share LT&RT)
	q-BC	20	40				
	f	0.667	0.800				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.00	0.00
	C-A	N/A	N/A
	B-AC	0.07	0.10
	Critical DFC	**0.07**	**0.10**

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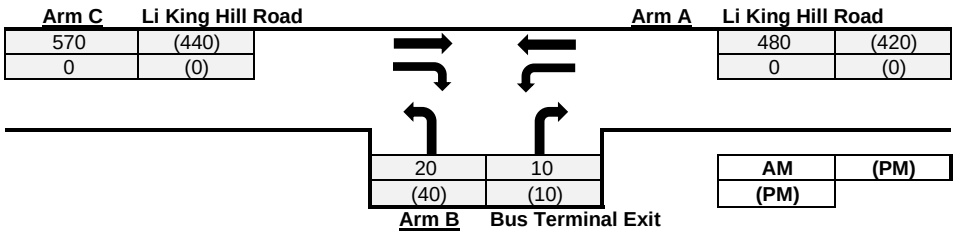
Priority Junction Calculation

Junction :	Li King Hill Road/Bus Terminal Exit(Jn A1-2)	Job No.:	21149HK
Scenario :	2032 Design Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	13	V-rBA	50	w-BA	2.3	D	0.769
W-CR	0	V-IBA	50	w-BC	2.3	E	0.818
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	0	F	0.616
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.552

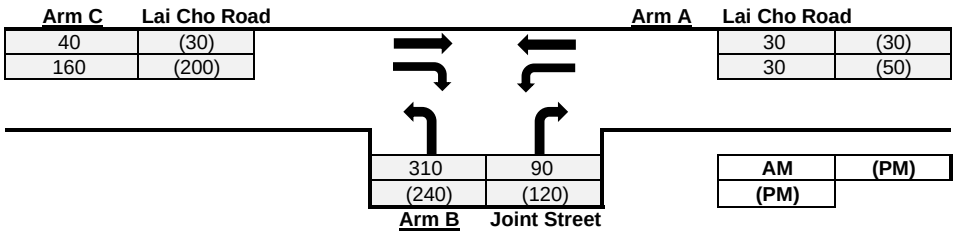
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	570	440	Q-BA	353	375	
	q-CB	0	0	Q-BC	531	541	
	q-AB	0	0	Q-CB	399	407	
	q-AC	480	420	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	10	10	Q-BAC	454	497	(If Minor Road Share LT&RT)
	q-BC	20	40				
	f	0.667	0.800				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.00	0.00
	C-A	N/A	N/A
	B-AC	0.07	0.10
	Critical DFC	**0.07**	**0.10**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Joint Street / Lai Cho Road (Jn A2)	Job No.:	21149HK
Scenario :	2023 Observed Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	3.6	D	0.877
W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	V-rCB	50			Y	0.655

Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	40	30	Q-BA	488	476	
	q-CB	160	200	Q-BC	685	684	
	q-AB	30	50	Q-CB	585	581	
	q-AC	30	30	Q-CA	1308	1180	(If C-B blocked C-A)
	q-BA	90	120	Q-BAC	N/A	N/A	(If Minor Road Share LT&RT)
	q-BC	310	240				
	f	0.775	0.667				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	0.18	0.25
	B-C	0.45	0.35
	C-B	0.27	0.34
	C-A	0.03	0.03
	B-AC	N/A	N/A
	Critical DFC	**0.45**	**0.35**

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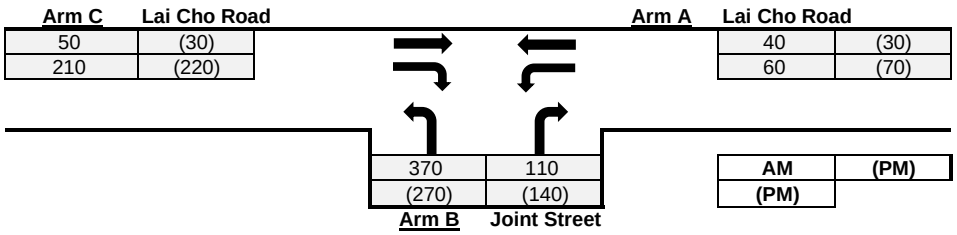
Priority Junction Calculation

Junction :	Joint Street / Lai Cho Road (Jn A2)	Job No.:	21149HK
Scenario :	2032 Reference Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	3.6	D	0.877
W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	V-rCB	50			Y	0.655

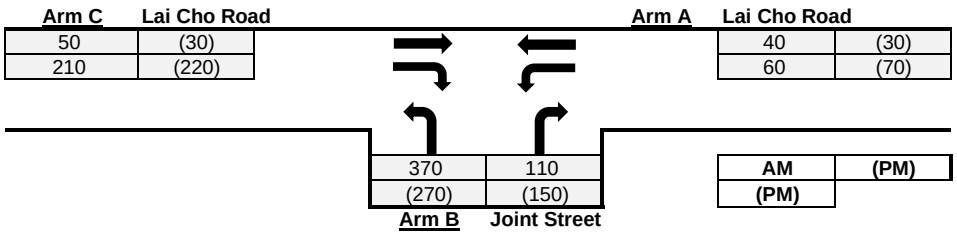
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	50	30	Q-BA	467	468	
	q-CB	210	220	Q-BC	681	682	
	q-AB	60	70	Q-CB	577	577	
	q-AC	40	30	Q-CA	1145	1114	(If C-B blocked C-A)
	q-BA	110	140	Q-BAC	N/A	N/A	(If Minor Road Share LT&RT)
	q-BC	370	270				
	f	0.771	0.659				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	0.24	0.30
	B-C	0.54	0.40
	C-B	0.36	0.38
	C-A	0.04	0.03
	B-AC	N/A	N/A
	Critical DFC	**0.54**	**0.40**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Joint Street / Lai Cho Road (Jn A2)	Job No.:	21149HK
Scenario :	2032 Design Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	3.6	D	0.877
W-CR	0	V-IBA	50	w-BC	3.6	E	0.933
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	0	V-rCB	50			Y	0.655

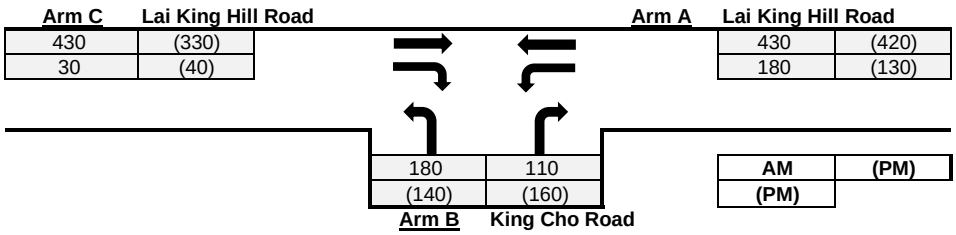
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	50	30	Q-BA	467	468	
	q-CB	210	220	Q-BC	681	682	
	q-AB	60	70	Q-CB	577	577	
	q-AC	40	30	Q-CA	1145	1114	(If C-B blocked C-A)
	q-BA	110	150	Q-BAC	N/A	N/A	(If Minor Road Share LT&RT)
	q-BC	370	270				
	f	0.771	0.643				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	0.24	0.32
	B-C	0.54	0.40
	C-B	0.36	0.38
	C-A	0.04	0.03
	B-AC	N/A	N/A
	Critical DFC	**0.54**	**0.40**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Estate) (Jn B)	Job No.:	21149HK
Scenario :	2023 Observed Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

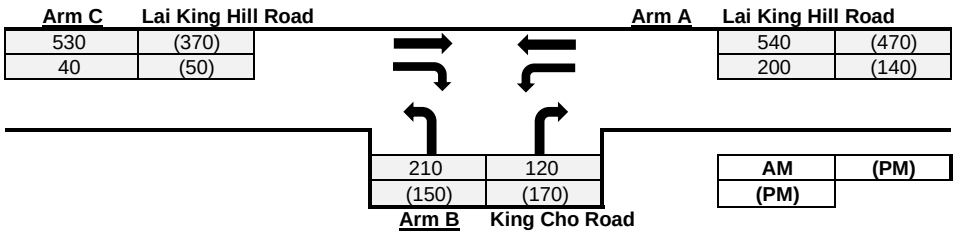
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	430	330	Q-BA	340	355	
	q-CB	30	40	Q-BC	523	529	
	q-AB	180	130	Q-CB	480	491	
	q-AC	430	420	Q-CA	1687	1653	(If C-B blocked C-A)
	q-BA	110	160	Q-BAC	434	419	(If Minor Road Share LT&RT)
	q-BC	180	140				
	f	0.621	0.467				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.06	0.08
	C-A	0.25	0.20
	B-AC	0.67	0.72
	Critical DFC	**0.67**	**0.72**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Estate) (Jn B)	Job No.:	21149HK
Scenario :	2032 Reference Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

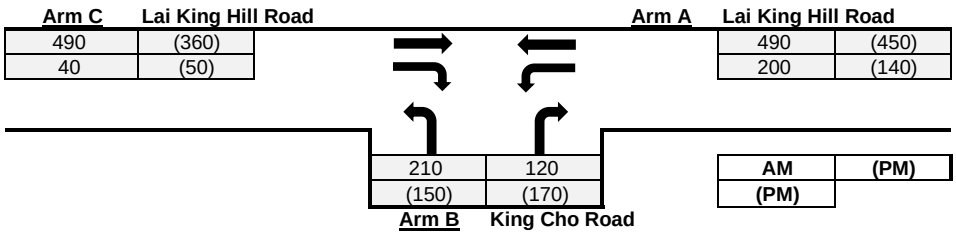
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	530	370	Q-BA	303	337	
	q-CB	40	50	Q-BC	499	518	
	q-AB	200	140	Q-CB	455	480	
	q-AC	540	470	Q-CA	1642	1612	(If C-B blocked C-A)
	q-BA	120	170	Q-BAC	404	403	(If Minor Road Share LT&RT)
	q-BC	210	150				
	f	0.636	0.469				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.09	0.10
	C-A	0.32	0.23
	B-AC	0.82	0.79
	Critical DFC	**0.82**	**0.79**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Estate) (Jn B)	Job No.:	21149HK
Scenario :	2032 Reference Traffic Flows (Without A/KC/489)		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

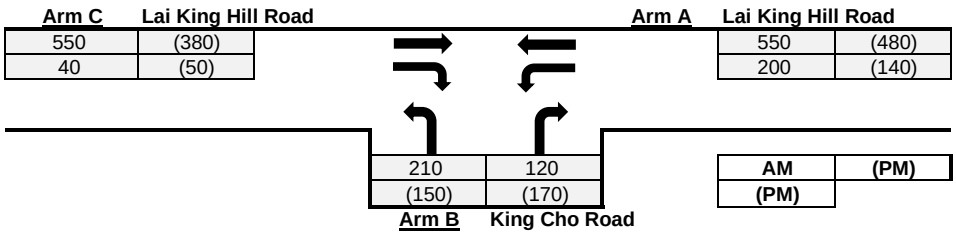
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	490	360	Q-BA	318	342	
	q-CB	40	50	Q-BC	509	522	
	q-AB	200	140	Q-CB	465	484	
	q-AC	490	450	Q-CA	1645	1614	(If C-B blocked C-A)
	q-BA	120	170	Q-BAC	418	408	(If Minor Road Share LT&RT)
	q-BC	210	150				
	f	0.636	0.469				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.09	0.10
	C-A	0.30	0.22
	B-AC	0.79	0.78
	Critical DFC	**0.79**	**0.78**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Estate) (Jn B)	Job No.:	21149HK
Scenario :	2032 Design Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

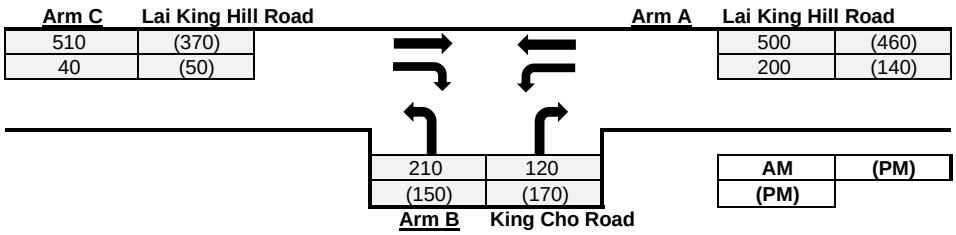
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	550	380	Q-BA	299	334	
	q-CB	40	50	Q-BC	497	516	
	q-AB	200	140	Q-CB	453	478	
	q-AC	550	480	Q-CA	1641	1612	(If C-B blocked C-A)
	q-BA	120	170	Q-BAC	401	400	(If Minor Road Share LT&RT)
	q-BC	210	150				
	f	0.636	0.469				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.09	0.10
	C-A	0.34	0.24
	B-AC	0.82	0.80
	Critical DFC	**0.82**	**0.80**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Estate) (Jn B)	Job No.:	21149HK
Scenario :	2032 Design Traffic Flows (Without A/KC/489)		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

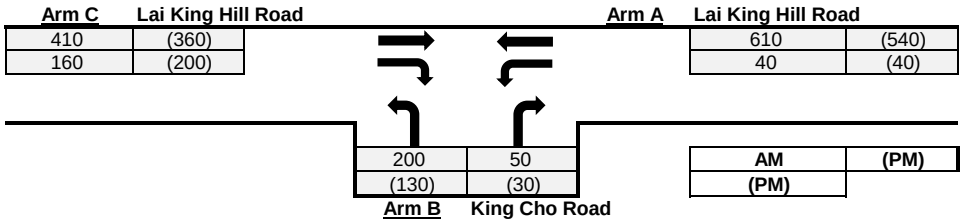
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	510	370	Q-BA	313	339	
	q-CB	40	50	Q-BC	507	520	
	q-AB	200	140	Q-CB	463	482	
	q-AC	500	460	Q-CA	1644	1613	(If C-B blocked C-A)
	q-BA	120	170	Q-BAC	414	405	(If Minor Road Share LT&RT)
	q-BC	210	150				
	f	0.636	0.469				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.09	0.10
	C-A	0.31	0.23
	B-AC	0.80	0.79
	Critical DFC	**0.80**	**0.79**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Ventilation Building) (Jn C)	Job No.:	21149HK
Scenario :	2023 Observed Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :

Input						Calculated	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

Analysis :

Traffic Flow pcu/hr	AM	PM	Capacity pcu/hr	AM	PM	
q-CA	410	360	Q-BA	284	293	
q-CB	160	200	Q-BC	498	512	
q-AB	40	40	Q-CB	472	486	
q-AC	610	540	Q-CA	1190	1059	(If C-B blocked C-A)
q-BA	50	30	Q-BAC	433	449	(If Minor Road Share LT&RT)
q-BC	200	130				
f	0.800	0.813				

Results : Ratio of Flow-to-Capacity

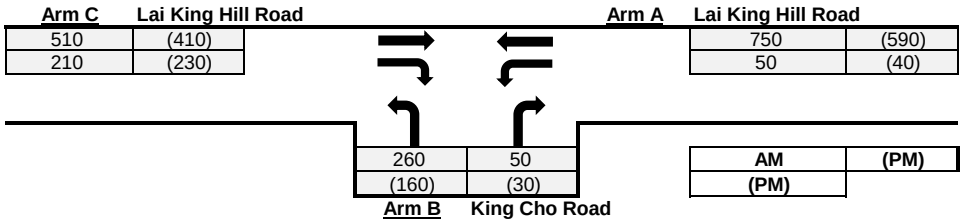
	AM	PM
B-A	N/A	N/A
B-C	N/A	N/A
C-B	0.34	0.41
C-A	0.34	0.34
B-AC	0.58	0.36

Critical DFC **0.58** **0.41**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Ventilation Building) (Jn C)	Job No.:	21149HK
Scenario :	2032 Reference Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

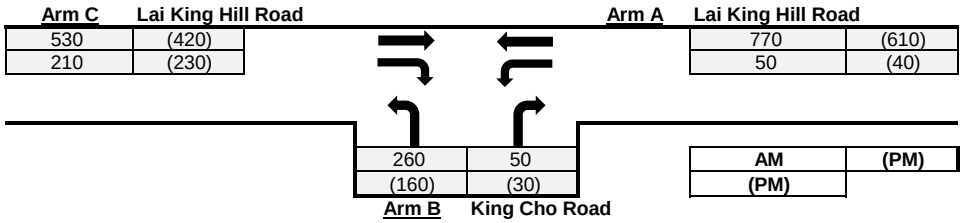
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	510	410	Q-BA	232	269	
	q-CB	210	230	Q-BC	469	502	
	q-AB	50	40	Q-CB	444	476	
	q-AC	750	590	Q-CA	948	930	(If C-B blocked C-A)
	q-BA	50	30	Q-BAC	403	442	(If Minor Road Share LT&RT)
	q-BC	260	160				
	f	0.839	0.842				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.47	0.48
	C-A	0.54	0.44
	B-AC	0.77	0.43
	Critical DFC	**0.77**	**0.48**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / King Cho Road (Near Lai King Ventilation Building) (Jn C)	Job No.:	21149HK
Scenario :	2032 Design Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**						**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	1	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

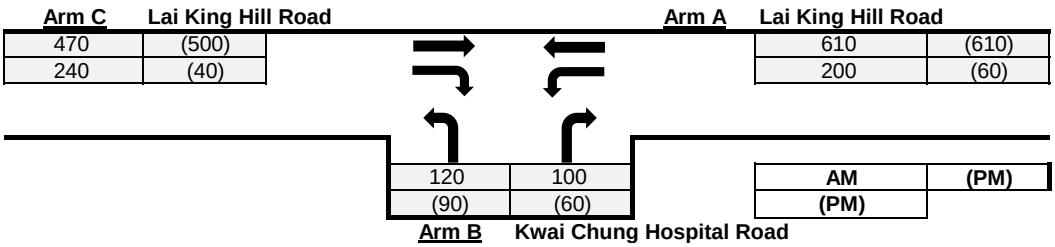
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	530	420	Q-BA	226	264	
	q-CB	210	230	Q-BC	465	498	
	q-AB	50	40	Q-CB	440	472	
	q-AC	770	610	Q-CA	941	923	(If C-B blocked C-A)
	q-BA	50	30	Q-BAC	397	437	(If Minor Road Share LT&RT)
	q-BC	260	160				
	f	0.839	0.842				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.48	0.49
	C-A	0.56	0.45
	B-AC	0.78	0.43
	Critical DFC	**0.78**	**0.49**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / Kwai Chung Hospital Road(Jn D)	Job No.:	21149HK
Scenario :	2023 Observed Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**					**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

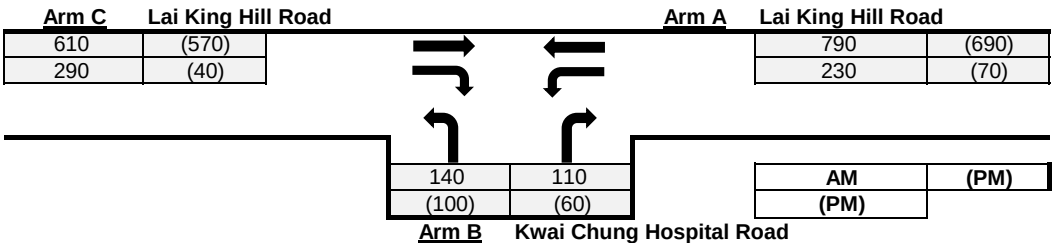
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	470	500	Q-BA	244	304	
	q-CB	240	40	Q-BC	485	496	
	q-AB	200	60	Q-CB	442	468	
	q-AC	610	610	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	100	60	Q-BAC	335	396	(If Minor Road Share LT&RT)
	q-BC	120	90				
	f	0.545	0.600				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.54	0.09
	C-A	N/A	N/A
	B-AC	0.66	0.38
	Critical DFC	**0.66**	**0.38**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / Kwai Chung Hospital Road(Jn D)	Job No.:	21149HK
Scenario :	2032 Reference Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**					**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

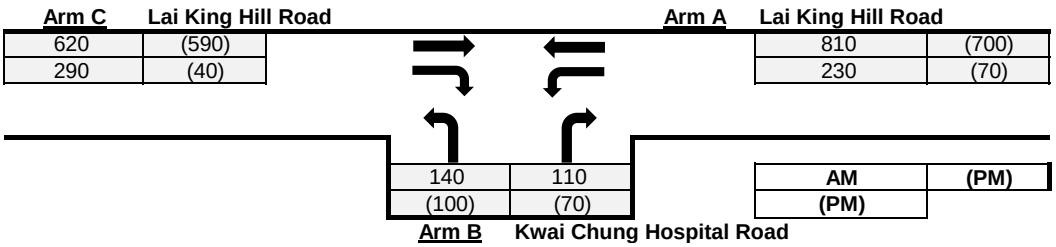
Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	610	570	Q-BA	178	280	
	q-CB	290	40	Q-BC	447	480	
	q-AB	230	70	Q-CB	402	451	
	q-AC	790	690	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	110	60	Q-BAC	269	379	(If Minor Road Share LT&RT)
	q-BC	140	100				
	f	0.560	0.625				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.72	0.09
	C-A	N/A	N/A
	B-AC	0.93	0.42
	Critical DFC	**0.93**	**0.42**

CTA Consultants Ltd.

Priority Junction Calculation

Junction :	Lai King Hill Road / Kwai Chung Hospital Road(Jn D)	Job No.:	21149HK
Scenario :	2032 Design Traffic Flows		



The predictive equations of capacity of movement are:

Q-BA = D(627 + 14W-CR - Y(0.364q-AC + 0.144q-AB + 0.229q-CA + 0.52q-CB))
Q-BC = E(745 - Y(0.364q-AC + 0.144q-AB))
Q-CB = F(745 - 0.364Y(q-AC + q-AB))

The geometric parameters represented by D, E, F are:

D = (1 + 0.094(w-BA - 3.65))(1 + 0.0009(V-rBA - 120))(1 + 0.0006(V-IBA - 150))
E = (1 + 0.094(w-BC - 3.65))(1 + 0.0009(V-rBC - 120))
F = (1 + 0.094(w-CB - 3.65))(1 + 0.0009(V-rCB - 120))

where

Y = 1 - 0.0345W
q-AB, etc = the design flow of movement AB, etc
W = major road width
W-CR = central reserve width
w-BA, etc = lane width to vehicle
v-rBA, etc = visibility to the right for waiting vehicles in stream BA, etc
v-IBA = visibility to the left for waiting vehicles in stream BA, etc

Geometry :	**Input**					**Calculated**	
W	10	V-rBA	50	w-BA	2.5	D	0.786
W-CR	0	V-IBA	50	w-BC	2.5	E	0.836
C-B blocked C-A, residual width <2.5m? (Yes: 1, No: 0)	0	V-rBC	50	w-CB	2.1	F	0.800
Minor Road Share LT&RT? (Yes: 1, No: 0)	1	V-rCB	50			Y	0.655

Analysis :	**Traffic Flow pcu/hr**	**AM**	**PM**	**Capacity pcu/hr**	**AM**	**PM**	
	q-CA	620	590	Q-BA	173	276	
	q-CB	290	40	Q-BC	443	478	
	q-AB	230	70	Q-CB	398	449	
	q-AC	810	700	Q-CA	N/A	N/A	(If C-B blocked C-A)
	q-BA	110	70	Q-BAC	263	367	(If Minor Road Share LT&RT)
	q-BC	140	100				
	f	0.560	0.588				

Results :	**Ratio of Flow-to-Capacity**	**AM**	**PM**
	B-A	N/A	N/A
	B-C	N/A	N/A
	C-B	0.73	0.09
	C-A	N/A	N/A
	B-AC	0.95	0.46
	Critical DFC	**0.95**	**0.46**

CTA Consultants Ltd.

TRAFFIC SIGNALS CALCULATION Job No: 21149HK **CTA Consultants Ltd.**

Junction: **Lai King Hill Road / Kwai Chung Interchange (E)**
Description: **2023 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
Kwai Chung Interchange	E		2	B	3.5	18	0	1	100%	100%	1813.8	1813.8	1675	1675	1675	1675	170	0.101	0.101	120	0.072	0.072
Kwai Chung Interchange	E		2	B	3.5	0	25	0	100%	100%	1953.8	1953.8	1845	1845	1845	1845	100	0.054		110	0.060	
Lai King Hill Road	N		3	C	3.8	0	0	0	0%	0%	2130	0	2130	2130	0	0	325	0.152		268	0.126	
Lai King Hill Road	N		3	C	3.8	15	0	1	27%	37%	1990	4120	1940	1920	4070	4050	295	0.152	0.152	242	0.126	0.126
Lai King Hill Road	S		1	A	3.3	0	0	1	0%	0%	1945	1945	1945	1945	1945	1945	610	0.314	0.314	580	0.298	0.298
Lai King Hill Road	S		1	A	3.3	0	20	0	100%	100%	2085	2085	1940	1940	1940	1940	120	0.062		120	0.062	

Notes:

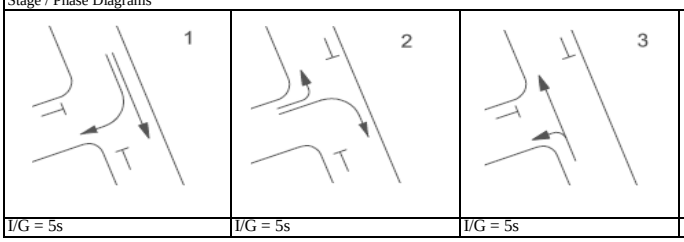
Traffic Flow (pcu / hr) AM(PM)

610(580) 540(420)
120(120) 80(90)

170(120) 100(110)

A.M. Check Phase		P.M. Check Phase	
εy	0.567	εy	0.496
L (sec)	12	L (sec)	12
C (sec)	120	C (sec)	120
y pract.	0.810	y pract.	0.810
R.C. (%)	43%	R.C. (%)	63%

Stage / Phase Diagrams



I/G = 5s I/G = 5s I/G = 5s

TRAFFIC SIGNALS CALCULATION Job No: 21149HK **CTA Consultants Ltd.**

Junction: **Lai King Hill Road / Kwai Chung Interchange (E)**

Description: **2032 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
Kwai Chung Interchange	E		2	B	3.5	18	0	1	100%	100%	1813.8	1813.8	1675	1675	1675	1675	250	0.149		160	0.096	
Kwai Chung Interchange	E		2	B	3.5	0	25	0	100%	100%	1953.8	1953.8	1845	1845	1845	1845	300	0.163	0.163	280	0.152	0.152
Lai King Hill Road	N		3	C	3.8	0	0	0	0%	0%	2130	0	2130	2130	0	0	575	0.270		369	0.173	
Lai King Hill Road	N		3	C	3.8	15	0	1	85%	72%	1990	4120	1835	1855	3965	3985	495	0.270	0.270	321	0.173	0.173
Lai King Hill Road	S		1	A	3.3	0	0	1	0%	0%	1945	1945	1945	1945	1945	1945	740	0.380	0.380	630	0.324	0.324
Lai King Hill Road	S		1	A	3.3	0	20	0	100%	100%	2085	2085	1940	1940	1940	1940	190	0.098		160	0.082	

Notes:

Traffic Flow (pcu / hr) AM(PM)

740(630) →

190(160) ↘

650(460) ←

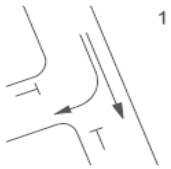
420(230) ↙

250(160) ↰ 300(280) ↱

A.M. Check Phase	
εy	0.813
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	0%

P.M. Check Phase	
εy	0.649
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	25%

Stage / Phase Diagrams



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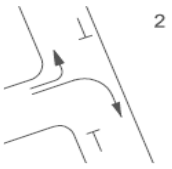

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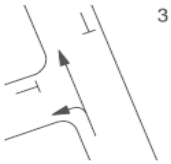

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TRAFFIC SIGNALS CALCULATION Job No: 21149HK **CTA Consultants Ltd.**

Junction: **Lai King Hill Road / Kwai Chung Interchange (E)**

Description: **2032 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
Kwai Chung Interchange	E		2	B	3.5	18	0	1	100%	100%	1813.8	1813.8	1675	1675	1675	1675	250	0.149		160	0.096	
Kwai Chung Interchange	E		2	B	3.5	0	25	0	100%	100%	1953.8	1953.8	1845	1845	1845	1845	300	0.163	0.163	280	0.152	0.152
Lai King Hill Road	N		3	C	3.8	0	0	0	0%	0%	2130	0	2130	2130	0	0	580	0.272		374	0.175	
Lai King Hill Road	N		3	C	3.8	15	0	1	84%	71%	1990	4120	1835	1860	3965	3990	500	0.272	0.272	326	0.175	0.175
Lai King Hill Road	S		1	A	3.3	0	0	1	0%	0%	1945	1945	1945	1945	1945	1945	750	0.386	0.386	640	0.329	0.329
Lai King Hill Road	S		1	A	3.3	0	20	0	100%	100%	2085	2085	1940	1940	1940	1940	190	0.098		160	0.082	

Notes:

Traffic Flow (pcu / hr) AM(PM)

750(640) →

190(160) ↘

660(470) ←

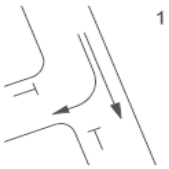
420(230) ↙

250(160) ↰ 300(280) ↱

A.M. Check Phase	
εy	0.821
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	-1%

P.M. Check Phase	
εy	0.656
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	23%

Stage / Phase Diagrams



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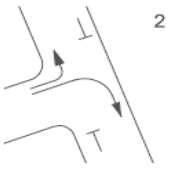

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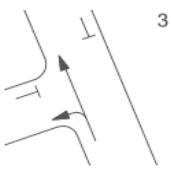


I/G = 5s

TRAFFIC SIGNALS CALCULATION Job No: 21149HK **CTA Consultants Ltd.**

Junction: **Lai King Hill Road / Kwai Chung Interchange (E)**

Description: **2032 Reference Traffic Flows (Without A/KC/489)**

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
Kwai Chung Interchange	E		2	B	3.5	18	0	1	100%	100%	1813.8	1813.8	1675	1675	1675	1675	250	0.149		160	0.096	
Kwai Chung Interchange	E		2	B	3.5	0	25	0	100%	100%	1953.8	1953.8	1845	1845	1845	1845	120	0.065	0.065	120	0.065	0.065
Lai King Hill Road	N		3	C	3.8	0	0	0	0%	0%	2130	0	2130	2130	0	0	367	0.172		284	0.133	
Lai King Hill Road	N		3	C	3.8	15	0	1	27%	39%	1990	4120	1940	1915	4070	4045	333	0.172	0.172	256	0.134	0.134
Lai King Hill Road	S		1	A	3.3	0	0	1	0%	0%	1945	1945	1945	1945	1945	1945	690	0.355	0.355	610	0.314	0.314
Lai King Hill Road	S		1	A	3.3	0	20	0	100%	100%	2085	2085	1940	1940	1940	1940	190	0.098		160	0.082	

Notes:

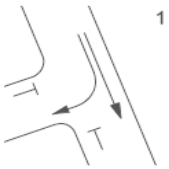
Traffic Flow (pcu / hr) AM(PM)

690(610) →
190(160) ↘
610(440) ←
90(100) ↙
250(160) ↰
120(120) ↱

A.M. Check Phase	
εy	0.592
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	37%

P.M. Check Phase	
εy	0.512
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	58%

Stage / Phase Diagrams



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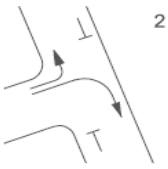

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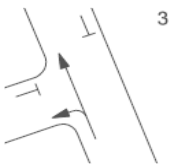


I/G = 5s

TRAFFIC SIGNALS CALCULATION Job No: 21149HK **CTA Consultants Ltd.**

Junction: **Lai King Hill Road / Kwai Chung Interchange (E)**

Description: **2032 Design Traffic Flows (Without A/KC/489)**

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
Kwai Chung Interchange	E		2	B	3.5	18	0	1	100%	100%	1813.8	1813.8	1675	1675	1675	1675	250	0.149		160	0.096	
Kwai Chung Interchange	E		2	B	3.5	0	25	0	100%	100%	1953.8	1953.8	1845	1845	1845	1845	120	0.065	0.065	120	0.065	0.065
Lai King Hill Road	N		3	C	3.8	0	0	0	0%	0%	2130	0	2130	2130	0	0	372	0.175		290	0.136	
Lai King Hill Road	N		3	C	3.8	15	0	1	27%	38%	1990	4120	1940	1915	4070	4045	338	0.174	0.174	260	0.136	0.136
Lai King Hill Road	S		1	A	3.3	0	0	1	0%	0%	1945	1945	1945	1945	1945	1945	700	0.360	0.360	620	0.319	0.319
Lai King Hill Road	S		1	A	3.3	0	20	0	100%	100%	2085	2085	1940	1940	1940	1940	190	0.098		160	0.082	

Notes:

Traffic Flow (pcu / hr) AM(PM)

700(620) →

190(160) ↘

620(450) ←

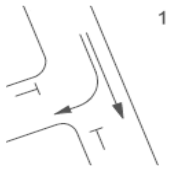
90(100) ↙

250(160) ↰ 120(120) ↱

A.M. Check Phase	
εy	0.599
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	35%

P.M. Check Phase	
εy	0.520
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	56%

Stage / Phase Diagrams



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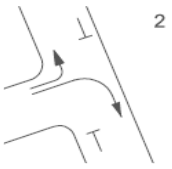

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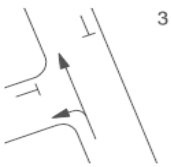


I/G = 5s

TRAFFIC SIGNALS CALCULATION Job No: 21149HK **CTA Consultants Ltd.**

Junction: **Lai King Hill Road / Kwai Chung Interchange (E)**

Description: **2032 Reference Traffic Flows (With improvement)**

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
Kwai Chung Interchange	E		1	A	3.5	18	0	1	100%	100%	1813.8	1813.8	1675	1675	1675	1675	250	0.149		160	0.096	
Kwai Chung Interchange	E		1	A	3.5	0	25	0	100%	100%	1953.8	1953.8	1845	1845	1845	1845	300	0.163		280	0.152	0.152
Lai King Hill Road	N	←	2	B	3.5	0	0	0	0%	0%	2105	2105	2105	2105	2105	2105	650	0.309		460	0.219	
Lai King Hill Road	N		1	A	4.3	15	0	1	100%	100%	2045	2045	1860	1860	1860	1860	420	0.226	0.226	230	0.124	
Lai King Hill Road	S	→	2	B	3.5	0	0	1	0%	0%	1965	1965	1965	1965	1965	1965	740	0.377	0.377	630	0.321	0.321
Lai King Hill Road	S		3	C	3.5	0	20	0	100%	100%	2105	2105	1960	1960	1960	1960	190	0.097	0.097	160	0.082	0.082
Pedestrian crossing			D	A																		
			E	C																		
			F	C																		
			G	B																		

Min. green time = 5Gm + 5 FGm = 10s

Min. green time = 5Gm + 9 FGm = 14s

Min. green time = 5Gm + 11 FGm = 16s

Min. green time = 5Gm + 10 FGm = 15s

Notes:

Traffic Flow (pcu / hr) AM(PM)

740(630) →

190(160) ↘

← 650(460)

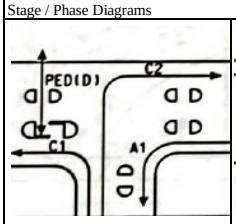
↙ 420(230)

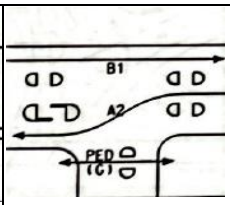
↖ 250(160) ↗ 300(280)

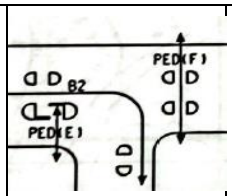
A.M. Check Phase	
εy	0.699
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	16%

P.M. Check Phase	
εy	0.554
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	46%

Stage / Phase Diagrams







I/G = 5s | I/G = 5s | I/G = 5s

TRAFFIC SIGNALS CALCULATION Job No: 21149HK **CTA Consultants Ltd.**

Junction: **Lai King Hill Road / Kwai Chung Interchange (E)**

Description: **2032 Design Traffic Flows (With improvement)**

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
Kwai Chung Interchange	E		1	A	3.5	18	0	1	100%	100%	1813.8	1813.8	1675	1675	1675	1675	250	0.149		160	0.096	
Kwai Chung Interchange	E		1	A	3.5	0	25	0	100%	100%	1953.8	1953.8	1845	1845	1845	1845	300	0.163		280	0.152	0.152
Lai King Hill Road	N	←	2	B	3.5	0	0	0	0%	0%	2105	2105	2105	2105	2105	2105	660	0.314		470	0.223	
Lai King Hill Road	N		1	A	4.3	15	0	1	100%	100%	2045	2045	1860	1860	1860	1860	420	0.226	0.226	230	0.124	
Lai King Hill Road	S	→	2	B	3.5	0	0	1	0%	0%	1965	1965	1965	1965	1965	1965	750	0.382	0.382	640	0.326	0.326
Lai King Hill Road	S		3	C	3.5	0	20	0	100%	100%	2105	2105	1960	1960	1960	1960	190	0.097	0.097	160	0.082	0.082
Pedestrian crossing			D	A		Min. green time = 5Gm + 5 FGm = 10s																
			E	C		Min. green time = 5Gm + 9 FGm = 14s																
			F	C		Min. green time = 5Gm + 11 FGm = 16s																
			G	B		Min. green time = 5Gm + 10 FGm = 15s																

Notes:

Traffic Flow (pcu / hr) AM(PM)

750(640) →

190(160) ↘

← 660(470)

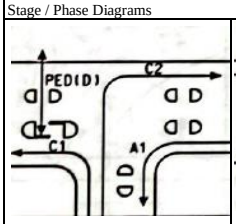
↙ 420(230)

↖ 250(160) ↗ 300(280)

A.M. Check Phase	
εy	0.704
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	15%

P.M. Check Phase	
εy	0.559
L (sec)	12
C (sec)	120
y pract.	0.810
R.C. (%)	45%

Stage / Phase Diagrams



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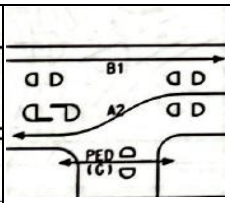

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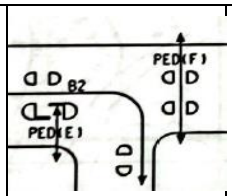

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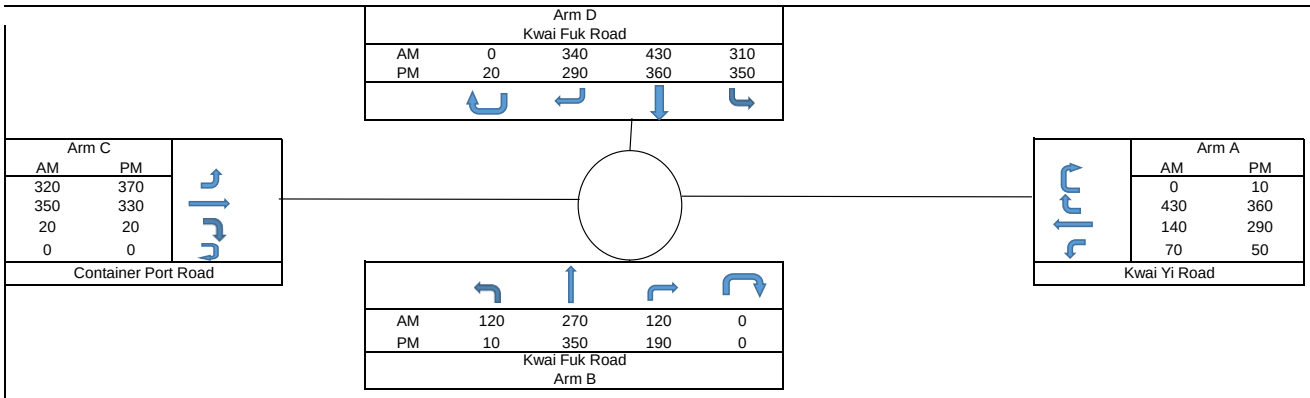
Roundabout Junction Calculation

Roundabout Junction : **Kwai Fuk Road / Kwai Yi Road / Container Port Road** Project No. 22149HK

Design Year : **2023 Observed Traffic Flows**



Input Parameters

			Arm A - Kwai Yi Road		Arm B - Kwai Fuk Road		Arm C - Container Port Road		Arm D - Kwai Fuk Road	
			AM	PM	AM	PM	AM	PM	AM	PM
V	=	Approach half width (m)	5.5	5.5	7.5	7.5	6.7	6.7	7.1	7.1
E	=	Entry width (m)	9.6	9.6	7.9	7.9	7	7	7.8	7.8
L	=	Effective length of flare (m)	12	12	1	1	17	17	1	1
R	=	Entry radius	35	35	29	29	30	30	18.2	18.2
D	=	Inscribed circle diameter (m)	62	62	65	65	69	69	60	60
A	=	Entry angle (degree)	18	18	38	38	8	8	34	34
Q	=	Entry flow (pcu/hr)	640	710	510	550	690	720	1080	1020
Qc	=	Circulating flow across entry (pcu/hr)	790	690	910	970	820	930	490	550

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	0.55	0.55	0.64	0.64	0.03	0.03	1.12	1.12
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.06	1.06	0.99	0.99	1.09	1.09	0.98	0.98
X_2	=	V+((E-V)/(1+2*S))	7.46	7.46	7.68	7.68	6.98	6.98	7.32	7.32
M	=	Exp((D-60)/10)	1.22	1.22	1.65	1.65	2.46	2.46	1.00	1.00
F	=	303*X_2	2260	2260	2326	2326	2116	2116	2217	2217
Td	=	1+(0.5/(1+M))	1.23	1.23	1.19	1.19	1.14	1.14	1.25	1.25
Fc	=	0.21*Td*(1+0.2*X_2)	0.64	0.64	0.63	0.63	0.58	0.58	0.65	0.65
Qe	=	Capacity = K*(F-Fc*Qc)	1863	1931	1728	1690	1796	1727	1864	1826
DFC	=	Entry Flow/Capacity = Q/Qe	0.34	0.37	0.30	0.33	0.38	0.42	0.58	0.56

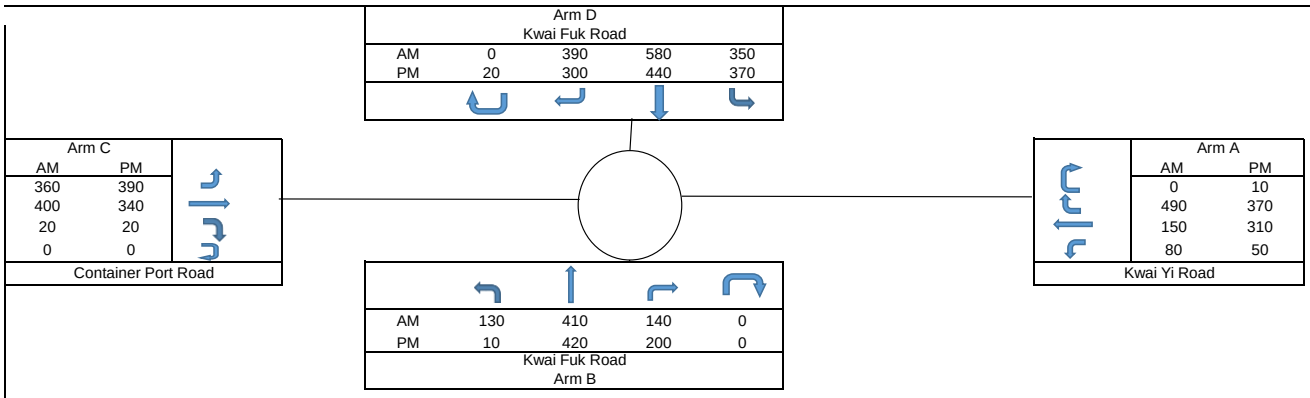
		AM	PM
DFC of Critical Approach	=	**0.58**	**0.56**

CTA

Roundabout Junction Calculation

Roundabout Junction : **Kwai Fuk Road / Kwai Yi Road / Container Port Road** Project No. 22149HK

Design Year : **2032 Reference Traffic Flows**



Input Parameters			Arm A - Kwai Yi Road		Arm B - Kwai Fuk Road		Arm C - Container Port Road		Arm D - Kwai Fuk Road	
			AM	PM	AM	PM	AM	PM	AM	PM
V	=	Approach half width (m)	5.5	5.5	7.5	7.5	6.7	6.7	7.1	7.1
E	=	Entry width (m)	9.6	9.6	7.9	7.9	7	7	7.8	7.8
L	=	Effective length of flare (m)	12	12	1	1	17	17	1	1
R	=	Entry radius	35	35	29	29	30	30	18.2	18.2
D	=	Inscribed circle diameter (m)	62	62	65	65	69	69	60	60
A	=	Entry angle (degree)	18	18	38	38	8	8	34	34
Q	=	Entry flow (pcu/hr)	720	740	680	630	780	750	1320	1130
Qc	=	Circulating flow across entry (pcu/hr)	990	780	1030	1010	1040	1020	560	570

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	0.55	0.55	0.64	0.64	0.03	0.03	1.12	1.12
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.06	1.06	0.99	0.99	1.09	1.09	0.98	0.98
X_2	=	V+((E-V)/(1+2*S))	7.46	7.46	7.68	7.68	6.98	6.98	7.32	7.32
M	=	Exp((D-60)/10)	1.22	1.22	1.65	1.65	2.46	2.46	1.00	1.00
F	=	303*X_2	2260	2260	2326	2326	2116	2116	2217	2217
Td	=	1+(0.5/(1+M))	1.23	1.23	1.19	1.19	1.14	1.14	1.25	1.25
Fc	=	0.21*Td*(1+0.2*X_2)	0.64	0.64	0.63	0.63	0.58	0.58	0.65	0.65
Qe	=	Capacity = K*(F-Fc*Qc)	1727	1870	1653	1665	1658	1670	1820	1814
DFC	=	Entry Flow/Capacity = Q/Qe	0.42	0.40	0.41	0.38	0.47	0.45	0.73	0.62

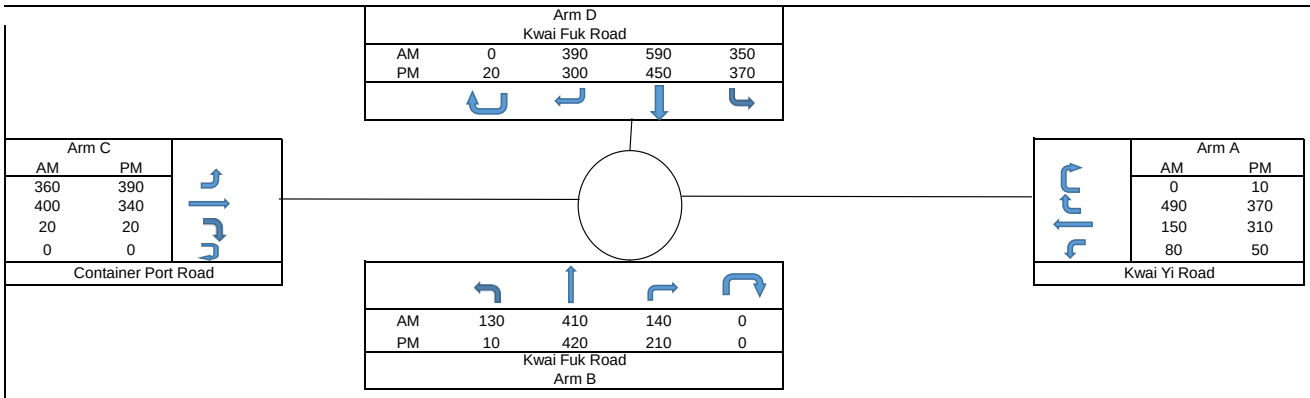
		AM	PM
DFC of Critical Approach	=	**0.73**	**0.62**

CTA

Roundabout Junction Calculation

Roundabout Junction : **Kwai Fuk Road / Kwai Yi Road / Container Port Road** Project No. 22149HK

Design Year : **2032 Design Traffic Flows**



Input Parameters			Arm A - Kwai Yi Road		Arm B - Kwai Fuk Road		Arm C - Container Port Road		Arm D - Kwai Fuk Road	
			AM	PM	AM	PM	AM	PM	AM	PM
V	=	Approach half width (m)	5.5	5.5	7.5	7.5	6.7	6.7	7.1	7.1
E	=	Entry width (m)	9.6	9.6	7.9	7.9	7	7	7.8	7.8
L	=	Effective length of flare (m)	12	12	1	1	17	17	1	1
R	=	Entry radius	35	35	29	29	30	30	18.2	18.2
D	=	Inscribed circle diameter (m)	62	62	65	65	69	69	60	60
A	=	Entry angle (degree)	18	18	38	38	8	8	34	34
Q	=	Entry flow (pcu/hr)	720	740	680	640	780	750	1330	1140
Qc	=	Circulating flow across entry (pcu/hr)	1000	790	1030	1010	1040	1030	560	580

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	0.55	0.55	0.64	0.64	0.03	0.03	1.12	1.12
K	=	1-0.00347*(A-30)-0.978*(1/R-0.05)	1.06	1.06	0.99	0.99	1.09	1.09	0.98	0.98
X_2	=	V+((E-V)/(1+2*S))	7.46	7.46	7.68	7.68	6.98	6.98	7.32	7.32
M	=	Exp((D-60)/10)	1.22	1.22	1.65	1.65	2.46	2.46	1.00	1.00
F	=	303*X_2	2260	2260	2326	2326	2116	2116	2217	2217
Td	=	1+(0.5/(1+M))	1.23	1.23	1.19	1.19	1.14	1.14	1.25	1.25
Fc	=	0.21*Td*(1+0.2*X_2)	0.64	0.64	0.63	0.63	0.58	0.58	0.65	0.65
Qe	=	Capacity = K*(F-Fc*Qc)	1720	1863	1653	1665	1658	1664	1820	1807
DFC	=	Entry Flow/Capacity = Q/Qe	0.42	0.40	0.41	0.38	0.47	0.45	0.73	0.63

		AM	PM
DFC of Critical Approach	=	**0.73**	**0.63**

CTA