Appendix 3

Traffic Impact Assessment

Technical Feasibility Study for the Proposed Development of Hong Kong Sheng Kung Hui St. Christopher's Complex at the Remaining Portion of Taxlord No. T77 in D.D.34. Tai Po

Traffic Impact Assessment Study

March 2024

HWSPB 何黃
Traffic & Transportation Consultants

Technical Feasibility Study for the Proposed Development of Hong Kong Sheng Kung Hui St. Christopher's Complex at the Remaining Portion of Taxlord No. T77 in D.D.34. Tai Po

Traffic Impact Assessment Study

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1. INTRODUCTION

1.1 Background

1.1.1 Hong Kong Sheng Kung Hui Welfare Council Limited (HKSKHWCL) plans to develop a new Social Service complex building at the Remaining Portion of Taxlord Lot No. T77 in D.D.34. Tai Po.

1.1.2 Ho Wang SPB Limited (HWSPB) is commissioned as the traffic consultant to undertake a Traffic Impact Assessment (TIA) study for this development study for the Planning Application.

1.1.3 The TIA report has been submitted to TD in March 2023 and comments were received from TD in August 2023. This revised TIA report has incorporated with TD's comments and the Response to Comment are enclosed in **Annex A**.

1.2 Objectives of the Report

1.2.1 The objectives of this traffic study are listed as follows:

(a) Conduct vehicle traffic and pedestrian count surveys and bus layby utilization survey to record existing traffic conditions during the critical AM and PM peak periods within the study area;

(b) Review and recommend on the car park and loading/ unloading provisions for this Social Services Complex based on HKPSG's requirement/end-user operational need;

(c) Review the existing traffic and transport facilities in the vicinity of the development site;

(d) Estimated the development traffic generations and attractions;

(e) Prepare the traffic forecast for the reference and design years (i.e. 3 years after the operation of the development);

(f) Assess the traffic impacts of the proposed development traffic on the adjacent road network in the design year;

(g) Recommend improvement measures, if necessary, to mitigate the traffic impact on the local road junction/network.

1.3 Report Structure

1.3.1 After this introductory chapter describes the background and study objective, this Traffic Review Report focus on the presentation and elaboration of the following key areas:

Chapter 2 – describes the proposed site location, proposed development schedule, vehicular and pedestrian access arrangements; and the proposed internal transport facilities provisions;

Chapter 3 – describes the baseline traffic surveys and the existing traffic conditions based on the latest traffic surveys;

Chapter 4 – presents the traffic forecast methodology and future traffic conditions;

Chapter 5 – estimates the development traffic generations and evaluates the traffic impacts within the study area in the Reference and Design scenarios;

Chapter 6 - estimates and review the number of construction traffic generations and the traffic impacts within the study area in design year 2033; and

Chapter 7 - summarizes and concludes the study findings of this TIA study.

2. THE PROPOSED DEVELOPMENT

2.1 Site Location

2.1.1 The existing site is a vacant site in at Tai Po Kau which is bounded by Po Leung Kuk Tin Ka Ping Millennium Primary School to the north, Japanese International School to the west, Tai Po Road-Tai Po Kau to the south and a vacant site to the east.

2.1.2 The subject site location is shown in **Figure 2.1**.

2.2 Proposed Development Schedule

2.2.1 According to latest Schedule of Accommodation (SoA), this complex (with **12,534**m^2 GFA approx.) will comprise of a variety of social services and facilities as summarized in **Table 2.1**.

Table 2.1 Proposed Development Schedule

Facilities	**Places/ GFA**
Special Child Care Centre (SCCC)	100 Places
Care and Attention Home providing Continuum of Care (CoC Home)	289 Places
Foster Care Services (FCS) and Agency-based Enhancement of Professional Staff Support Service (ABPSS)	95.4m^2 GFA
Staff Training Unit (STU)	85 Places
Child Care Centre (CCC)	65 Places

2.3 Permanent Vehicular Access

2.3.1 A 7.3m wide vehicular access is proposed at Tai Po Road-Tai Po Kau as shown in **Figure 2.2**.

2.3.2 The section of the central divider close to the proposed vehicular access will be demolished for the provision of a designated northbound right-turn lane for the ingress development traffic.

2.3.3 All development ingress/egress vehicles can operate in all traffic movements.

2.3.4 Currently there is a lamp post (ID: EB4724) outside the proposed run-in/out. This lamp post will need to be relocated to a suitable location by Works Agent. The Works Agent for undertaking the works will need to be agreed with relevant Government Departments at later stage.

2.4 Temporary Vehicular Access during Construction Stage

2.4.1 The temporary construction vehicular access is proposed at Tai Po Road-Tai Po Kau. (i.e. similar to permanent vehicular access). All construction vehicles will be operated via a left-in and left-out traffic arrangement.

2.5 Internal Transport Facilities

2.5.1 There are no specific car parking and loading/unloading requirements for this type of development based on the latest Hong Kong Planning Standards and Guidelines (HKPSG). With regards to Item 1(b) in Statement of Intent of Table 11 – "Parking Standard" of HKPSG Chapter 8, "*The provision of parking for community facilities should generally be limited to operation requirements. Users of community facilities will generally be expected to use public transport or public car parks.*"

2.5.2 The car parking and loading/unloading provisions advised by Social Welfare Department have been confirmed by End-users to fulfil their operational need.

2.5.3 The parking and loading/unloading provisions are summarized in **Table 2.2**.

Table 2.2 Car Parking and Loading/ Unloading Provisions of the Subject Site

Type	Vehicle Type	Floor	Dimension	Number
SCCC	Coach (48-seater)	G/F	12m x 3.5m	2
CoC	Light Bus	B1/F	8m x 3m	2
	Private Car	B1/F	5m x 2.5m	6(1)
Share-used	Private Car (Accessible)	B1/F	5m x 3.5m	1
	Motorcycle	B1/F	2.4m x 1m	2
	LGV	B1/F	7m x 3.5m	1
	HGV L/UL bay	G/F	12m x 3.5m	1
	Ambulance Bay	G/F	9m x 3m	1
	Private car/ Taxi Drop-off/ pick-up bay	G/F	5m x 2.5m	1

Note: (1) As advised by SWD, ratio of 1 parking spaces for every 50 residential service places is adopted. (i.e. 289 CoC places / 50 = 6 parking spaces)

2.5.4 Based on the existing SKH reference sites, the parking demand for visitors/ users is minimal. 1 accessible parking space will be provided for visitor parking and share-used among the whole development in accordance with BFA codes.

2.5.5 All visitors are advised to commute by public transport and the users will be travelled by the NEATS (Non-Emergency Ambulance Transfer Service) provided by operator.

2.5.6 The proposed parking and loading/ unloading provisions can satisfy the operation need for the subject site.

2.5.7 The parking layouts for G/F and B1/F are presented in **Figure 2.3** and **Figure 2.4** respectively.

2.6 Swept Path Analysis

2.6.1 Computerized swept path simulation analysis demonstrated there is adequate manoeuvring space for the design vehicle (i.e. 12m coach) and is shown in **Appendix A**.

2.7 Sightline assessment

2.7.1 The sightline assessment (presented in **Figure 2.5**) shows that a minimum 60m clear sightline can be provided without obstruction (over 1.05m height) placed within visibility splay.

3. EXISTING TRAFFIC CONDITIONS

3.1 Existing Road Network

3.1.1 Tai Po Road - Tai Po Kau is a rural road running in a north-south direction connecting Shatin and Tai Po districts. This road also connects with between Tai Po Road – Ma Liu Shui and Tai Po Road – Yuen Chai Tsai.

3.1.2 The details of the road network are also shown in **Figure 2.1**.

3.2 Public Transport Facilities

3.2.1 There are numerous franchised buses and green minibus services along Tai Po Road. The details of the nearby public transport services are summarised in **Table 3.1**.

Table 3.1 Public Transport Services along Tai Po Road – Tai Po Kau

Public Transport Services	Tai Po Road – Tai Po Kau
Franchised Buses	72, 72A, 73A, 74A
GMB	28K, 28S

3.2.2 The locations of the nearby public transport facilities are shown in **Figure 3.1**.

3.3 Baseline Traffic Surveys

3.3.1 In order to review the existing traffic conditions, vehicular traffic count survey and public transport utilization survey were carried out on a typical school weekday (under normal school traffic condition without zoom classes and without work from home arrangement) on 22 November 2021 and 20 February 2024 during the AM (07:30-09:30) and PM (17:00-19:00) peak periods.

3.3.2 The locations of the concerned road junctions are shown in **Figure 3.2**.

3.3.3 The weekday AM and PM Peak hours of the existing local road network are identified as 08:15-09:15 and 17:45-18:45 hours respectively.

3.3.4 The 2021 observed traffic flows for these concerned junctions and road links are presented in **Figure 3.3**.

3.3.5 It is observed that the peak hour traffic flows at the junction of Tai Po Road – Tai Po Kau and Access Road to Deerhill Bay (J1) is different from local road network due to traffic generated by nearby schools.

3.3.6 Surge factors are adopted for J1 to reflect traffic survey during school peak periods (AM and PM peak). The adopted surge factors are presented in **Table 3.2** and its derivation is enclosed in **Appendix B**.

Table 3.2 Adopted Traffic Surge Factor for J1

Period	Traffic Surge Factor
AM	1.14
PM	1.19

3.4 Junction Capacity Performance in Year 2021 and 2024

3.4.1 Based on the 2021 and 2024 surveyed traffic flows, the junction capacity analysis for the 4 concerned junctions during the worst AM and PM peak periods have been assessed and the results of the junction capacity analysis are summarised in **Table 3.3**.

Table 3.3 Base Year Junction Operational Performance

No.	Junction	Junction Type(1)	Weekday	
			AM Peak	PM Peak
J1(2)	Tai Po Road – Tai Po Kau / Access Road to Deerhill Bay	Priority (DFC)	0.26	0.08
J2	Tai Po Road – Ma Liu Shui / Kau To Shan Road	Roundabout (DFC)	0.53	0.56
J3	Tai Po Road – Sha Tin / Tsun King Road	Roundabout (DFC)	0.47	0.52
J4	Tai Po Road – Tai Po Kau / Lookout Link	Priority (DFC)	0.24	0.12
J5(3)	Tai Po Road – Ma Liu Shui/ Lai Ping Road	Roundabout (DFC)	0.55	0.51

Note: (1) DFC – Design flow/ Capacity ratio for priority junction and roundabout.
(2) Surge factor (i.e. 1.14 and 1.19 for AM and PM peak) is adopted for J1.
(3) Junction surveyed in 2024.

3.4.2 The results of the junction performance enclosed in **Appendix C** show that all 5 concerned junctions are currently operating with ample junction capacity.

3.5 Base Year Road Link Performance

3.5.1 The road link performance for the 4 concerned road links during the AM and PM peak periods have been assessed and the results of the road link analysis are presented in **Table 3.4**.

Table 3.4 Base Year Road Link Capacity Performance

No.	Road Link	Direction	Capacity(1) (veh/hr)	AM Peak		PM Peak	
				Flows (veh/ hr)	V/C	Flows (veh/ hr)	V/C
L1	Tai Po Road – Ma Liu Shui (near University Avenue)	SB	2600	806	0.31	237	0.09
		NB	2600	269	0.10	437	0.17
L2	Tai Po Road – Sha Tin (Slip Road from Tai Po Road – Ma Liu Shui Southbound to Shatin Racecourse)	SB	1300	496	0.38	499	0.38
L3	Tai Po Road – Sha Tin (Slip Road from Tai Po Road – Sha Tin Northbound to Tsun King Road Roundabout)	NB	2600	316	0.12	299	0.12
L4	Tai Po Road – Ma Liu Shui (near Lai Ping Road)(2)	SB	1400	685	0.49	466	0.33
		NB	1400	446	0.32	390	0.28

Note (1): Design flow is reference to Table 2.4.11, Chapter 2.4, Volume 2, TPDM.
(2): Road Link surveyed in 2024.

3.5.2 The road link assessment presented in **Table 3.3** shows that all 4 concerned road links can operate with adequate capacity during the AM and PM peak hours.

3.6 Existing Public Transport Utilization

3.6.1 The public transport utilization assessment at Tai Po Road – Tai Po Kau bus layby is also conducted and the results are presented in **Table 3.5**.

Table 3.5 Existing Public Transport Service Utilization

Public Transport	AM Peak			PM Peak		
	Total Passenger Capacity (pax/hr)	Total Passenger Demand (pax/hr)	Occupancy (Demand /Capacity)	Total Passenger Capacity (pax/hr)	Total Passenger Demand (pax/hr)	Occupancy (Demand /Capacity)
Franchised Buses (72, 72A, 73A, 74A) (To Shatin Direction)	1237	209	0.17	1008	503	0.50
Franchised Buses (72, 72A, 73A, 74A) (To Tai Po Direction)	870	128	0.15	886	284	0.32
GMB (28K, 28S) (To Shatin Direction)	182	147	0.81	150	133	0.89
GMB (28K, 28S) (To Tai Po Direction)	163	117	0.72	150	85	0.57

3.6.2 The results shows that there is adequate public transport capacity.

3.7 Bus Layby Assessment

3.7.1 In order to assess the adequacy existing bus layby (Deerhill Bay Bus Stop) at Tai Po Road – Tai Po Kau near subject site, multi-servers queuing (M/M/N) model was applied as follows:

$$\rho = \frac{\text{Average Arrival Rate Per Hour } (\lambda)}{\text{Average Service Rate } (\mu)}$$

with the probability of having no vehicles in the system is:

$$P_0 = \frac{1}{\sum_{i=0}^{N-1} \frac{\rho^i}{i!} + \frac{\rho^N}{N!\left(1 - \frac{\rho}{N}\right)}}$$

and the probability of having n vehicles in the system is:

$$P_n = \frac{\rho^n P_0}{n!} \qquad P_n = \frac{\rho^n P_0}{n!} \text{ (for } n \le N)$$

$$P_n = \frac{\rho^n P_0}{N^{n-N} N!} \qquad P_n = \frac{\rho^n P_0}{N^{n-N} N!} \text{ (for} > N))$$

3.7.2 The average arrival rate and average servicing time for the existing bus layby (Deerhill Bay Bus Stop) are summarized in **Table 3.6**.

Table 3.6 Average Arrival Rate and Servicing Time on Deerhill Bay Bus Layby

Location	Arrival Rate(veh/hr)		Average Servicing Time (min/veh)(1)	
	AM Peak	PM Peak	AM Peak	PM Peak
Deerhill Bay Bus Stop (NB)	16	14	0.32	0.36
Deerhill Bay Bus Stop (SB)	11	11	0.41	0.34

Note (1): Estimated based on boarding time of 4 second/passenger, alighting time of 3 second/passenger and 10 second/vehicle for manoeuvring of buses/GMBs.

3.7.3 Bus layby assessment is summarized in **Table 3.7**.

Table 3.7 Existing Bus Layby Assessment

Location		AM Peak		PM Peak	
		P_n	P(0)+P(1)	P_n	P(0)+P(1)
Deerhill Bay Bus Stop (NB)	n=0 (no vehicle at layby)	0.9144	0.9926	0.9169	0.9931
	n=1 (1 vehicle at layby)	0.0782		0.0762	
Deerhill Bay Bus Stop (SB)	n=0 (no vehicle at layby)	0.9256	0.9945	0.9375	0.9961
	n=1 (1 vehicle at layby)	0.0689		0.0586	

3.7.4 The assessment in above table concluded that the chances for more than 2 vehicles simultaneously using the bus layby is less than 1% and there is no capacity problem at the existing bus layby.

3.8 Existing Footpath Performance

3.8.1 Pedestrian count survey was carried out at the concerned footpath on a typical school weekday (under normal school traffic condition without zoom classes and without work from home arrangement) on 11 May 2022 during the AM (07:30-09:30), and PM (17:00-19:00) peak periods.

3.8.2 The footpath assessment (Level of Service (LOS)) is based on the guidelines stipulated in Chapter 10.5.2, Volume 6, TPDM. The definitions of Level of Service (LOS) for pedestrian footpath are enclosed in **Appendix D**.

3.8.3 Based on the 2022 surveyed pedestrian flows, the performance for the critical footpath sections leading to the subject site and bus stop is tabulated in **Table 3.8**.

Table 3.8 Base Year Footpath (LOS) Performance

No.	Location	Actual Width (m)	Effective Width (m)	Peak	Pedestrian Flows (ped/15 mins)	Flow Rate (Ped/min/ m)	Level of Service (LOS)
P1	Tai Po Road – Tai Po Kau (outside Subject Site)	1.9	0.9	AM	26	1.93	A
				PM	14	1.04	A
P2	Tai Po Road – Tai Po Kau (outside Japanese International School)	1.9	0.9	AM	48	3.56	A
				PM	24	1.78	A
P3	Pedestrian Crossing across Tai Po Road – Tai Po Kau	4.5	3.5	AM	12	0.23	A
				PM	13	0.25	A
P4	Tai Po Road – Tai Po Kau (near Tai Po Kau Gas Station northbound bus stop)	2	1	AM	12	0.8	A
				PM	13	0.87	A

Note (1): Effective Width = Actual width – 1m.

3.8.4 The results of the above assessment demonstrated that the concerned footpaths can operate with Level of Service "A" and with adequate capacity.

3.8.5 The 2022 observed pedestrian flows for concerned footpath are presented in **Figure 3.4**.

3.9 Existing Queue Length Survey

3.9.1 Queue length survey was carried out at the junction of Tai Po Road- Tai Po Kau and access road to Deerhill Bay on a typical school weekday (under normal school traffic condition without zoom classes and without work from home arrangement) on 22 November 2021 during the AM (07:30-09:30) and PM (17:00-19:00) peak periods.

3.9.2 During the survey period, no traffic queue was observed as shown in the photo records enclosed in **Appendix E**.

4. FUTURE TRAFFIC CONDITION

4.1 Design Year

4.1.1 Based on the latest programme, the proposed development is scheduled to be completed and in operation by 2030. Hence a design year 2033 [i.e. 3 years after the operation year] is adopted for the traffic assessment purpose.

4.2 Traffic Forecast Approach

4.2.1 Since there are no major changes in the local road network, traffic forecast by growth factor method is adopted to estimate the future traffic flows (i.e. from base year 2021 to design year 2033) based on the following data:

- Historical trend data from the Annual Traffic Census (ATC) by Transport Department
- 2019-based Territorial Population and Employment Data Matrix (TPEDM) planning data by Planning Department's website
- Hong Kong Population Distribution 2020-2069 by Census and Statistics Department
- Projections of Population Distribution 2019-2029 by Planning Department

4.2.2 The historical traffic data of the surrounding road links based on the Annual Average Daily Traffic (AADT) are extracted from the "Annual Traffic Census" report issued by Transport Department. The relevant AADT data from 2016 to 2020 are summarized in **Table 4.1.**

Table 4.1 AADT at Counting Stations Extracted from Annual Traffic Census – 2017 to 2021

Stn No.	Road	From	To	2017	2018	2019	2020	2021
6652	Yau King Lane	Lookout Link	End	1,320	1,160	1,350	1,330	1,430
6210	Tai Po Road - Ma Liu Shui	Entrance to Chung Chi College, CUHK	Yuen Chau Tsai	7,650	7,640	7,970	8,260	7,650
5820	Tai Po Road - Shatin	Tolo Highway	Entrance to Chung Chi College, CUHK	13,840	13,830	13,040	14,450	15,230
All Stations Total				22,810	22,630	22,360	24,040	24,310
Average Growth Rate (% p. a.)					-0.79%	-1.19%	7.51%	1.12%
Overall Growth Rate (% p. a.) from 2016 to 2020				+1.66%				

4.2.3 The population and employment data of the Planning Data District are extracted from the 2019-based TPEDM issued by Planning Department's website. The estimated growth rate from 2021 to 2026 in Tai Po District is summarized in **Table 4.2.**

Table 4.2 2019-Based TPEDM Tai Po District

Annual Growth from 2021 to 2026 (%)	**Tai Po**		
	2019	**2021**	**2026**
Total Population	250,050	285,850	263 800
Total Employment	86,750	83,700	78 550
Total Population & Employment	336,800	369,550	342 350
Average Annual Growth Rate of Total Population & Employment		**2019-2021**	**2021-2026**
		4.75%	**-1.52%**

4.2.4 The relevant growth rates from year 2022 to 2046 are extracted from the Hong Kong Population Projection by Census and Statistics Department and are presented in **Table 4.3**.

Table 4.3 Hong Kong Population Projection Forecast

Hong Kong Population Projections 2022-2046 by Census and Statistics Department	**Year**			
	2021	**2026**	**2031**	**2036**
Population (Thousands)	7413.1	7596.8	7820.2	8022.4
Average Annual Growth Rate of Total Population	2021-2026	2026-2031	2031-2036	
	0.5%	0.6%	0.5%	

4.2.5 The Projections of Population Distribution 2019-2029 by Planning Department and the relevant growth rate are summarised in **Table 4.4**.

Table 4.4 Projections of Population Distribution 2019-2029

Projections of Population Distribution 2019-2029 by Planning Department (Tai Po District)			
Year	2021	2026	2029
Projections of Population	323,200	353,800	348,000
Average Annual Population Growth (%)		**2021-2026**	**2026-2029**
		+1.83%	**-0.55%**

4.2.6 The annual growth rates obtained from various sources from 2016 to 2033 are summarised in **Table 4.5**.

Table 4.5 Summary of Annual Growth Rates Obtained from Various Sources from 2018 to 2036

Information	Planning Horizon	District	Annual Growth Rates			
			2018-2022	2021-2026	2026-2031	2031-2036
Annual Traffic Census	--	Tai Po	+1.66 %	--	--	--
2019-based Territorial Population and Employment Data Matrix by Planning Department	2026	Tai Po	--	-1.52%	--	--
Projections of Population Distribution 2019-2029 by Planning Department	2029	Tai Po	--	+1.83%	-0.55%(1)	--
Hong Kong Population Projections 2022-2046 by Census and Statistics Department	2046	Territorial-wide	--	+0.5%	+0.6%	+0.5%

Note: (1) Annual growth rates from 2026 to 2029.

4.2.7 For conservative analysis, the background traffic from 2021 to 2026, 2026 to 2031, and 2031 to 2033 will adopt various growth rates of +1.83%, +0.6% and +0.5% p.a. respectively for the traffic forecast.

4.3 Planned and Committed Developments in the Vicinity

4.3.1 The development traffic generated by the adjacent planned developments in the vicinity have also been taken into consideration in the reference case scenario for this TIA study.

4.3.2 The planned/committed developments approved by the Town Planning Board in the Vicinity are summarised in **Table 4.6**.

Table 4.6 Summary of Planned / Committed Developments in the Vicinity

Application No.	Planned Development	Completion Year	Development Scale	Traffic Generations (pcu/hr)			
				AM Peak		PM Peak	
				Gen.	Att.	Gen.	Att.
S/TP/28[(1)]	Proposed Public and Private Housing Development [at Tsiu Hang]	Unknown	2,198 Flats	158	94	63	82
A/TP/656[(1)] (TPTL 244)	Proposed Housing Development with Proposed Social Welfare Facility (Residential Care Home for the Elderly) [at Yau King Lane]	Phase 1: 2023 Phase 2A: 2024 Phase 2B: 2024	Phase 1: 576 Phase 2A: 607 Phase 2B: 688	136	81	55	71
S/TP/28[(1)]	Proposed Amendments to the Approved Tai Po Outline Zoning Plan No. S/TP/28 (Item A) [at To Yuen Tung]	2032-2033	GFA: 24,128m^2	150	102	71	96
Tai Po Town Lot 230[(2)]	Proposed Residential Development at Tai Po Town Lot No.230, Tai Po Kau, Tai Po	N.A.	GFA: 24,128m^2 (approx.102 house)	34	27	29	42
Tai Po Town Lot 231	Proposed Residential Development at Tai Po Town Lot No.231, Tai Po Kau, Tai Po	N.A.	GFA: 5,450m^2 23 House	8	7	7	10
Tai Po Town Lot 234[(2)]	Proposed Residential Development at Tai Po Town Lot No. 234	N.A.	GFA: 21,003m^2 (approx.89 house)	29	24	26	37
Tai Po Town Lot 241[(2)]	Proposed Residential Development	N.A.	GFA: 9357m^2 (approx.40 house)	14	11	12	17
Total				**529**	**346**	**263**	**355**

Note: (1) Traffic Generations are estimated based on trip rate of Private Housing: High Density (Average Flat Size 60m^2) in TPDM Vol 1 Chap 3 Appendix, the trip rate is presented as below

Development	Average Flat Size	AM Peak		PM Peak	
		Gen.	Att.	Gen.	Att.
Private Housing	60m^2	0.0718	0.0425	0.0256	0.0370

(2) Traffic Generations are estimated based on trip rate of Private Housing: Low-Density (Average Flat Size 300m^2) in TDPM Vol 1 Chap 3 Appendix, the flat number are based on GFA/house ratio in TPTL Lot 231. The trip rate is presented as below

Development	Average Flat Size	AM Peak		PM Peak	
		Gen.	Att.	Gen.	Att.
Private Housing	300m^2	0.3252	0.2609	0.2835	0.4074

4.3.3 The distribution of the adjacent planned/ committed developments traffic is presented in **Figure 4.1**.

4.4 Reference Year Traffic Forecasts

4.4.1 The 2033 Reference traffic flows are derived as follows:

= 2021 Observed Traffic Flows x $(1+1.83\%)^{(2026-2021)}$ x $(1+0.4\%)^{(2029-2026)}$ x $(1+0.3\%)^{(2033-2029)}$
+ Adjacent Planned/Committed Developments Traffic

4.4.2 The 2033 reference traffic flows (i.e. without proposed development traffic) are shown in **Figure 4.2**.

5. TRAFFIC IMPACT ASSESSMENT

5.1 Proposed Development Traffic Generations

5.1.1 The trip generations of this proposed development are estimated based different types of services.

5.1.2 For Continuum of Care Home, in-house trip rates from similar sites are adopted.

5.1.3 As there are no suitable reference sites for the other services (SCCC, CCC, SGH, FCS, ABPSS and STU) with similar site characteristics, the trip generations are estimated based on information provided by HKSKH (e.g. users, visitors and future staff number) and are summarised in **Table 5.1**.

Table 5.1 Estimated Trip Generations of the Proposed Development based on HKSKH information

Proposed GIC Facilities	CoC Home	SCCC(1)	CCC(1)	STU	SGH	FCS and ABPSS
Places	289	100	65	85 places	30 places	--
Estimated Pedestrian Trip Generations for User/ Visitor	In-house Trip Rate	AM: 46 (IN); 26 (OUT) PM: 26 (IN); 46 (OUT)	AM: 150 (IN); 85 (OUT) PM: 85 (IN); 150 (OUT)	AM: 85 (IN); 0 (OUT) PM: 0 (IN); 85 (OUT)	--	--
Future Staff Number & Shifting Hour	80 (07:00-15:00) 80 (13:30-21:30) 40 (21:30-07:00)	25	16	--	20 (10:00-20:00)	10

Note: (1) the number of pedestrian trip generations for user/visitor is advised by HKSKH.

Adopted Modal Split

5.1.4 The modal split provided by Sheng Kung Hui from similar reference sites (i.e. SKH Nursing Home and HKSKH Li Ka Shing Care & Attention Home for the Elderly) are adopted for the assessment for the vehicular trip generations and are presented in **Table 5.9**.

Table 5.2 Adopted Modal Split

Transport Mode	Modal Split (%)	
	User/Visitors(1)	Staff
Private Car	4%	0%
Taxi	5%	8%
Bus	82%	64%
GMB	9%	28%
Total	**100%**	**100%**

Note: (1) Percentage excluding users commuting by NEATS.

Pedestrian Trip Generations of CoC Home

5.1.5 The in-house trip rate survey at similar site (Po Leung Kuk Wong Chuk Hang Elderly Home) are adopted for this Continuum of Care Home.

5.1.6 The pedestrian count survey result and the pedestrian trip rates of this reference site are presented in **Table 5.3**.

Table 5.3 Pedestrian Trip Generations of Po Leung Kuk Wong Chuk Hang Elderly Home

Po Leung Kuk Wong Chuk Hang Elderly Home (Total: 165 places)	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Pedestrian Trips (ped/hr)	4	13	39	3
Pedestrian Trip Rate (ped/hr/place)	0.0242	0.0788	0.2364	0.0182

5.1.7 By applying the trip rates shown in Table 5.4, the estimated pedestrian trip generations for proposed development (CoC Home) are presented in **Table 5.4**.

Table 5.4 Pedestrian Trip Generations of Proposed Development (CoC Home)

Proposed Development – CoC Home (289 places)	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Estimated Pedestrian Trips (ped/hr)	8	23	69	6

Vehicular Trip Generations of Continuum of Care Home (CoC Home)

5.1.8 Vehicular count survey was also conducted at the reference site and the result and the vehicular trip rates are summarized in **Table 5.5**.

Table 5.5 Vehicular Traffic Generations of Po Leung Kuk Wong Chuk Hang Elderly Home

Po Leung Kuk Wong Chuk Hang Elderly Home (Total: 165 places)	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Vehicular Trips (pcu/hr)	9	7	3	5
Vehicle Trip Rate (pcu/hr/place)	0.0545	0.0424	0.0182	0.0303

5.1.9 By adopting the trip rate in Table 5.5, the estimated vehicular traffic generations for proposed development (CoC Home) are presented in **Table 5.6**.

Table 5.6 Vehicular Traffic Generations of Proposed Development (CoC Home)

Proposed Development - CoC Home (289 places)	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Estimated Vehicular Trips (pcu/hr)	16	13	6	9

Pedestrian Trip Generations of Special Child Care Centre (SCCC)

5.1.10 The pedestrian trip generations of SCCC are estimated based on information provided by the users and SWD operation requirement (i.e. minimum 80% of users is required to commute by NEATS).

5.1.11 The pedestrian trip generations are summarised in **Table 5.7** and trip generations breakdown by different transport modes are summarised in **Table 5.8**.

Table 5.7 Pedestrian Trip Generations of Proposed Development (SCCC)

Proposed Development - SCCC (100 places)	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Estimated Pedestrian Trips (ped/hr)(1)	26	46	46	26

Note: (1) Pedestrian trip generations are advised by users.
(2) 80 users will travel by NEATS.

Table 5.8 Pedestrian Trip Generations breakdown of Proposed Development (SCCC)

Proposed Development - SCCC (100 places)	Modal Split	AM Peak (ped/hr)		PM Peak(ped/hr)	
		Generation	Attraction	Generation	Attraction
Private Car	4%	1	2	2	1
Taxi	5%	1	2	2	1
Bus	82%	21	37	37	21
GMB	9%	3	5	5	3
Sub-Total(1)	**100%**	**26**	**46**	**46**	**26**

Note: (1) Number of users not commuting by NEATS.

5.1.12 The proposed development of SCCC service will generate and attract a total of 72 pedestrian trips (26+46) in AM peak hour and 72 pedestrian trips (46+26) in PM peak hour.

Vehicular Trip Generations of Special Child Care Centre (SCCC)

5.1.13 Based on the pedestrian trip generations by different transport modes, the vehicular generations are summarised in **Table 5.9**.

Table 5.9 Vehicular Trip Generations of Proposed Development (SCCC)

Proposed Development SCCC (100 places)(1)	Occupancy Rate (ped/veh)	PCU factor	AM Peak (pcu/hr)(3)		PM Peak (pcu/hr) (3)	
			Gen.	Att.	Gen.	Att.
Private Car	1	1	2(2)	2	2	2(2)
Taxi	1	1	2(2)	2	2	2(2)
NEATS	48	2	0	4	4	0
Total	--	--	**4**	**8**	**8**	**4**

Note: (1) The vehicular trip generations for Bus and GMB will be discussed in section 5.5.
(2) Maximum of vehicle trips (gen./att.) [Table 5.8] for private car and taxi is taken for conservative.
(3) Vehicular trip generation/Attraction = pedestrian trip generation/attraction [Table 5.8] / occupancy rate x PCU factor.

5.1.14 The proposed development of SCCC service will generate and attract a total of 12 pcu (4+8) in AM peak hour and 12 pcu (8+4) in PM peak hour.

Pedestrian Trip Generations of Child Care Centre (CCC)

5.1.15 The future pedestrian trip generations of CCC (65 places) advised by user are summarised in **Table 5.10**.

Table 5.10 Pedestrian Trip Generations of Proposed Development (CCC)

Proposed Development - CCC (65 places)	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
Estimated Pedestrian Trips (ped/hr)	85	150	150	85

5.1.16 By adopting the modal split in Table 5.2, the pedestrian trip generations breakdown by different transport modes are tabulated in **Table 5.11**.

Table 5.11 Pedestrian Trip Generations breakdown of Proposed Development (CCC)

Proposed Development - CCC (65 places)	Modal Split	AM Peak (ped/hr)		PM Peak (ped/hr)	
		Generation	Attraction	Generation	Attraction
Private Car	4%	3	6	6	3
Taxi	5%	4	7	7	4
Bus	82%	70	123	123	70
GMB	9%	8	14	14	8
Total	100%	**85**	**150**	**150**	**85**

Vehicular Trip Generations of Child Care Centre (CCC)

5.1.17 Based on the pedestrian trip generations presented in Table 5.11, the vehicular generations of CCC are summarised in **Table 5.12**.

Table 5.12 Vehicular Trip Generations of Proposed Development (CCC)

Proposed Development - CCC (65 places)(1)	Occupancy Rate (ped/veh)	PCU factor	AM Peak (pcu/hr)(3)		PM Peak (pcu/hr) (3)	
			Generation	Attraction	Generation	Attraction
Private Car	1	1	6(2)	6	6	6(2)
Taxi	1	1	7(2)	7	7	7(2)
Total	**--**	**--**	**13**	**13**	**13**	**13**

Note: (1) The vehicular trip generations for Bus and GMB will be discussed in section 5.5.
(2) Maximum of vehicle trips (gen./att.) for private car and taxi is taken for conservative.
(3) Vehicular trip generation/Attraction = pedestrian trip generation/attraction [Table 5.11] / occupancy rate x PCU factor.

5.1.18 The proposed development of CCC service will generate and attract a total of 26 pcu (13+13) in AM peak hour and 26 pcu (13+13) in PM peak hour.

Pedestrian Trip Generations of Staff Training Units (STU) and Small Group Home (SGH)

5.1.19 As advised by user, the users/staff of Staff Training Units (STU) and Small Group Home (SGH) will not commute during concern AM and PM peak hours.

5.1.20 Hence, there is no vehicular and pedestrian trip generations during AM and PM peak hours for STU and SGH services.

Pedestrian Trip Generations of Staff (all services)

5.1.21 The staff trip generations for all services are based on the information advised by users (Table 5.1) and summarised in **Table 5.13**.

Table 5.13 Pedestrian Trip Generations of Proposed Development (Staff)

Services	Pedestrian Trip Generations (ped/hr)			
	AM Peak		PM Peak	
	Generation	Attraction	Generation	Attraction
CoC Home	40	80	0	0
SCCC	0	25	25	0
CCC	0	16	16	0
STU	0	0	0	0
SGH	0	0	0	0
FCS & ABPSS	0	10	10	0
Total	**40**	**131**	**51**	**0**

5.1.22 The proposed development will generate and attract a total of 171 pedestrian trips (40+131) in the AM peak hour and 51 pedestrian trips (51+0) in the PM peak hour.

Vehicular Trip Generations of Staff (all services)

5.1.23 By adopting the modal split presented in Table 5.2, the pedestrian trip generations by different transport modes is presented in **Table 5.14**.

Table 5.14 Pedestrian Trip Generations breakdown of Proposed Development (Staff)

Proposed Development - Staff	Modal Split	Pedestrian Trip Generations (ped/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Private Car	0%	0	0	0	0
Taxi	8%	3	10	4	0
Bus	64%	26	84	33	0
GMB	28%	11	37	14	0
Total	**--**	**40**	**131**	**51**	**0**

5.1.24 Based on the pedestrian generations shown Table 5.14, the vehicular trip generations by different transport modes are tabulated in **Table 5.15**.

Table 5.15 Vehicular Trip Generations of Proposed Development (Staff)

Proposed Development - Staff[1]	Occupancy Rate (ped/veh)	PCU factor	AM Peak (pcu/hr)[3]		PM Peak (pcu/hr) [3]	
			Generation	Attraction	Generation	Attraction
Private Car	1	1	0	0	0	0
Taxi	1	1	10[2]	10	4	4[2]
Total	**--**	**--**	**10**	**10**	4	4

Note: (1) The vehicular trip generations for Bus and GMB will be discussed in section 5.5
(2) Maximum of vehicle trips (in/out) for private car and taxi is taken for conservative.
(3) Vehicular trip generation/Attraction = pedestrian trip generation/attraction [Table 5.14] / occupancy rate x PCU factor.

5.1.25 The proposed development (staff) will generate and attract a total of 20 pcu (10+10) in the AM peak hour and 8 pcu (4+4) in the PM peak hour.

Trip Generations Summary

5.1.26 The summary of pedestrian and vehicular trip generations of the development site are tabulated in **Table 5.16**.

Table 5.16 Vehicular Trip Generations Summary

Development		AM Peak (pcu/hr)		PM Peak (pcu/hr)	
		Generation	Attraction	Generation	Attraction
CoC Home (289 places)	Table 5.6	16	13	6	9
SCCC (100 places)	Table 5.9	4	8	8	4
CCC (65 places)	Table 5.12	13	13	13	13
STU (85 places)	--	0	0	0	0
SGH (30 places)	--	0	0	0	0
Staff (All Service)	Table 5.15	10	10	4	4
Total		**43**	**44**	**31**	**30**

5.1.27 The proposed development will generate and attract a total of 87 pcu (43+44) in the AM peak hour and 61 pcu (31+30) in the PM peak hour.

5.1.28 The distribution of the development traffic based on survey pattern is presented in **Figure 5.1**.

5.2 2033 Design Traffic Flows

5.2.1 The 2033 Design traffic flows are calculated as follows:

2033 Design Flows = 2033 Reference Flows + Development Traffic Flows

5.2.2 The 2033 design traffic flows (i.e. with proposed development traffic) are shown in **Figures 5.2**.

5.3 Junction Capacity Performance for 2033 Reference and Design Year

5.3.1 The junction capacity for the 6 concerned junctions in the vicinity of the site has been assessed for both reference and design scenarios in year 2033 and the results of the junction performance are shown in **Table 5.17**.

Table 5.17 2033 Junction Performance (Reference and Design Scenarios)

No.	Junction	Junction Type	2033 Reference (Without Proposed Development)		2033 Design (With Proposed Development)	
			AM Peak	PM Peak	AM Peak	PM Peak
J1[(1)]	Tai Po Road – Tai Po Kau / Access Road to Deerhill Bay	Priority (DFC)	0.34	0.10	0.34	0.10
J2	Tai Po Road – Ma Liu Shui/ Kau To Shan Road	Roundabout (DFC)	0.66	0.67	0.67	0.68
J3	Tai Po Road – Sha Tin / Tsun King Road	Roundabout (DFC)	0.57	0.63	0.57	0.63
J4	Tai Po Road – Tai Po Kau / Lookout Link	Priority (DFC)	0.45	0.19	0.46	0.19
J5	Tai Po Road – Ma Liu Shui/ Lai Ping Road	Roundabout (DFC)	0.69	0.64	0.70	0.65
J6	Tai Po Road – Tai Po Kau / Access Road to Development Site	Priority (DFC)	--	--	0.14	0.07

Note: DFC – Design flow/ Capacity ratio for priority junction and roundabout.
(1)Surge factor adopted for J1 for AM and PM period, details please refer to Appendix B.

5.3.2 The junction capacity analysis enclosed in **Appendix C** show that all the 6 concerned junctions will operate with adequate junction capacity under 2033 reference and design scenarios.

5.4 Road Link Performance for 2033 Reference and Design Year

5.4.1 The road link performance for the 4 concerned road links during the AM and PM peak periods in 2033 Reference and Design scenario have been assessed and the results are presented in **Table 5.18**.

Table 5.18 2033 Reference and Design Road Link Capacity Performance

No.	Road Link	Direction	2033 Reference				2033 Design			
			AM Peak		PM Peak		AM Peak		PM Peak	
			Flows (veh/ hr)	V/C	Flows (veh/ hr)	V/C	Flows (veh/ hr)	V/C	Flows (veh/ hr)	V/C
L1	Tai Po Road – Ma Liu Shui (near University Avenue)	SB	981	0.38	322	0.12	999	0.38	335	0.13
		NB	359	0.14	553	0.21	376	0.14	564	0.22
L2	Tai Po Road – Sha Tin (Slip Road from Tai Po Road – Ma Liu Shui Southbound to Shatin Racecourse)	SB	633	0.49	613	0.47	650	0.50	626	0.48
L3	Tai Po Road – Sha Tin (Slip Road from Tai Po Road – Sha Tin Northbound to Tsun King Road Roundabout)	NB	360	0.14	340	0.13	365	0.14	344	0.13
L4	Tai Po Road – Ma Liu Shui (near Lai Ping Road)	SB	849	0.61	570	0.41	866	0.62	583	0.42
		NB	557	0.40	496	0.35	574	0.41	507	0.36

Note (1): Design flow is reference to Table 2.4.11, Chapter 2.4, Volume 2, TPDM.

5.4.2 The results of the road link assessment shows that all 4 concern road links will operate with adequate capacity during the AM and PM peak hours in both 2033 Reference and Design Year scenarios.

5.5 Public Transport Utilization Assessment

5.5.1 The public transport demand generated (Bus and GMB) by the proposed development are summarized in **Table 5.19** and **Table 5.20** respectively.

Table 5.19 Pedestrian Trip Generations by Public Transport (Bus)

Development		AM Peak (ped/hr)		PM Peak (ped/hr)	
		Generation	Attraction	Generation	Attraction
CoC Home	--	7	21	62	5
SCCC	Table 5.8	21	37	37	21
CCC	Table 5.11	70	123	123	70
STU	--	0	0	0	0
SGH	--	0	0	0	0
Staff	Table 5.14	26	84	33	0
Total		124	265	255	96

Table 5.20 Pedestrian Trip Generations by Public Transport (GMB)

Development		AM Peak (ped/hr)		PM Peak (ped/hr)	
		Generation	Attraction	Generation	Attraction
CoC Home	--	1	2	7	1
SCCC	Table 5.8	3	5	5	3
CCC	Table 5.11	8	14	14	8
STU	--	0	0	0	0
SGH	--	0	0	0	0
Staff	Table 5.14	11	37	14	0
Total		23	58	40	12

5.5.2 The public transport utilization for 2033 Design scenarios is presented in **Table 5.21**.

Table 5.21 2033 Design Public Transport Utilization

Public Transport	AM Peak			PM Peak		
	Total Passenger Capacity (pax/hr)	Total Passenger Demand (pax/hr)(1)	Occupancy (Demand /Capacity)	Total Passenger Capacity (pax/hr)	Total Passenger Demand (pax/hr)(1)	Occupancy (Demand /Capacity)
Franchised Buses (72, 72A, 73A, 74A) (To Shatin Direction)	1237	393	0.32	1008	666	0.66
Franchised Buses (72, 72A, 73A, 74A) (To Tai Po Direction)	870	250	0.29	870	471	0.54
GMB (28K, 28S) (To Shatin Direction)	182	200	1.10	150	165	1.10
GMB (28K, 28S) (To Tai Po Direction)	163	154	0.95	163	119	0.73

Note: (1) 2033 Design Public Transport Demand = 2021 Demand x Growth Factor + Development demand.

5.5.3 The assessment shows that there is ample capacity for the franchised buses service to accommodate the additional passenger demands generated by proposed development site except GMB service (Shatin bound) during AM and PM Peak period.

5.5.4 Additional GMB services (Shatin bound) are recommended to accommodate the additional passenger demands generated by the proposed development. The required additional GMB services are presented in **Table 5.22**.

Table 5.22 Additional GMB Services Required

Additional GMB Services Required	AM Peak				PM Peak			
	Total Passenger Capacity (pax/hr)	Total Passenger Demand (pax/hr)	Deficiency (pax/hr)	Additional GMB required^	Total Passenger Capacity (pax/hr)	Total Passenger Demand (pax/hr)	Deficiency (pax/hr)	Additional GMB required^
	[A]	[B]	[C] =[B]-[A]	[D] =[C]/19	[A]	[B]	[C]= [B]-[A]	[D]= [C]/19
GMB (28K, 28S) (To Shatin Direction)	182	200	18	1	150	165	15	1

Note: ^It is assumed that the GMB capacity is 19 passengers.

5.5.5 An additional 1 GMB service (to Shatin direction) [i.e. 1.5 pcu] is required for AM and PM Peak period respectively according to the above analysis results.

5.6 2033 Design Bus Layby Assessment

5.6.1 The arrival rate for the bus layby (Deerhill Bay Bus Stop) incorporated the public transport utilization assessment result (Table 5.21 and Table 5.22) is estimated and presented in **Table 5.23**.

Table 5.23 Arrival Rate and Servicing Time on Deerhill Bay Bus Layby in Year 2033

Location	Arrival Rate(veh/hr)		Average Servicing Time (min/veh)	
	AM Peak	PM Peak	AM Peak	PM Peak
Deerhill Bay Bus Stop (NB)	16	14	0.78	1.22
Deerhill Bay Bus Stop (SB)(1)	12	12	1.23	1.00

Noted: (1) Arrival rate for SB bus stop: 11 veh/hr (table 3.6) + 1 veh (table 5.22) = 12 veh/hr

5.6.2 The 2033 bus layby assessment is reviewed and the results are summarized in **Table 5.24**.

Table 5.24 2033 Design Bus Layby Assessment

Location		2033 Design AM Peak		2033 Design PM Peak	
		P_n	Sum of P(n)	P_n	Sum of P(n)
Deerhill Bay Bus Stop (NB)	n=0 (no vehicle at layby)	0.7920	0.9910	0.7153	0.9769
	n=1 (1 vehicle at layby)	0.1647		0.2036	
	n=2 (2 vehicles at layby)	0.0343		0.0580	
Deerhill Bay Bus Stop (SB)	n=0 (no vehicle at layby)	0.7540	0.9851	0.8000	0.9920
	n=1 (1 vehicle at layby)	0.1855		0.1600	
	n=2 (2 vehicles at layby)	0.0456		0.0320	

5.6.3 The assessment shown in above table concluded that the chances for more than 2 vehicles simultaneously using the bus layby is less than 3%. The result showed that there will be no capacity problem at the bus layby under 2033 design scenario.

5.7 2033 Reference and Design Year Footpath Performance Assessment

5.7.1 Based on the additional pedestrian flows the performance for the critical footpath sections under 2033 reference and design scenarios are reviewed and the results are tabulated in **Table 5.25**.

Table 5.25 2033 Critical Footpath Sections Performance

No.	Location	Peak	2033 Reference			2033 Design		
			Pedestrian Flows (Ped/ 15 mins)	Flow Rate (Ped/min/ m)	Level of Service (LOS)	Pedestrian Flows (Ped/ 15 mins)	Flow Rate (Ped/min/ m)	Level of Service (LOS)
P1	Tai Po Road – Tai Po Kau (outside Subject Site)	AM	29	2.15	A	147	10.89	A
		PM	16	1.19	A	117	8.67	A
P2	Tai Po Road – Tai Po Kau (outside Japanese International School)	AM	53	3.93	A	171	12.67	A
		PM	27	2.00	A	128	9.48	A
P3	Pedestrian Crossing across Tai Po Road – Tai Po Kau	AM	14	0.27	A	132	2.51	A
		PM	15	0.29	A	116	2.21	A
P4	Tai Po Road – Tai Po Kau (near Tai Po Kau Gas Station northbound bus stop)	AM	14	0.93	A	132	8.80	A
		PM	15	1.00	A	116	7.73	A

5.7.2 The results of the above assessment demonstrated that the concerned footpaths will operate with adequate capacity under 2033 reference and design scenarios.

5.7.3 The 2033 reference and design pedestrian flows are presented in **Figures 5.3.**

6. CONSTRUCTION TRAFFIC IMPACT ASSESSMENT

6.1 Traffic Review for Construction Vehicles

6.1.1 According to the preliminary information provided by AP, it is estimated that there will be approximately 5 heavy good vehicles enter and leave the subject site hourly (equivalent to 12.5 pcu/hr) on each working day.

6.1.2 As the demand of the construction vehicles is relatively low, the traffic impact generated is considered negligible to the local road network.

6.1.3 The following traffic management measures are recommended to minimize the construction vehicles traffic impact to the general public:

(1) A maximum of 5 construction vehicles are limited within one hour period;

(2) The construction vehicles are restricted during local peak period and school peak period to avoid construction vehicle impact to the local road network and the school activities in the vicinity.

(3) Traffic wardens will be deployed at Access Road to Deerhill Bay to closely monitor the traffic situation and manage the ingress/egress of delivery vehicles. The traffic warden will also ensure smooth operation of the delivery vehicles and pedestrian safety.

7. SUMMARY AND CONCLUSION

7.1 Summary

Background

7.1.1 The subject site is located at Tai Po Kau area which is bounded by Po Leung Kuk Tin Ka Ping Millennium Primary School to the north, Japanese International School to the west, Tai Po Road-Tai Po Kau to the south and a vacant site to the east.

7.1.2 The development site will provide 1 block of Social Services Complex and is anticipated to be completed by 2030 for Special Child Care Centre (SCCC), Care and Attention Home providing Continuum of Care (CoC Home), Small Group Home (SGH), Foster Care Services (FCS) and Agency-based Enhancement of Professional Staff Support Service (ABPSS), Staff Training Unit (STU) and Child Care Centre (CCC) facilities.

Proposed Parking Provisions and Vehicular Access Points

7.1.3 A total of 7 private car parking spaces, 2 Light Bus parking spaces, 1 LGV parking spaces and 2 coach spaces and 1 private car bay, 1 ambulance bays, 1 HGV L/UL bay are provided to meet the end-users' operational need.

7.1.4 The permanent vehicular access is located at Tai Po Road – Tai Po Kau.

Existing Traffic Conditions

7.1.5 In order to review the existing traffic conditions, vehicular count surveys and pedestrian count surveys were carried out on a typical school weekday in November 2021, May 2022 and February 2024 during the AM (07:30 to 09:30) and PM (17:00 to 19:00) peak periods respectively.

7.1.6 The junction capacity and road link assessment show that the 5 concerned junctions and 4 concerned road links can operate with adequate capacity during the AM and PM peak hours under existing traffic condition.

7.1.7 The concerned footpath sections along the subject site and bus layby in the vicinity can operate with no capacity problem during the AM and PM peak periods.

Future Traffic Conditions

7.1.8 The proposed development is scheduled to be operated by 2030. Hence a design year 2033 (i.e. 3 years after the completion) is adopted for the TIA study for the traffic impact assessment purpose.

7.1.9 A growth factor method is applied to forecast the traffic flows in design year 2033. For conservative analysis, the background traffic annual growth rate from 2021 to 2026, 2026 to 2031 and 2031 to 2033 has adopted a growth rate of +1.83%, +0.6% and +0.5% p.a. respectively.

Traffic Impact Assessment

7.1.10 Upon the completion of the development building, this Social Services Complex will generate and attract 87 (two-way) pcu/hr in the AM peak hour and 61 (two-way) pcu/hr in the PM peak hour.

7.1.11 The traffic impact assessment demonstrated that all 5 concerned junctions and 4 concerned road links will operate with adequate capacity in the AM and PM Peak periods in year 2033.

7.1.12 The assessment shows that the franchised buses service is adequate to accommodate the additional passenger demand generated by proposed development site. However, additional 1 GMB services (To Shatin direction) is required to accommodate the future passenger demands generated by the proposed development in AM and PM peak period respectively.

7.1.13 The performance of concerned footpath sections and bus layby will operate with no capacity problem during the peak periods in design year 2033.

Traffic Review for the Construction Vehicles

7.1.14 According to the AP's preliminary programme, a maximum of 5 construction vehicles will access to the subject site per hour during non-peak in year 2030 (i.e. max 12.5 pcu/hr).

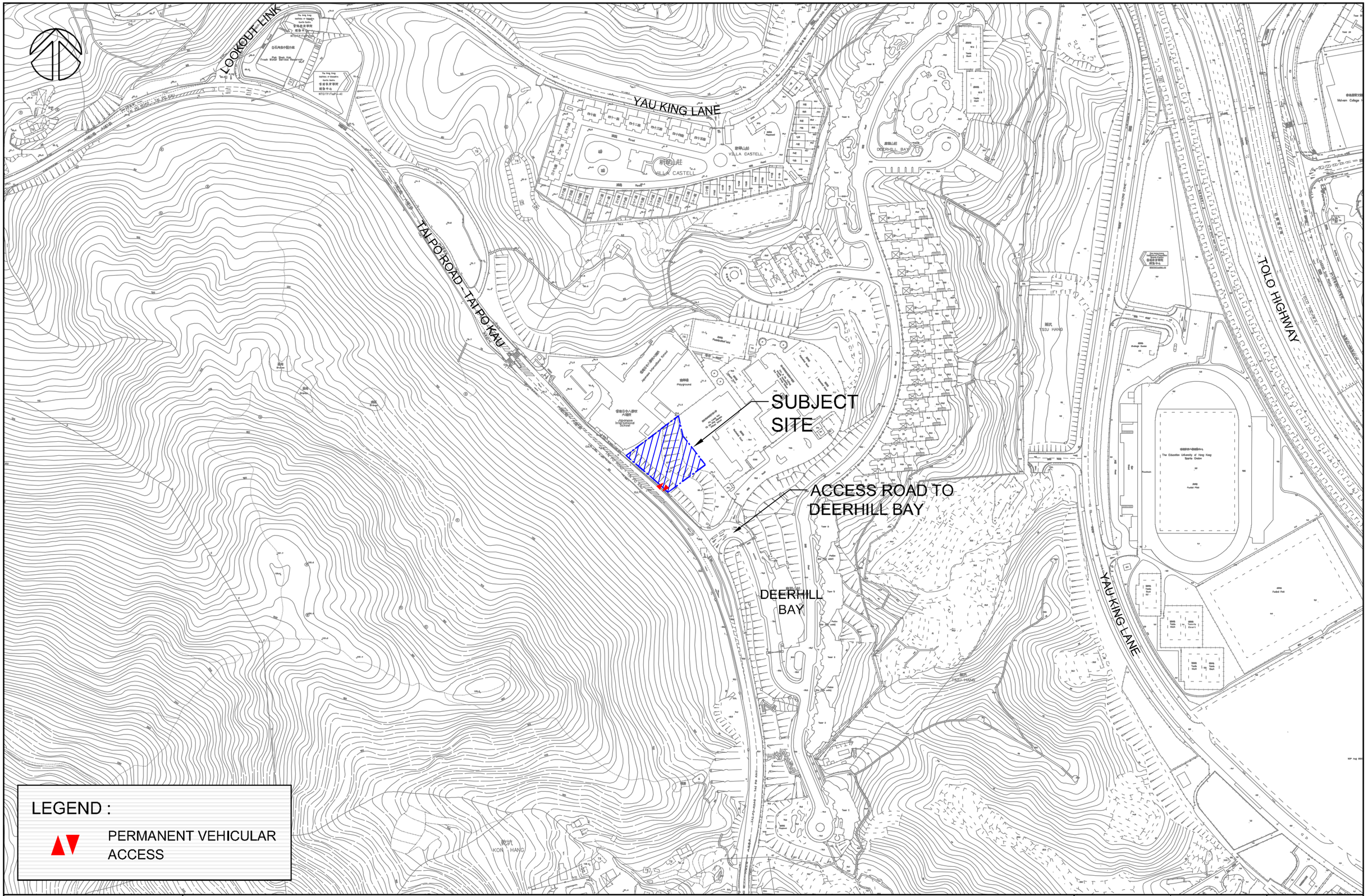
7.1.15 These construction traffic are considered negligible and will not affect the local road network.

7.2 Conclusion

7.2.1 The findings of this TIA concluded that the proposed Social Services Complex development will not generate with adverse traffic impacts in Design year 2033.

7.2.2 The proposed Social Services Complex Development is therefore supported from the traffic engineering point of view.

FIGURES



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Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: 1 : 5000	Date: FEB 2022	Figure No.: 2.1
Figure Title: SITE LOCATION	Project No.: J1652	CAD Ref.: J1652/TIA1/F21/2023-03-29	Rev.: –

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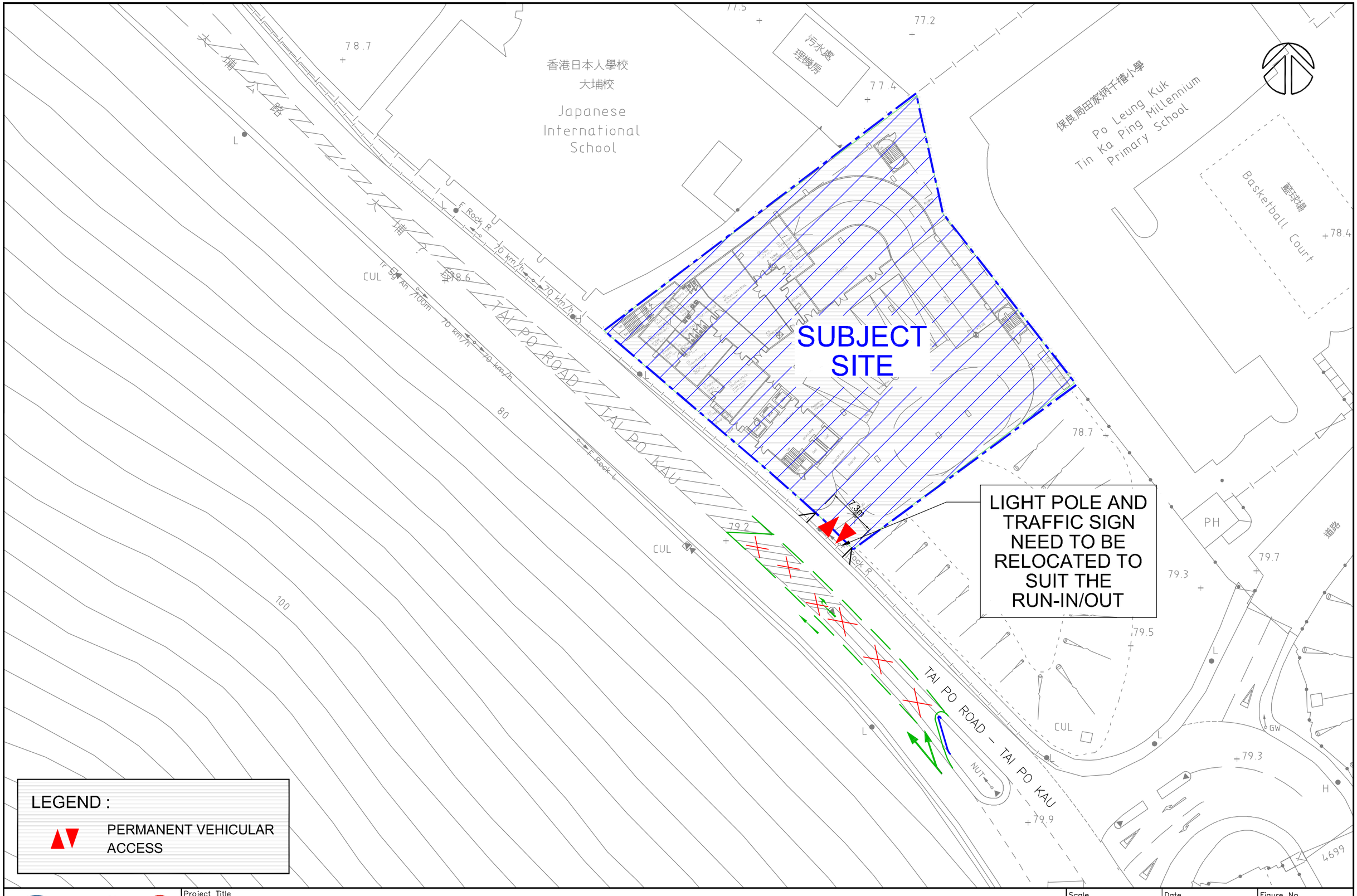

LEGEND :

PERMANENT VEHICULAR ACCESS

HWSPB 何黃 Traffic & Transportation Consultants Ho Wang SPB Limited	Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: 1 : 500	Date: FEB 2024	Figure No.: 2.2
	Figure Title: PROPOSED PERMANENT VEHICULAR ACCESS AT TAI PO ROAD – TAI PO KAU	Project No.: J1652	CAD Ref.: J1652/TIA1/F22B/2024-02-28	Rev.: B

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Figure Title: G/F LAYOUT PLAN	Project No.: J1652	CAD Ref.: J1652/TIA1/F23/2024-02-28	Rev.: –

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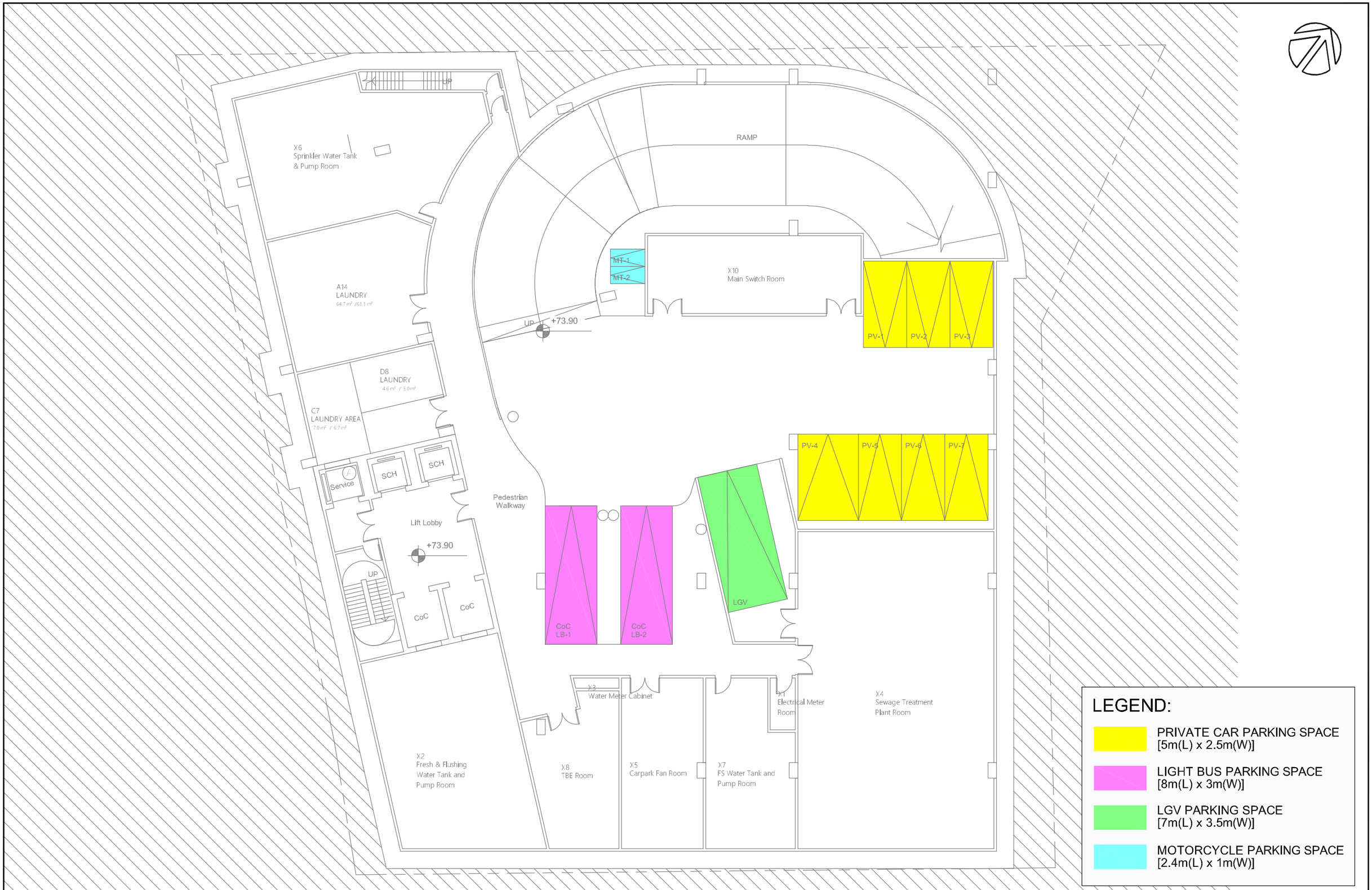

LEGEND:

- PRIVATE CAR PARKING SPACE [5m(L) x 2.5m(W)]
- LIGHT BUS PARKING SPACE [8m(L) x 3m(W)]
- LGV PARKING SPACE [7m(L) x 3.5m(W)]
- MOTORCYCLE PARKING SPACE [2.4m(L) x 1m(W)]

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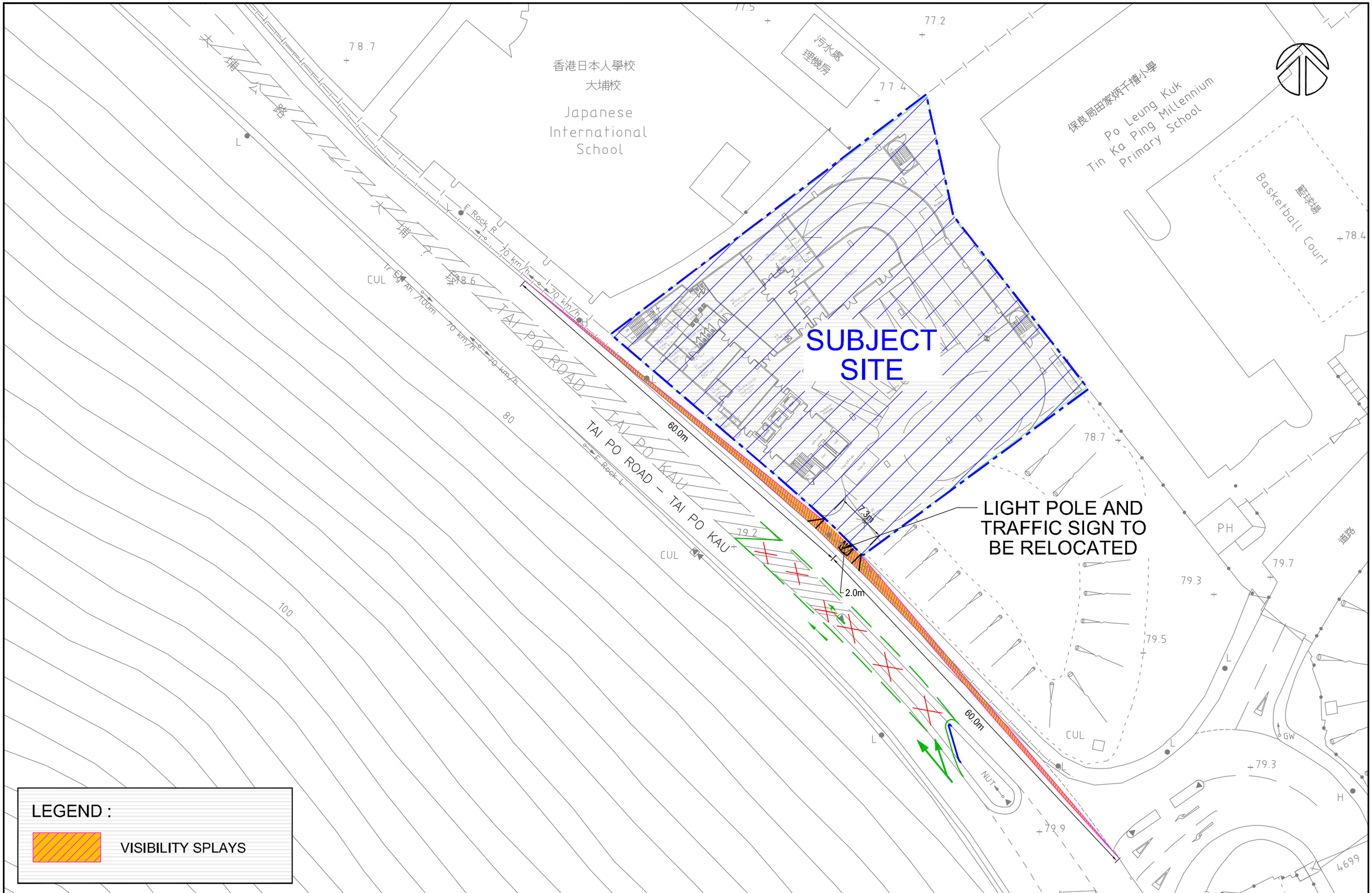
Figure Title: LG1/F LAYOUT PLAN	Project No.: J1652	CAD Ref.: J1652/TIA1/F24A/2024-07-26	Rev.: A



LEGEND :

VISIBILITY SPLAYS

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Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: 1 : 500	Date: FEB 2024	Figure No.: 2.5
Figure Title: SIGHTLINE ASSESSMENT	Project No.: J1652	CAD Ref.: J1652/TIA1/F25/2024-02-28	Rev.: –

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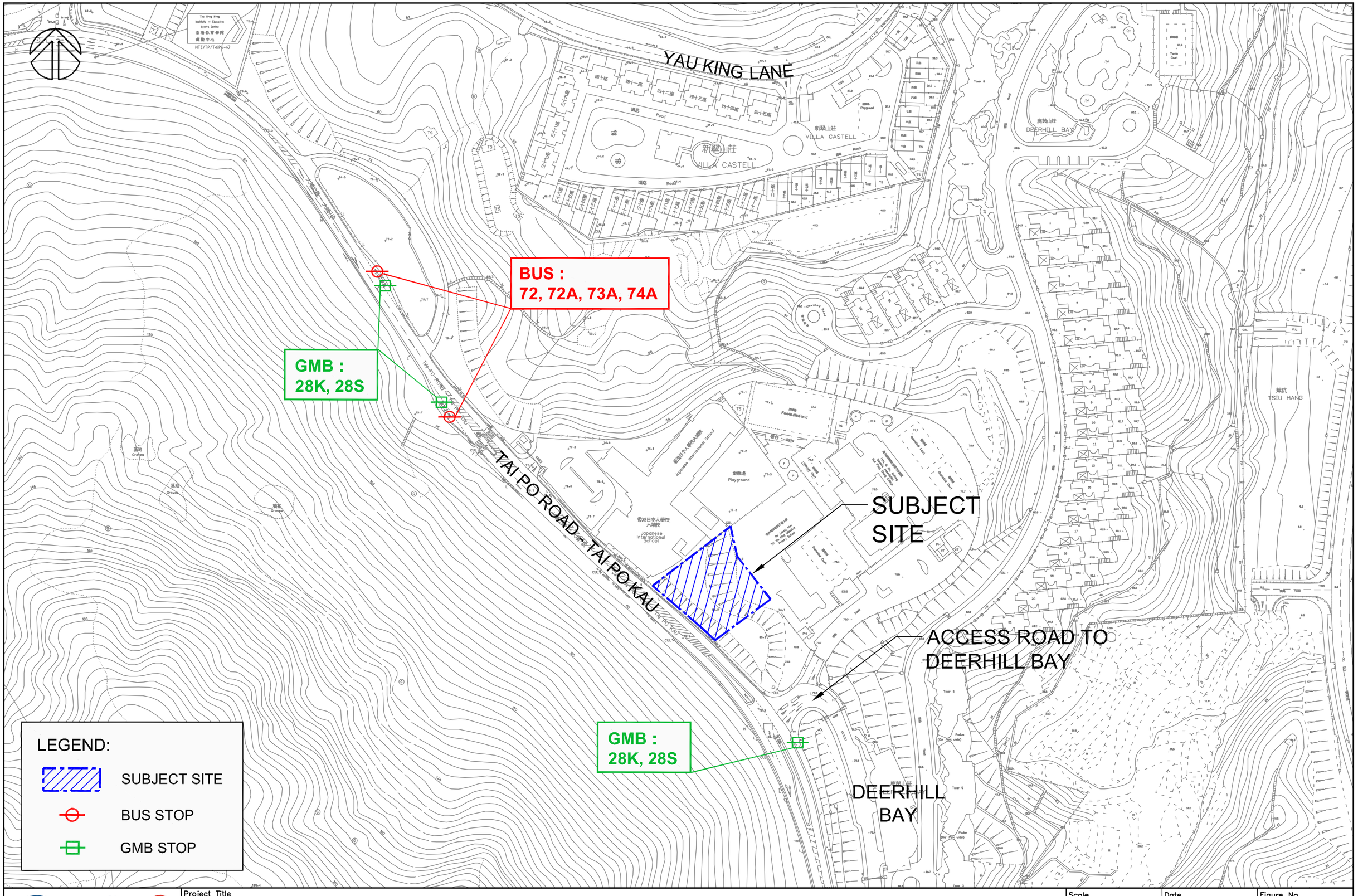

HWSPB 何黃 Traffic & Transportation Consultants Ho Wang SPB Limited	Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: 1 : 2000	Date: FEB 2022	Figure No.: 3.1
	Figure Title: LOCATION OF EXISTING PUBLIC TRANSPORT FACILITIES	Project No.: J1652	CAD Ref.: J1652/TIA1/F31/2023-03-29	Rev.: –

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TOLO HIGHWAY

TOLO HIGHWAY

沙田海
SHA TIN HOI

YAU KING LANE

LOOKOUT LINK

J4

J1

TAI PO ROAD - TAI PO KAU

SUBJECT SITE

L1

TAI PO ROAD - MA LIU SHUI

L4

J5

TOLO HIGHWAY

KAU TO SHAN ROAD

J2

L2

L3

J3

TSUN WING ROAD

TAI PO ROAD - SHA TIN

LEGEND :

AREA OF INFLUENCE (AOI)

J1 SURVEYED JUNCTION

L1 SURVEYED ROAD LINK

T:\041Tno\2024-02-15\J1652-cad\TIA1 2022-01-27\J1652-TIA1-F32A.dwg 1:1

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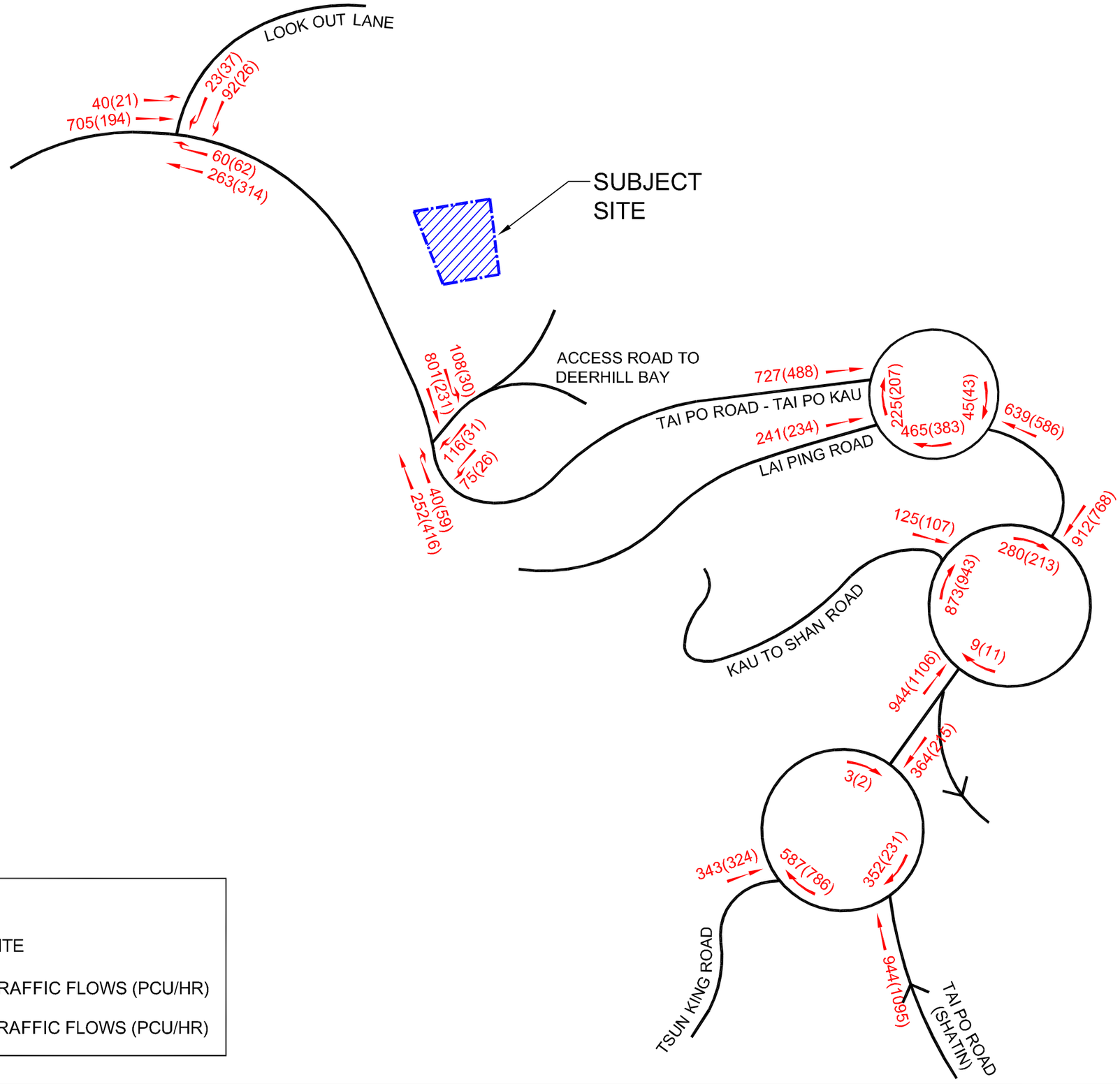
Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: N. T. S.	Date: MAY 2022	Figure No.: 3.2
Figure Title: LOCATION OF SURVEYED JUNCTIONS AND ROAD LINKS	Project No.: J1652	CAD Ref.: J1652/TIA1/F32A/2024-02-15	Rev.: A



LEGEND:

	SUBJECT SITE
123	AM PEAK TRAFFIC FLOWS (PCU/HR)
(456)	PM PEAK TRAFFIC FLOWS (PCU/HR)

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Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: N. T. S.	Date: FEB 2024	Figure No.: 3.3
Figure Title: 2021 OBSERVED TRAFFOC FLOWS	Project No.: J1652	CAD Ref.: J1652/TIA1/F33B/2024-02-27	Rev.: B

No.	Peak	Pedestrian Flows (Ped/15min)	Flow Rate (Ped/min/m)	Level of Service (LOS)
P1	AM	26	1.93	A
	PM	14	1.04	A
P2	AM	48	3.56	A
	PM	24	1.78	A
P3	AM	12	0.23	A
	PM	13	0.25	A
P4	AM	12	0.8	A
	PM	13	0.87	A

BUS/GMB STOP
(TO SHATIN DIRECTION)

BUS/GMB STOP
(TO TAI PO DIRECTION)

P1

P2

P3

P4

SUBJECT SITE

TAI PO ROAD - TAI PO KAU

LEGEND:

SUBJECT SITE

PEDESTRIAN ROUTE

P1 SURVEYED LOCATION

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Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title
TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title
2022 OBSERVED PEDESTRIAN FLOWS

Scale	Date	Figure No.
1 : 1500	MAY 2022	3.4

Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/F34/2023-03-29	–

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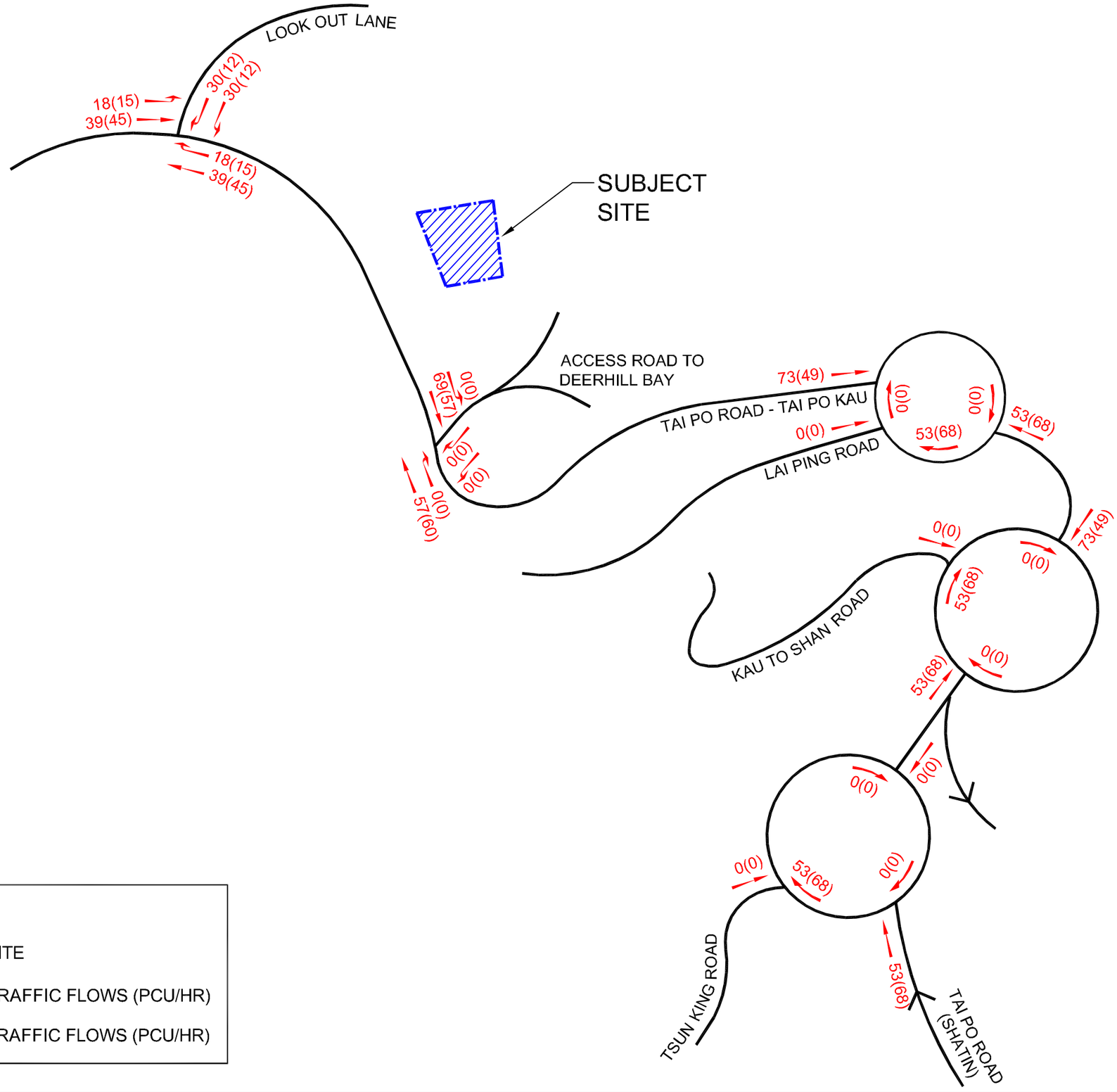

LEGEND:

	SUBJECT SITE
123	AM PEAK TRAFFIC FLOWS (PCU/HR)
(456)	PM PEAK TRAFFIC FLOWS (PCU/HR)

HWSPB 何黃
Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title: DISTRIBUTION OF ADJACENT PLANNED/COMMITTED DEVELOPMENT TRAFFIC FLOWS

Scale	Date	Figure No.
N. T. S.	FEB 2024	4.1

Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/F41B/2024-02-27	B

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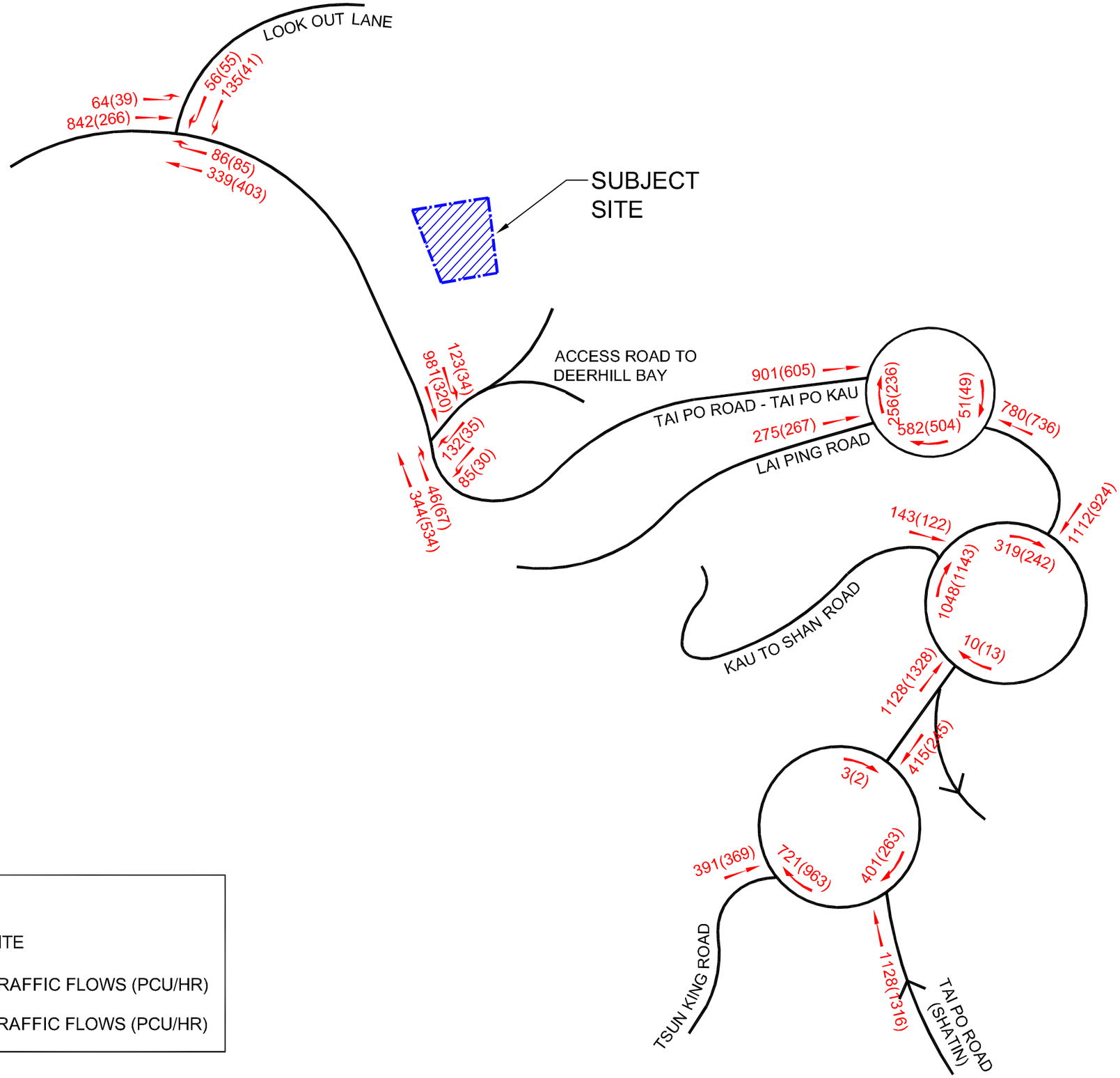

LEGEND:

	SUBJECT SITE
123	AM PEAK TRAFFIC FLOWS (PCU/HR)
(456)	PM PEAK TRAFFIC FLOWS (PCU/HR)

HWSPB 何黃
Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title
TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title
2033 REFERENCE TRAFFIC FLOWS

Scale	Date	Figure No.
N. T. S.	FEB 2024	4.2
Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/F42B/2024-02-27	B

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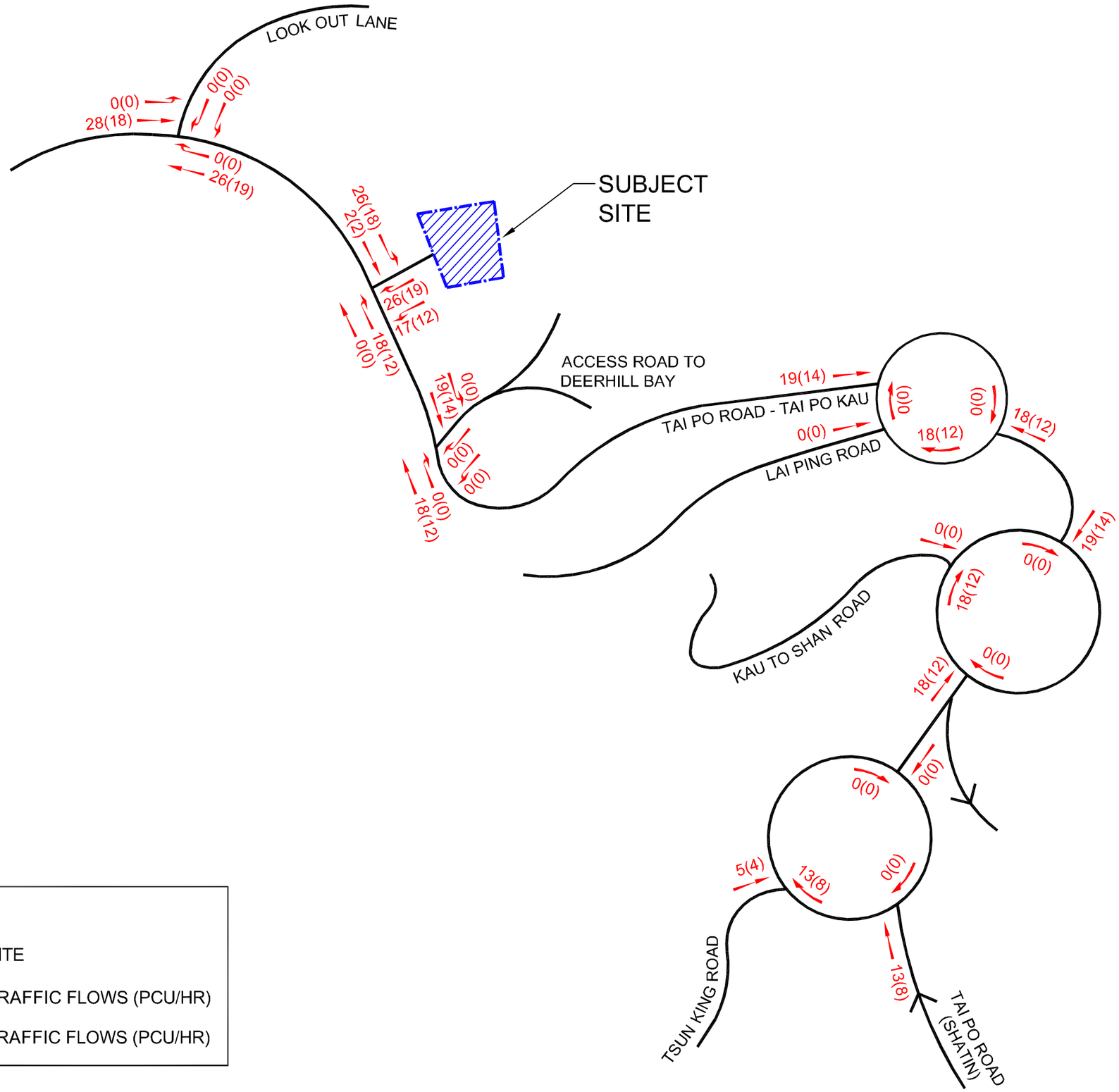

LEGEND:

	SUBJECT SITE
123	AM PEAK TRAFFIC FLOWS (PCU/HR)
(456)	PM PEAK TRAFFIC FLOWS (PCU/HR)

HWSPB 何黃
Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title
TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title
DISTRIBUTION OF DEVELOPMENT TRAFFIC FLOWS

Scale	Date	Figure No.
N. T. S.	FEB 2024	5.1

Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/F51B/2024-02-27	B

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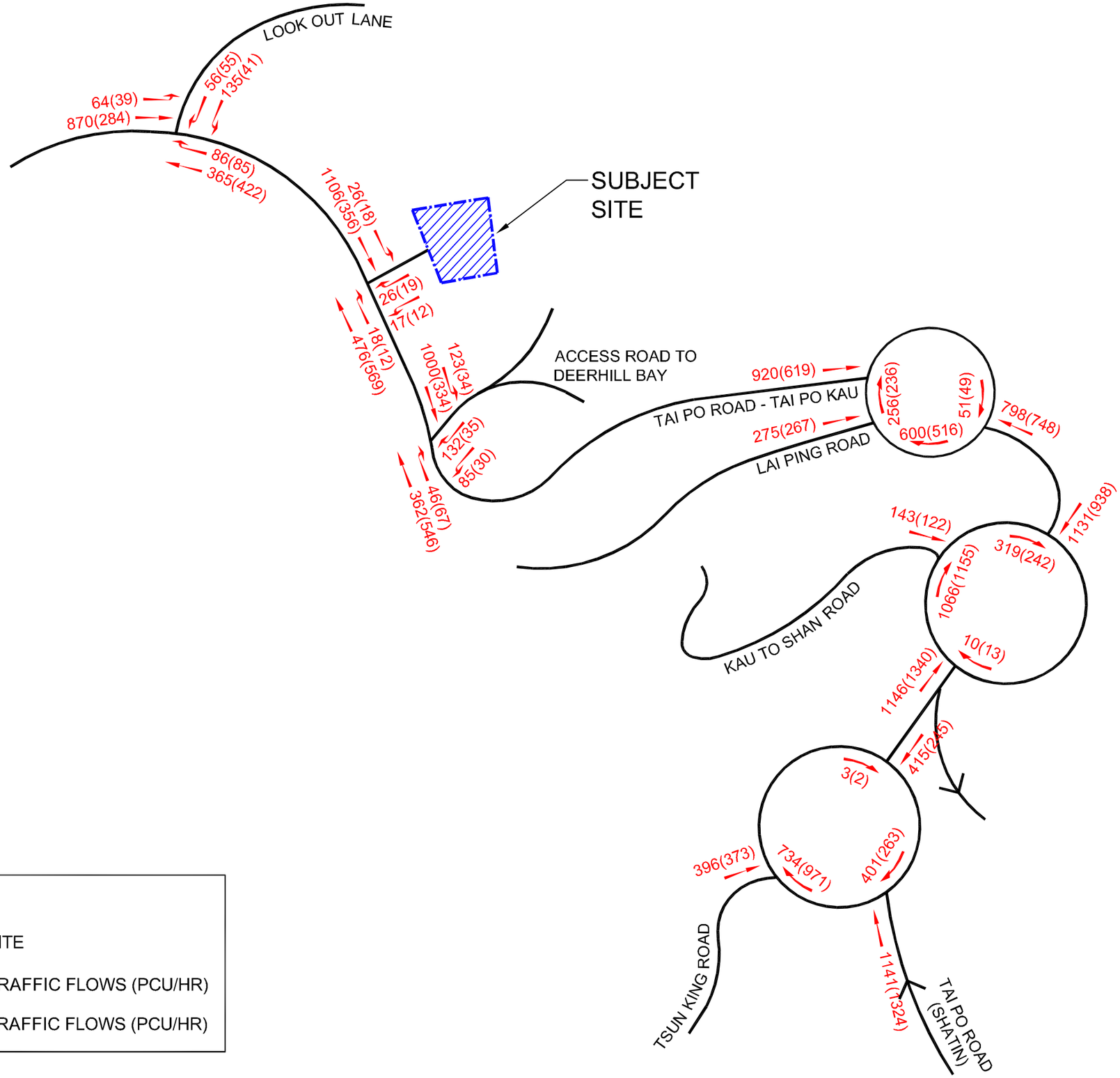

LEGEND:

	SUBJECT SITE
123	AM PEAK TRAFFIC FLOWS (PCU/HR)
(456)	PM PEAK TRAFFIC FLOWS (PCU/HR)

HWSPB 何黃
Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title
TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title
2033 DESIGN TRAFFIC FLOWS

Scale	Date	Figure No.
N. T. S.	FEB 2024	5.2
Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/F52B/2024-02-27	B

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No.	Peak	2033 Reference Flows (Ped/15min)	Flow Rate (Ped/min/m)	Level of Service (LOS)	2033 Design Flows (Ped/15min)	Flow Rate (Ped/min/m)	Level of Service (LOS)
P1	AM	29	2.15	A	147	10.89	A
	PM	16	1.19	A	117	8.67	A
P2	AM	53	3.93	A	171	12.67	A
	PM	27	2.00	A	128	9.48	A
P3	AM	14	0.27	A	132	2.51	A
	PM	15	0.29	A	116	2.21	A
P4	AM	14	0.93	A	132	8.80	A
	PM	15	1.00	A	116	7.73	A

BUS/GMB STOP
(TO SHATIN DIRECTION)

BUS/GMB STOP
(TO TAI PO DIRECTION)

P2

P4

P3

P1

TAI PO ROAD - TAI PO KAU

SUBJECT SITE

LEGEND:

- SUBJECT SITE
- PEDESTRIAN ROUTE
- P1 SURVEYED LOCATION

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Ho Wang SPB Limited

Project Title
TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title
2031 REFERENCE AND DESIGN PEDESTRIAN FLOWS

Scale	Date	Figure No.
1 : 1500	MAY 2022	5.3
Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/F53B/2024-02-15	B

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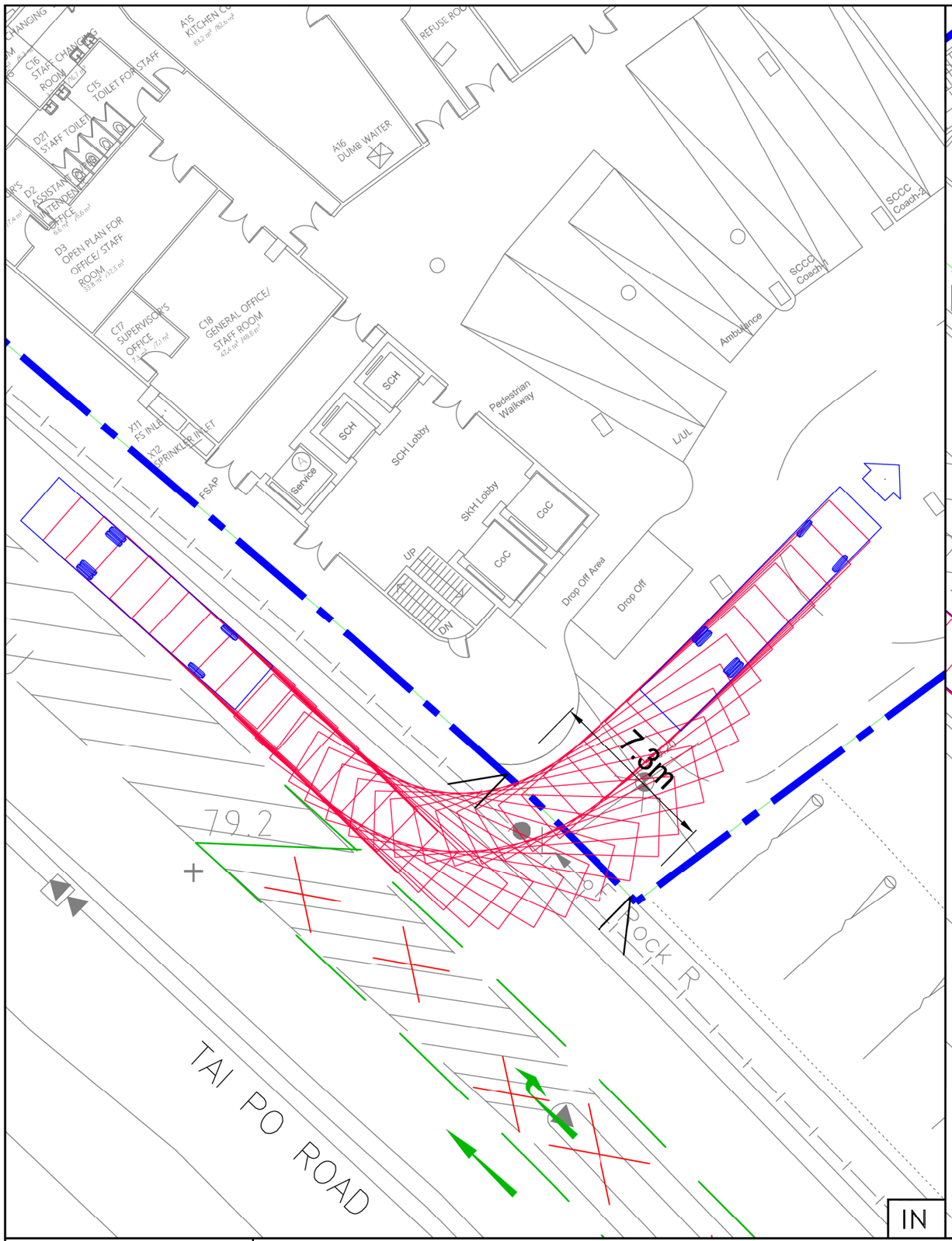
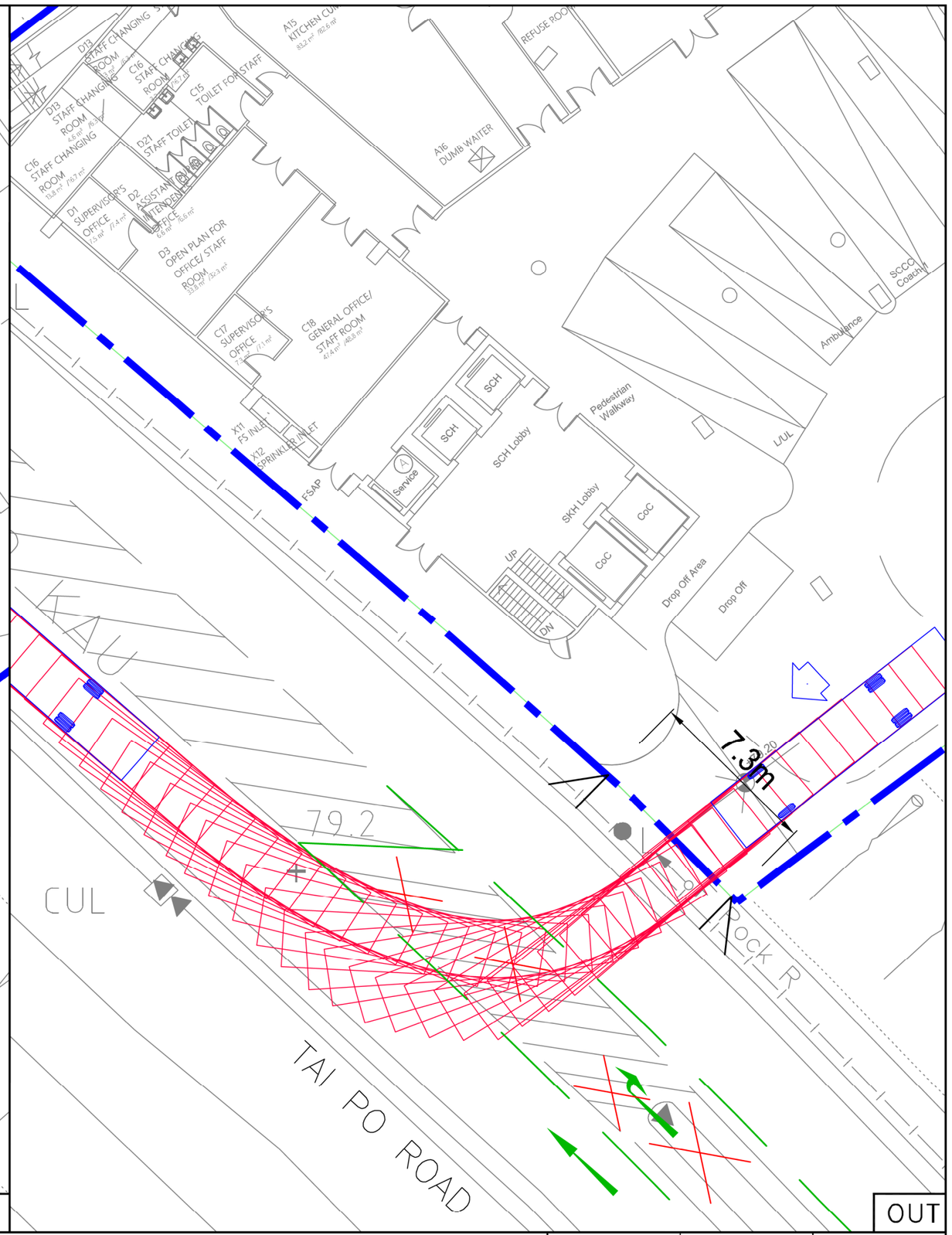
APPENDIX A

Swept Path Analysis





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Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title
TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title
SWEPT PATH ANALYSIS OF A 12m COACH TURNING INTO / OUT OF THE SUBJECT SITE

Scale	Date	Figure No.
1 : 200	FEB 2024	SP1

Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/SP1/2024-02-28	-

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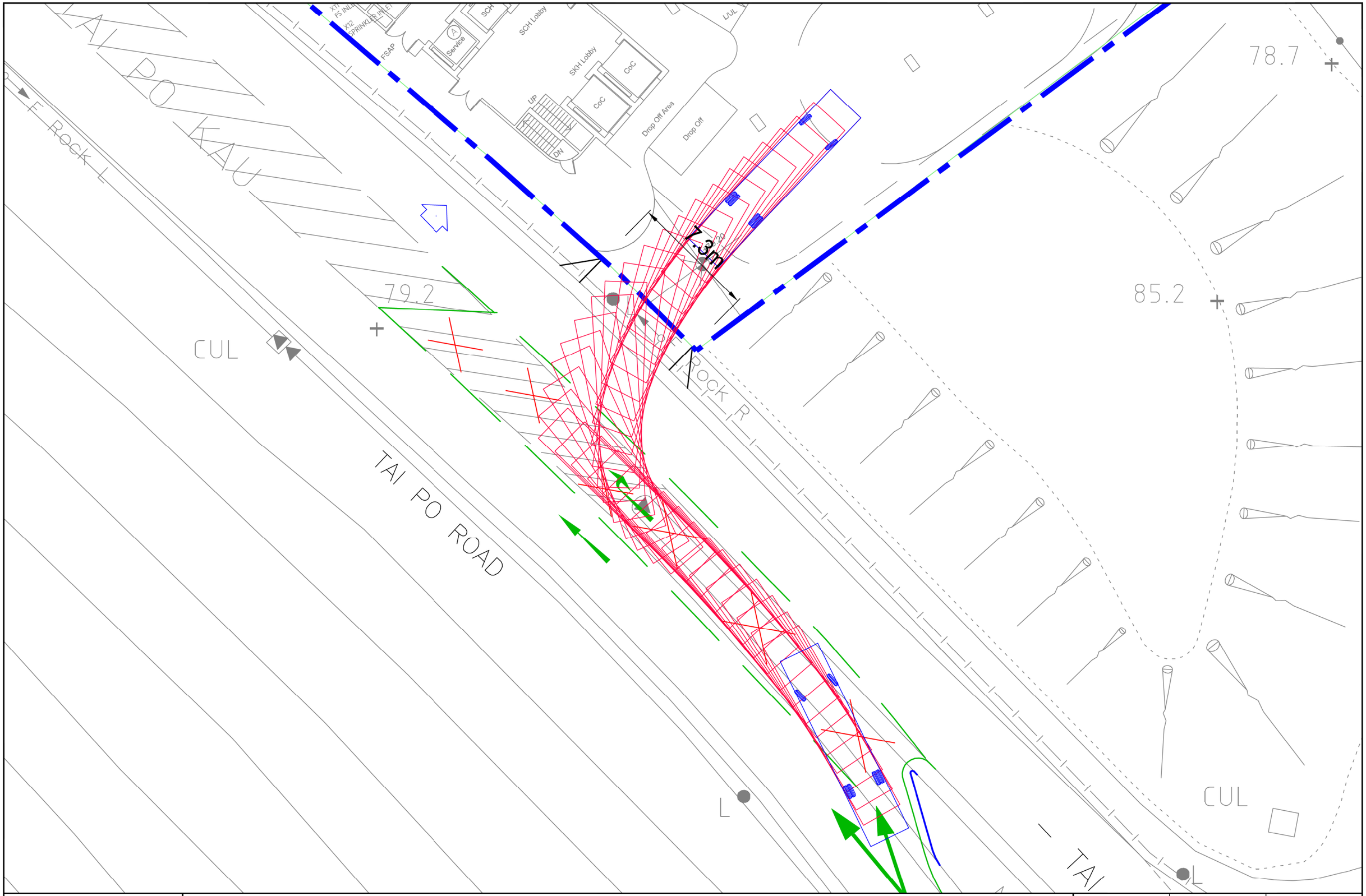

HWSPB 何黃 Traffic & Transportation Consultants Ho Wang SPB Limited	Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: 1 : 200	Date: JUL 2024	Figure No.: SP2
	Figure Title: SWEPT PATH ANALYSIS OF A 12m COACH TURNING INTO THE SUBJECT SITE	Project No.: J1652	CAD Ref.: J1652/TIA1/SP2/2024-07-30	Rev.: –

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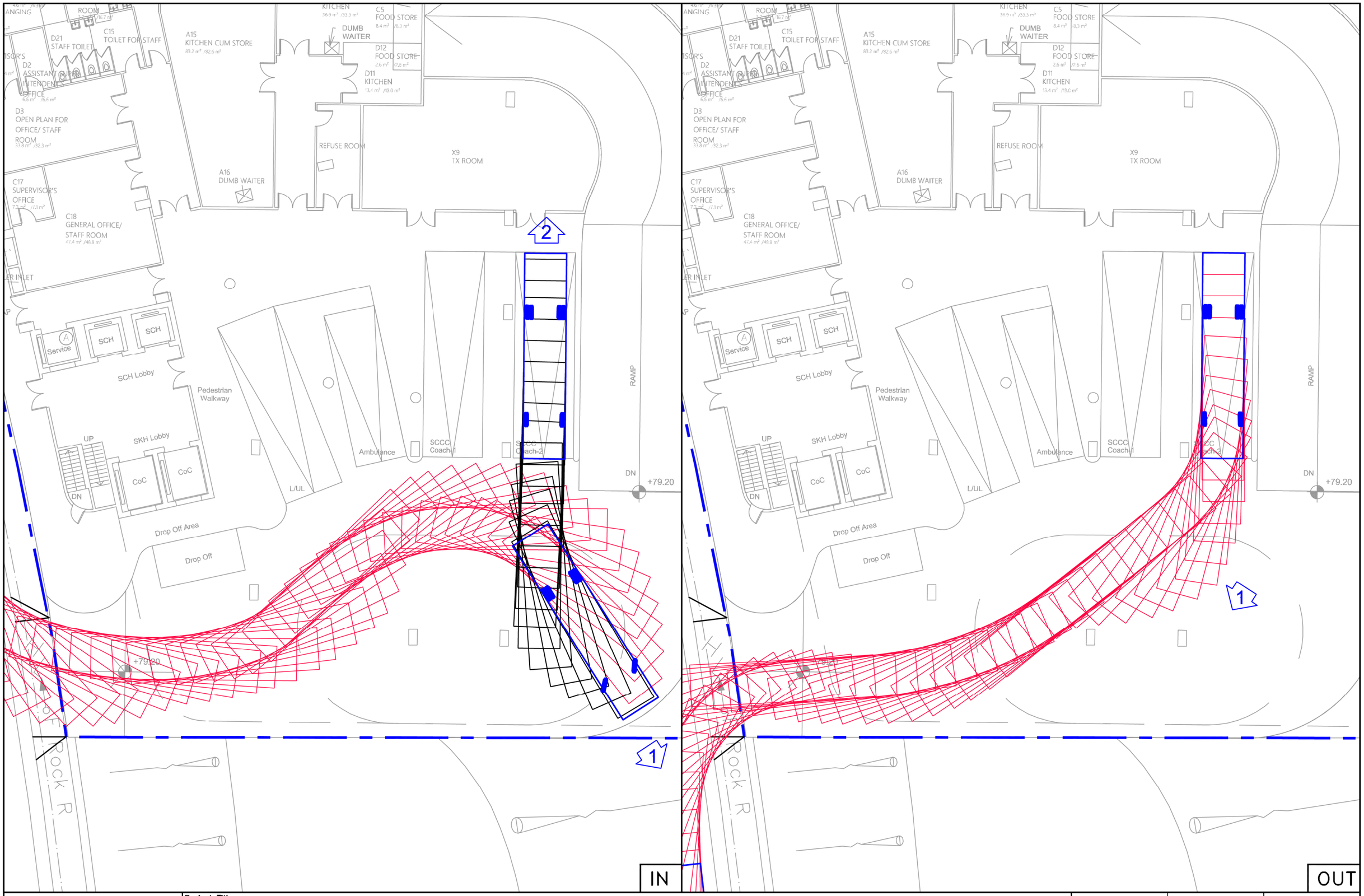

HWSPB 何黃 Traffic & Transportation Consultants Ho Wang SPB Limited	Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: 1 : 200	Date: AUG 2024	Figure No.: SP3
	Figure Title: SWEPT PATH ANALYSIS OF A 12m COACH TURNING INTO / OUT OF THE SUBJECT SITE	Project No.: J1652	CAD Ref.: J1652/TIA1/SP3toSP5/2024-08-14	Rev.: -

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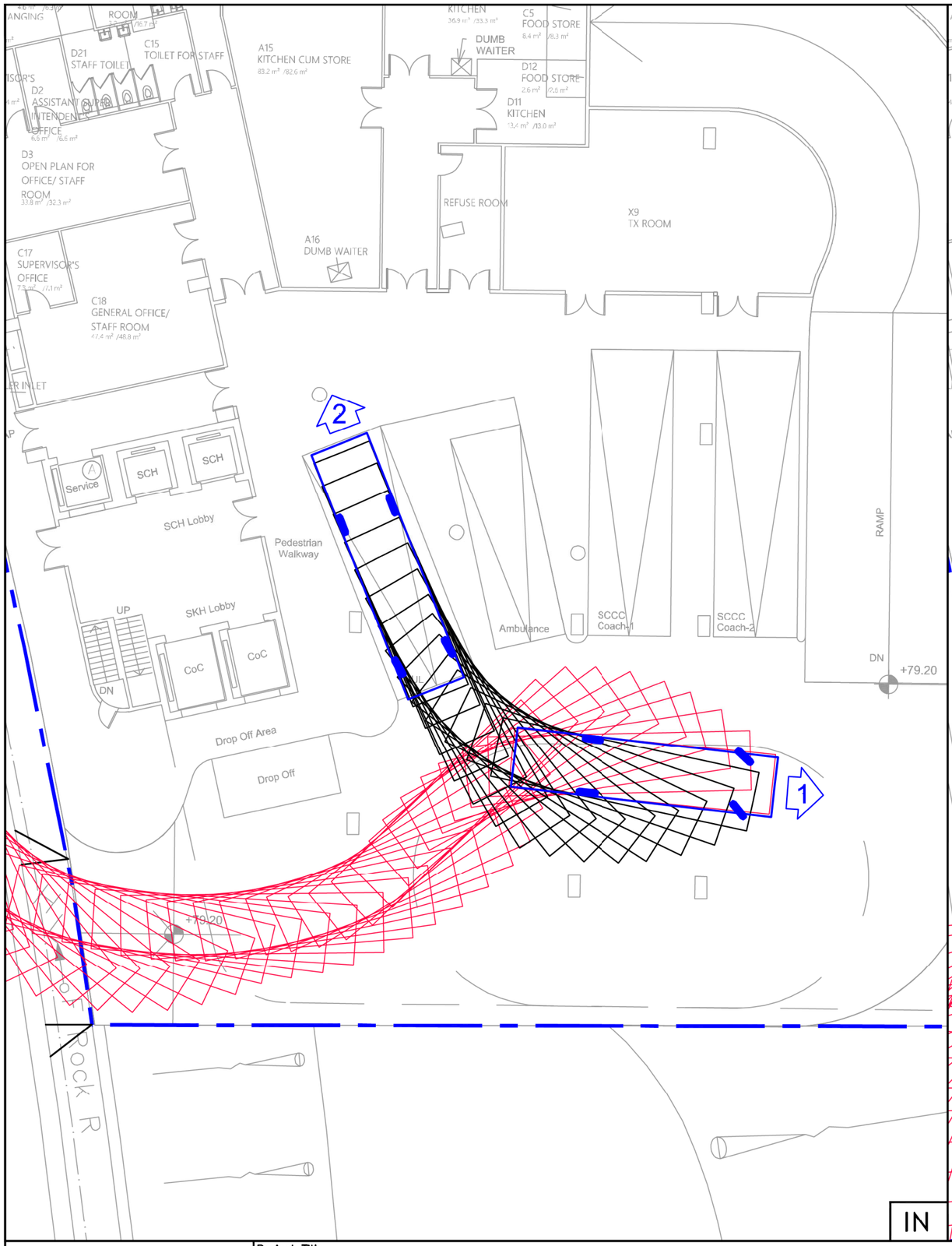

HWSPB 何黃 Traffic & Transportation Consultants Ho Wang SPB Limited	Project Title: TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO	Scale: 1 : 200	Date: AUG 2024	Figure No.: SP4
	Figure Title: SWEPT PATH ANALYSIS OF A 11m HGV TURNING INTO / OUT OF THE SUBJECT SITE	Project No.: J1652	CAD Ref.: J1652/TIA1/SP3toSP5/2024-08-14	Rev.: -

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RAMP
MT-1
MT-2
X10
Main Switch Room
PV-1
PV-2
PV-3
PV-4
PV-5
PV-6
PV-7
D8
LAUNDRY
SCH
SCH
Pedestrian
Walkway
Lift Lobby
+73.90
UP
CoC
CoC
CoC
LB-1
CoC
LB-2
LGV
1
2
X3
Water Meter Cabinet
X1
Electrical Meter
Room
X4
Sewage Treatment
Plant Room
X2
Fresh & Flushing
Water Tank and
Pump Room
X8
TBE Room
X5
Carpark Fan Room
X7
FS Water Tank and
Pump Room
IN
OUT

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Traffic & Transportation Consultants
Ho Wang SPB Limited

Project Title
TECHNICAL FEASIBILITY STUDY (TFS) FOR THE PROPOSED DEVELOPMENT OF HONG KONG SHENG KUNG HUI ST. CHRISTOPHER'S COMPLEX AT THE REMAINING PORTION OF TAXLORD LOT NO. T77 IN D.D.34. TAI PO

Figure Title
SWEPT PATH ANALYSIS OF A 7.8m LIGHT BUS TURNING INTO / OUT OF THE PARKING SPACE

Scale	Date	Figure No.
1 : 200	AUG 2024	SP5

Project No.	CAD Ref.	Rev.
J1652	J1652/TIA1/SP5/2024-08-14	-

APPENDIX B

Traffic Assessment for The Junction of Tai Po Road – Tai Po Kau And Access Road to Deerhill Bay (J1) During 2022 Observed School Peak Period

1. APPENDIX B

1.1 Background

1.1.1 It is observed that the peak hour traffic flow of the junction of Tai Po Road – Tai Po Kau and Access Road to Deerhill Bay (J1) is different from local road network due to traffic generated by nearby schools. An additional traffic review for J1 during school time peak period (AM) is conducted

1.2 Additional Traffic Survey

1.2.1 In order to review the existing traffic conditions, an additional vehicular traffic count survey was carried out on typical school weekday (under normal school traffic condition without zoom classes and without work from home arrangement) in 14 September 2022 (Wed) during the AM (07:30-09:30) and PM (17:00-19:00) peak periods.

1.2.2 The observed peak periods and traffic flows are presented in **Table 1.1** and **Table 1.2** respectively.

Table 1.1 2022 Observed Peak Hour at J1

Period	Local Peak Peak Hour	J1 Peak Hour
AM	08:15 – 09:15	07:45 – 08:45
PM	17:45 – 18:45	17:30 – 18:30

Table 1.2 2022 Observed Vehicular Flow at J1

Period (15 minutes)	Observed Vehicular Flow
0730-0745	262
0745-0800	279
0800-0815	377
0815-0830	364
0830-0845	300
0845-0900	191
0900-0915	202
0915-0930	140
1700-1715	146
1715-1730	155
1730-1745	212
1745-1800	128
1800-1815	184
1815-1830	187
1830-1845	163
1845-1900	139

1.2.3 The survey result shows that the AM peak period at the junction of Tai Po Road – Tai Po Kau and Access Road to Deerhill Bay (J1) is different from the local AM peak period (08:15 – 09:15). It is noted that there is a local traffic surge occurred at around 08:00 – 08:15 and 17:30 – 17:45 hours. A traffic surge factor is derived for conservative assessment as summarized in **Table 1.3**.

Table 1.3 Traffic Surge Factor

Period	Observed Peak Hour Flow at J1 [A]	Observed Peak 15-minutes Flow at J1 during J1 Traffic Surge [B]	Surge Factor = ([B]x4)/[A]
AM	1320 (07:45–08:45)	377 (08:00-08:15)	1.14
PM	711 (17:30-18:30)	212 (17:30-18:30)	1.19

1.2.4 Based on the survey result, a surge factor of 1.14 and 1.19 for AM and PM peak is adopted for conversative analysis.

1.3 Junction Capacity Performance at AM School Peak Hour

1.3.1 Based on the 2022 adjusted peak hour traffic flows, the junction capacity analysis for J1 during the observed school peak period is assessed and the results is presented in **Table 1.3**.

Table 1.4 2022 Junction Operational Performance

No.	Junction	Junction Type	2022 Weekday	
			AM Peak	PM Peak
J1	Tai Po Road – Tai Po Kau / Access Road to Deerhill Bay	Priority (DFC)	0.399	0.093

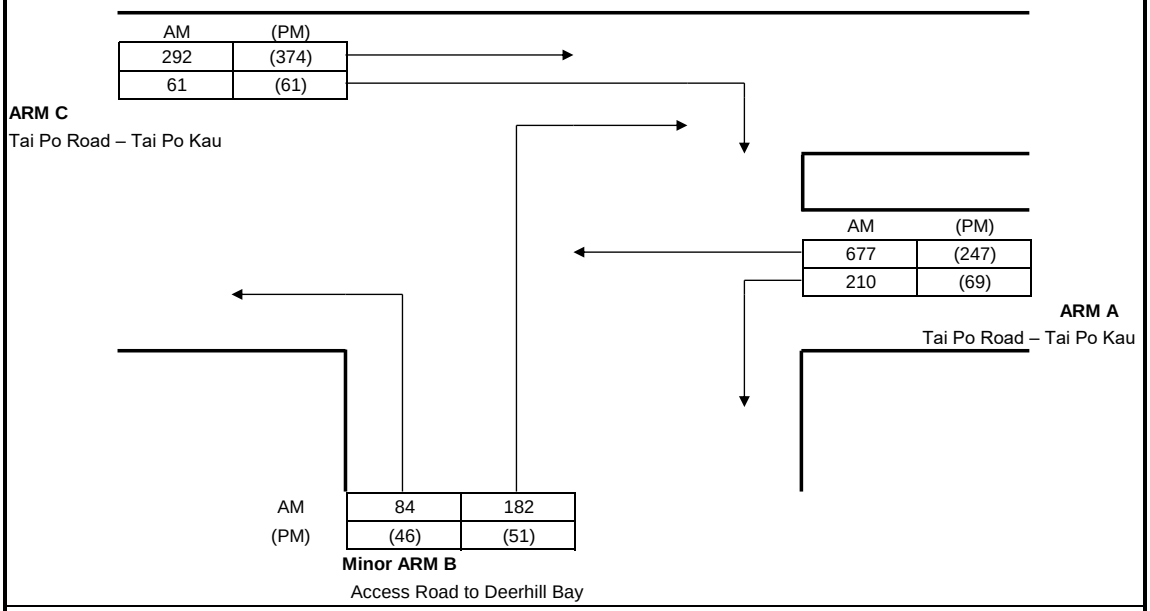
Note: DFC – Design flow/ Capacity ratio for priority junction and roundabout.

1.3.2 The results of the junction performance enclosed show that junction of Tai Po Road – Tai Po Kau/ Access Road to Deerhill Bay (J1) are currently operating with ample junction capacity during school peak period with traffic surge.

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road – Tai Po Kau / Access Road to Deerhill Bay			Ref. No.:	J1
Scheme:	2022 Observed School Peak			Ref. No.:	
Year:	2022	Job No.:	J1652	Rev.:	-
ARM A:	Tai Po Road – Tai Po Kau				
ARM B:	Access Road to Deerhill Bay				
ARM C:	Tai Po Road – Tai Po Kau				



GEOMETRY

Major road width	W	11.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	5.00		w(b-c)	3.30
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	100	Calculated	D	0.98
	Vl(b-a)	100		E	0.93
	Vr(b-c)	80		F	1.06
	Vr(c-b)	50		Y	0.62

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		292	374
	q(c-b)		61	61
	q(a-b)		210	69
	q(a-c)		677	247
	q(b-a)		182	51
	q(b-c)		84	46
	f		0.32	0.47
CAPACITIES	Q(b-a)	1	457	553
	Q(b-c)	1	534	637
	Q(c-b)	1	575	711
	Q(b-ac)	1	479	589
RFC's	b-a		0.399	0.093
	b-c		0.158	0.072
	c-b		0.105	0.086
	b-ac		0.000	0.000
Worst RFC			**0.399**	**0.093**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

Capacity of combined streams
- in accordance with TPDM V2.4

T.P.D.M.V.2.4
Appendix 1

Calculated by:	JL	Date:	Dec-22	Checked by:	TA

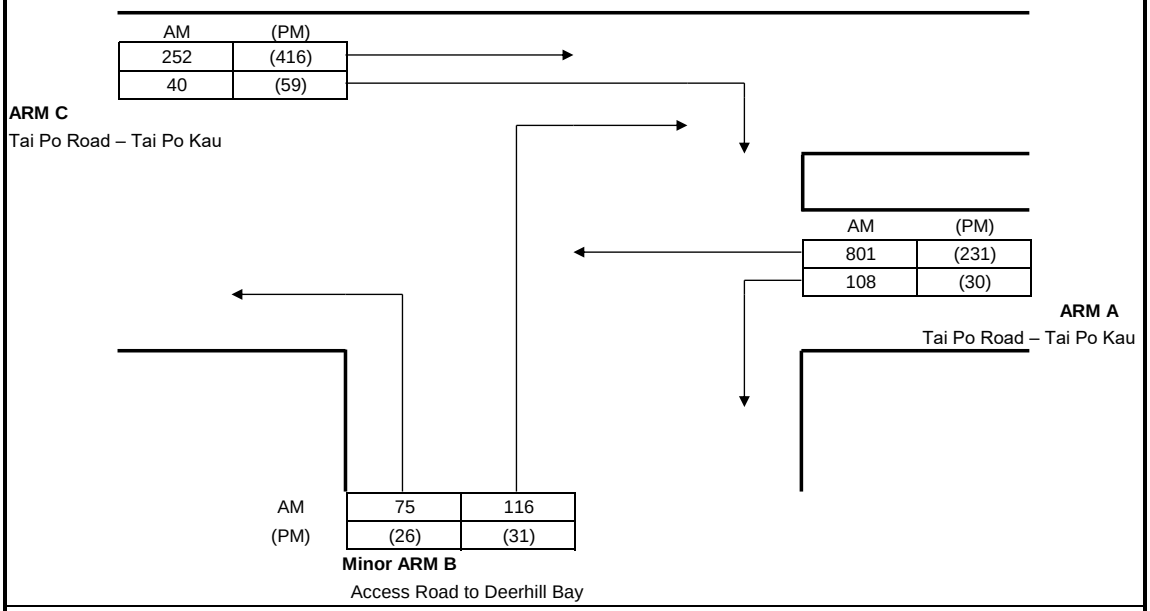
APPENDIX C

JUNCTION PERFORMANCE CALCULATION SHEETS

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road – Tai Po Kau / Access Road to Deerhill Bay			Ref. No.:	J1
Scheme:	2021 Observed			Ref. No.:	
Year:	2021	Job No.:	J1652	Rev.:	I3
ARM A:	Tai Po Road – Tai Po Kau				
ARM B:	Access Road to Deerhill Bay				
ARM C:	Tai Po Road – Tai Po Kau				



GEOMETRY

Major road width	W	11.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	5.00		w(b-c)	3.30
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	100	Calculated	D	0.98
	Vl(b-a)	100		E	0.93
	Vr(b-c)	80		F	1.06
	Vr(c-b)	50		Y	0.62

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		252	416
	q(c-b)		40	59
	q(a-b)		108	30
	q(a-c)		801	231
	q(b-a)		116	31
	q(b-c)		75	26
	f		0.39	0.46
CAPACITIES	Q(b-a)	1	450	555
	Q(b-c)	1	517	643
	Q(c-b)	1	570	724
	Q(b-ac)	1	474	592
RFC's	b-a		0.258	0.056
	b-c		0.145	0.040
	c-b		0.070	0.081
	b-ac		0.000	0.000
Worst RFC			**0.258**	**0.081**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

Capacity of combined streams
- in accordance with TPDM V2.4

T.P.D.M.V.2.4
Appendix 1

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

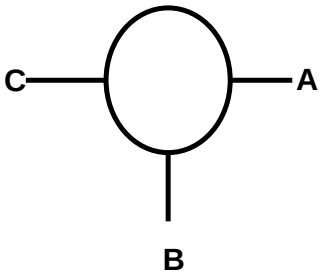
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po		
Junction:	Tai Po Road – Tai Po Kau / Kau To Shan Road	Ref. No.:	J2
Scheme:	2021 Observed	Ref. No.:	
Year:	2021	Job No.: J1652	Rev.: -

AM PM

ARM A: Tai Po Road – Tai Po Kau
ARM B: Kau To Shan Road
ARM C: Tai Po Road – Tai Po Kau



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	6.50	7.80	16	9	36	50	0.13
B	4.80	8.20	18	75	36	46	0.30
C	5.20	8.00	8	53	36	50	0.56

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	9	944
B	0	0	0	873	125
C	0	0	0	280	912

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	11	1106
B	0	0	0	943	107
C	0	0	0	213	768

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.87	7.53	0.09	2282	1.46	0.77	1981	1980	0.48	0.56
B	0.98	6.92	0.09	2096	1.46	0.73	1430	1380	0.09	0.08
C	0.96	6.52	0.09	1976	1.46	0.71	1709	1755	0.53	0.44

Critical Arm: **C** **A**
RFC: **0.53** **0.56**
AM **PM**

- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

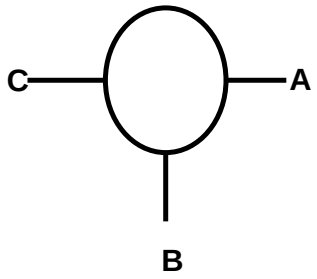
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title: TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po			
Junction: Tai Po Road – Sha Tin / Tsun King Road		Ref. No.:	J3
Scheme: 2021 Observed		Ref. No.:	
Year: 2021	Job No.: J1652	Rev.:	-

AM PM

ARM A: Tai Po Road – Sha Tin
ARM B: Tai Po Road – Sha Tin
ARM C: Tsun King Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.30	7.60	13.5	40	38	40	0.51
B	7.60	9.40	9.6	12	38	60	0.30
C	7.80	8.20	1	100	38	30	0.64

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	3	364
B	0	0	0	352	944
C	0	0	0	587	343

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	2	215
B	0	0	0	231	1095
C	0	0	0	786	324

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	5.43	0.11	1645	1.45	0.64	1626	1627	0.22	0.13
B	0.86	8.73	0.11	2644	1.45	0.84	2028	2116	0.47	0.52
C	1.04	7.98	0.11	2417	1.45	0.79	2029	1866	0.17	0.17

Critical Arm: **B** **B**

RFC: **0.47** **0.52**

AM **PM**

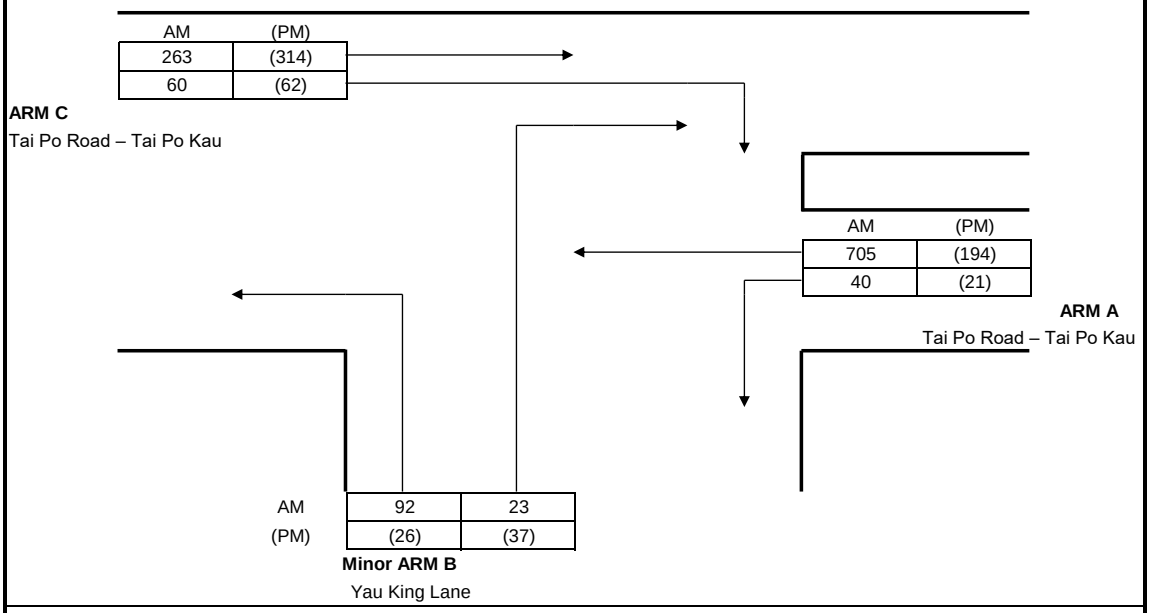
- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road – Tai Po Kau / Yau King Lane			Ref. No.:	J4
Scheme:	2021 Observed			Ref. No.:	
Year:	2021	Job No.:	J1652	Rev.:	I3
ARM A:	Tai Po Road – Tai Po Kau				
ARM B:	Yau King Lane				
ARM C:	Tai Po Road – Tai Po Kau				



GEOMETRY

Major road width	W	9.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	1.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	70	Calculated	D	0.90
	Vl(b-a)	70		E	0.95
	Vr(b-c)	70		F	0.92
	Vr(c-b)	40		Y	0.69

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		263	314
	q(c-b)		60	62
	q(a-b)		40	21
	q(a-c)		705	194
	q(b-a)		23	37
	q(b-c)		92	26
	f		0.80	0.41
CAPACITIES	Q(b-a)	1	359	469
	Q(b-c)	1	536	660
	Q(c-b)	1	515	638
	Q(b-ac)	1	488	531
RFC's	b-a		0.064	0.080
	b-c		0.172	0.039
	c-b		0.116	0.097
	b-ac		0.236	0.119
Worst RFC			**0.236**	**0.119**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

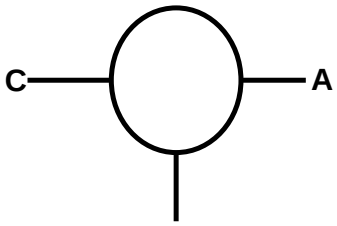
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	Consultancy Services for New Teaching Research Complex in Tai Po Area 39 - The Chinese University of Hong Kong		
Junction:	Tai Po Road - Ma Liu Shui / Lai Ping Road	Ref. No.:	J5
Scheme:	2024 Observed	Ref. No.:	
Year:	2024	Job No.: J1652	Rev.: I3

AM PM

ARM A: Tai Po Road - Ma Liu Shui
ARM B: Lai Ping Road
ARM C: Tai Po Road - Ma Liu Shui



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.30	4.20	8	30	30	40	0.18
B	4.00	4.20	2	20	30	40	0.16
C	4.50	4.60	2	100	30	25	0.08

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	2	182	455	45	639
B	223	0	18	465	241
C	682	37	8	225	727

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	6	226	354	43	586
B	201	0	33	383	234
C	445	20	23	207	488

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.98	3.96	0.05	1200	1.48	0.56	1154	1155	0.55	0.51
B	0.97	4.15	0.05	1258	1.48	0.57	960	1004	0.25	0.23
C	1.06	4.59	0.05	1390	1.48	0.59	1327	1338	0.55	0.36

Critical Arm: **A** **A**
RFC: **0.55** **0.51**
AM **PM**

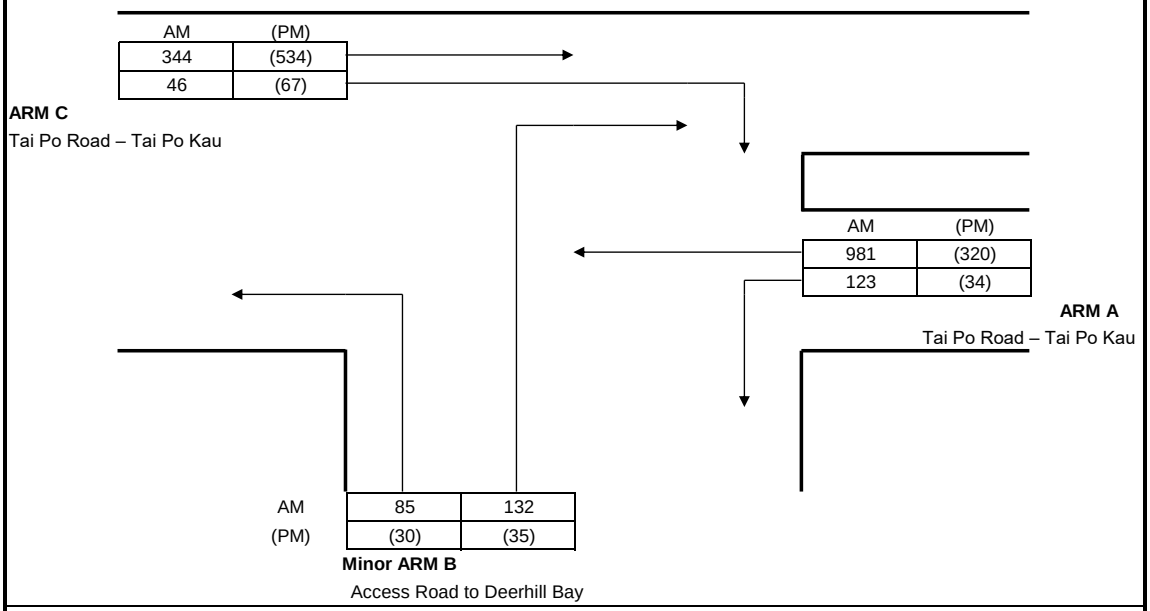
- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road – Tai Po Kau / Access Road to Deerhill Bay			Ref. No.:	J1R
Scheme:	2033 Reference			Ref. No.:	
Year:	2033	Job No.:	J1652	Rev.:	I3
ARM A:	Tai Po Road – Tai Po Kau				
ARM B:	Access Road to Deerhill Bay				
ARM C:	Tai Po Road – Tai Po Kau				



GEOMETRY

Major road width	W	11.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	5.00		w(b-c)	3.30
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	100	Calculated	D	0.98
	Vl(b-a)	100		E	0.93
	Vr(b-c)	80		F	1.06
	Vr(c-b)	50		Y	0.62

ANALYSIS

			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		344	534
	q(c-b)		46	67
	q(a-b)		123	34
	q(a-c)		981	320
	q(b-a)		132	35
	q(b-c)		85	30
	f		0.39	0.46
		Factor		
CAPACITIES	Q(b-a)	1	394	516
	Q(b-c)	1	478	624
	Q(c-b)	1	523	702
	Q(b-ac)	1	423	561
RFC's	b-a		0.335	0.068
	b-c		0.178	0.048
	c-b		0.088	0.095
	b-ac		0.000	0.000
Worst RFC			**0.335**	**0.095**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

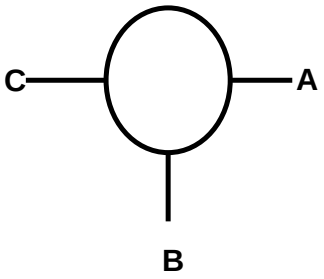
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title: TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po			
Junction: Tai Po Road – Tai Po Kau / Kau To Shan Road		Ref. No.:	J2R
Scheme: 2033 Reference		Ref. No.:	
Year: 2033	Job No.: J1652	Rev.:	-

AM PM

ARM A: Tai Po Road – Tai Po Kau
ARM B: Kau To Shan Road
ARM C: Tai Po Road – Tai Po Kau



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	6.50	7.80	16	9	36	50	0.13
B	4.80	8.20	18	75	36	46	0.30
C	5.20	8.00	8	53	36	50	0.56

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	10	1128
B	0	0	0	1048	143
C	0	0	0	319	1112

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	13	1328
B	0	0	0	1143	122
C	0	0	0	242	924

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.87	7.53	0.09	2282	1.46	0.77	1981	1979	0.57	0.67
B	0.98	6.92	0.09	2096	1.46	0.73	1305	1237	0.11	0.10
C	0.96	6.52	0.09	1976	1.46	0.71	1682	1735	0.66	0.53

Critical Arm:	**C**	**A**
RFC:	**0.66**	**0.67**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

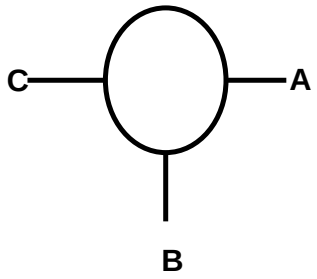
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title: TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po			
Junction: Tai Po Road – Sha Tin / Tsun King Road		Ref. No.:	J3R
Scheme: 2033 Reference		Ref. No.:	
Year: 2033	Job No.: J1652	Rev.:	-

AM PM

ARM A: Tai Po Road – Sha Tin
ARM B: Tai Po Road – Sha Tin
ARM C: Tsun King Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.30	7.60	13.5	40	38	40	0.51
B	7.60	9.40	9.6	12	38	60	0.30
C	7.80	8.20	1	100	38	30	0.64

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	3	415
B	0	0	0	401	1128
C	0	0	0	721	391

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	2	245
B	0	0	0	263	1316
C	0	0	0	963	369

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	5.43	0.11	1645	1.45	0.64	1626	1627	0.26	0.15
B	0.86	8.73	0.11	2644	1.45	0.84	1993	2092	0.57	0.63
C	1.04	7.98	0.11	2417	1.45	0.79	1919	1720	0.20	0.21

Critical Arm: **B** **B**

RFC: **0.57** **0.63**

AM **PM**

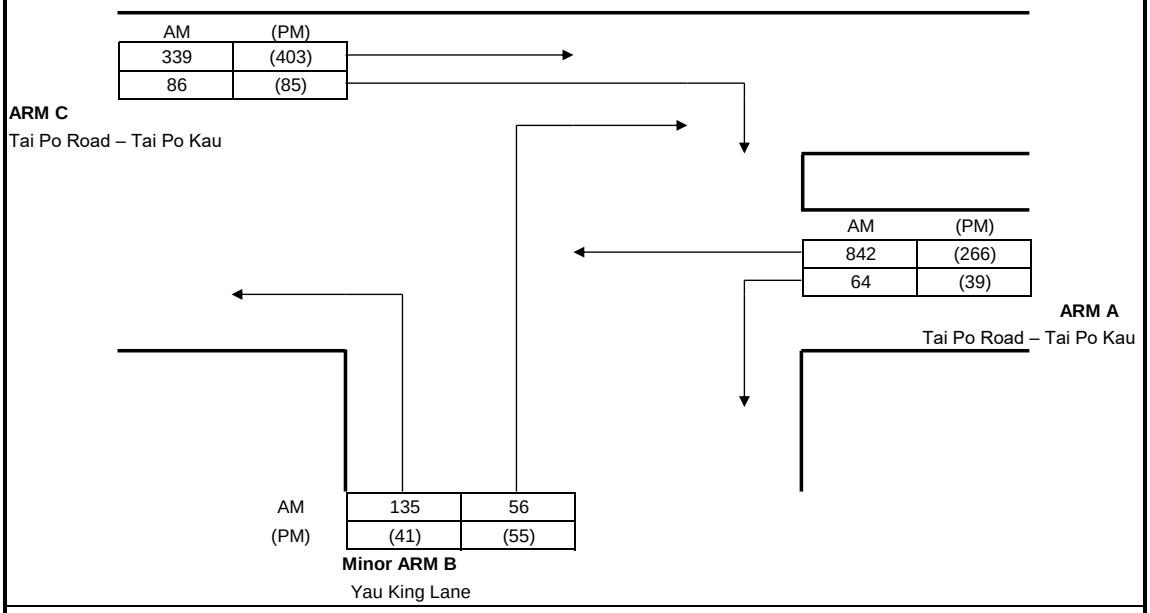
- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road – Tai Po Kau / Yau King Lane			Ref. No.:	J4R
Scheme:	2033 Reference			Ref. No.:	
Year:	2033	Job No.:	J1652	Rev.:	I3
ARM A:	Tai Po Road – Tai Po Kau				
ARM B:	Yau King Lane				
ARM C:	Tai Po Road – Tai Po Kau				



GEOMETRY

Major road width	W	9.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	1.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	70	Calculated	D	0.90
	Vl(b-a)	70		E	0.95
	Vr(b-c)	70		F	0.92
	Vr(c-b)	40		Y	0.69

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		339	403
	q(c-b)		86	85
	q(a-b)		64	39
	q(a-c)		842	266
	q(b-a)		56	55
	q(b-c)		135	41
	f		0.71	0.43
CAPACITIES	Q(b-a)	1	307	431
	Q(b-c)	1	501	641
	Q(c-b)	1	478	617
	Q(b-ac)	1	423	501
RFC's	b-a		0.182	0.128
	b-c		0.269	0.064
	c-b		0.180	0.138
	b-ac		0.452	0.192
Worst RFC			**0.452**	**0.192**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

Capacity of combined streams
- in accordance with TPDM V2.4

T.P.D.M.V.2.4
Appendix 1

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

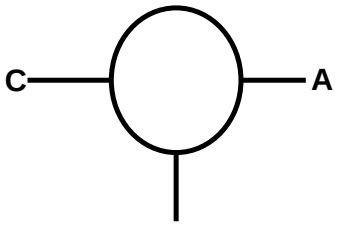
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	Consultancy Services for New Teaching Research Complex in Tai Po Area 39 - The Chinese University of Hong Kong		
Junction:	Tai Po Road - Ma Liu Shui / Lai Ping Road	Ref. No.:	J5R
Scheme:	2033 Reference	Ref. No.:	
Year:	2033	Job No.: J1652	Rev.: I3

AM PM

ARM A: Tai Po Road - Ma Liu Shui
ARM B: Lai Ping Road
ARM C: Tai Po Road - Ma Liu Shui



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.30	4.20	8	30	30	40	0.18
B	4.00	4.20	2	20	30	40	0.16
C	4.50	4.60	2	100	30	25	0.08

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	2	207	571	51	780
B	254	0	21	582	275
C	850	42	9	256	901

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	7	258	471	49	736
B	229	0	38	504	267
C	556	23	26	236	605

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.98	3.96	0.05	1200	1.48	0.56	1151	1152	0.68	0.64
B	0.97	4.15	0.05	1258	1.48	0.57	895	938	0.31	0.28
C	1.06	4.59	0.05	1390	1.48	0.59	1307	1320	0.69	0.46

Critical Arm:	**C**	**A**
RFC:	**0.69**	**0.64**
	AM	**PM**

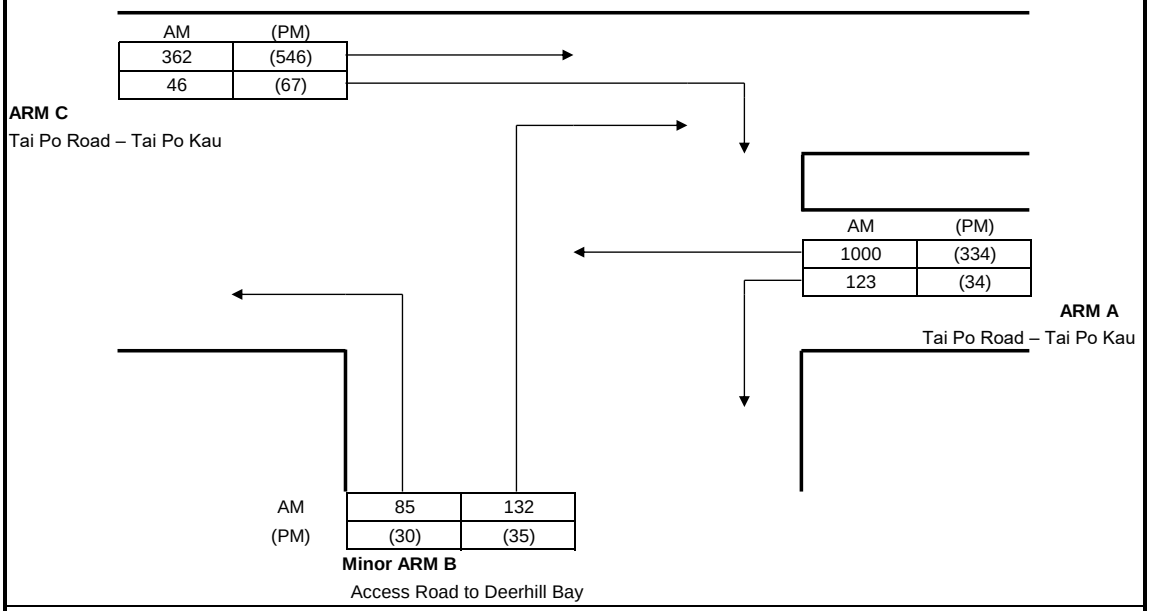
- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road – Tai Po Kau / Access Road to Deerhill Bay			Ref. No.:	J1D
Scheme:	2033 Design			Ref. No.:	
Year:	2033	Job No.:	J1652	Rev.:	I3
ARM A:	Tai Po Road – Tai Po Kau				
ARM B:	Access Road to Deerhill Bay				
ARM C:	Tai Po Road – Tai Po Kau				



GEOMETRY

Major road width	W	11.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	5.00		w(b-c)	3.30
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	100	Calculated	D	0.98
	Vl(b-a)	100		E	0.93
	Vr(b-c)	80		F	1.06
	Vr(c-b)	50		Y	0.62

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		362	546
	q(c-b)		46	67
	q(a-b)		123	34
	q(a-c)		1000	334
	q(b-a)		132	35
	q(b-c)		85	30
	f		0.39	0.46
CAPACITIES	Q(b-a)	1	388	511
	Q(b-c)	1	474	621
	Q(c-b)	1	519	699
	Q(b-ac)	1	418	557
RFC's	b-a		0.340	0.068
	b-c		0.179	0.048
	c-b		0.089	0.096
	b-ac		0.000	0.000
Worst RFC			**0.340**	**0.096**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

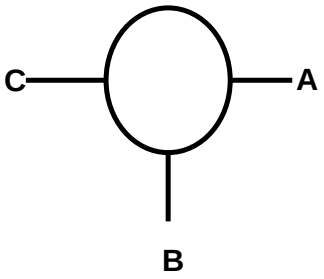
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title: TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po			
Junction: Tai Po Road – Tai Po Kau / Kau To Shan Road		Ref. No.:	J2D
Scheme: 2033 Design		Ref. No.:	
Year: 2033	Job No.: J1652	Rev.:	-

AM PM

ARM A: Tai Po Road – Tai Po Kau
ARM B: Kau To Shan Road
ARM C: Tai Po Road – Tai Po Kau



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	6.50	7.80	16	9	36	50	0.13
B	4.80	8.20	18	75	36	46	0.30
C	5.20	8.00	8	53	36	50	0.56

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	10	1146
B	0	0	0	1066	143
C	0	0	0	319	1131

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	13	1340
B	0	0	0	1155	122
C	0	0	0	242	938

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.87	7.53	0.09	2282	1.46	0.77	1981	1979	0.58	0.68
B	0.98	6.92	0.09	2096	1.46	0.73	1292	1229	0.11	0.10
C	0.96	6.52	0.09	1976	1.46	0.71	1682	1735	0.67	0.54

Critical Arm:	**C**	**A**
RFC:	**0.67**	**0.68**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

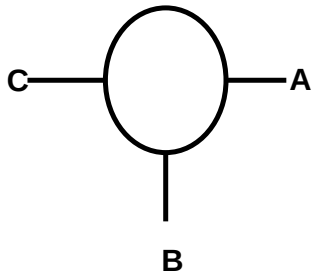
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title: TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po			
Junction: Tai Po Road – Sha Tin / Tsun King Road		Ref. No.:	J3D
Scheme: 2033 Design		Ref. No.:	
Year: 2033	Job No.: J1652	Rev.:	-

AM PM

ARM A: Tai Po Road – Sha Tin
ARM B: Tai Po Road – Sha Tin
ARM C: Tsun King Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.30	7.60	13.5	40	38	40	0.51
B	7.60	9.40	9.6	12	38	60	0.30
C	7.80	8.20	1	100	38	30	0.64

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	3	415
B	0	0	0	401	1141
C	0	0	0	734	396

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	0	0	2	245
B	0	0	0	263	1324
C	0	0	0	971	373

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	5.43	0.11	1645	1.45	0.64	1626	1627	0.26	0.15
B	0.86	8.73	0.11	2644	1.45	0.84	1993	2092	0.57	0.63
C	1.04	7.98	0.11	2417	1.45	0.79	1908	1714	0.21	0.22

Critical Arm: **B** **B**

RFC: **0.57** **0.63**

AM **PM**

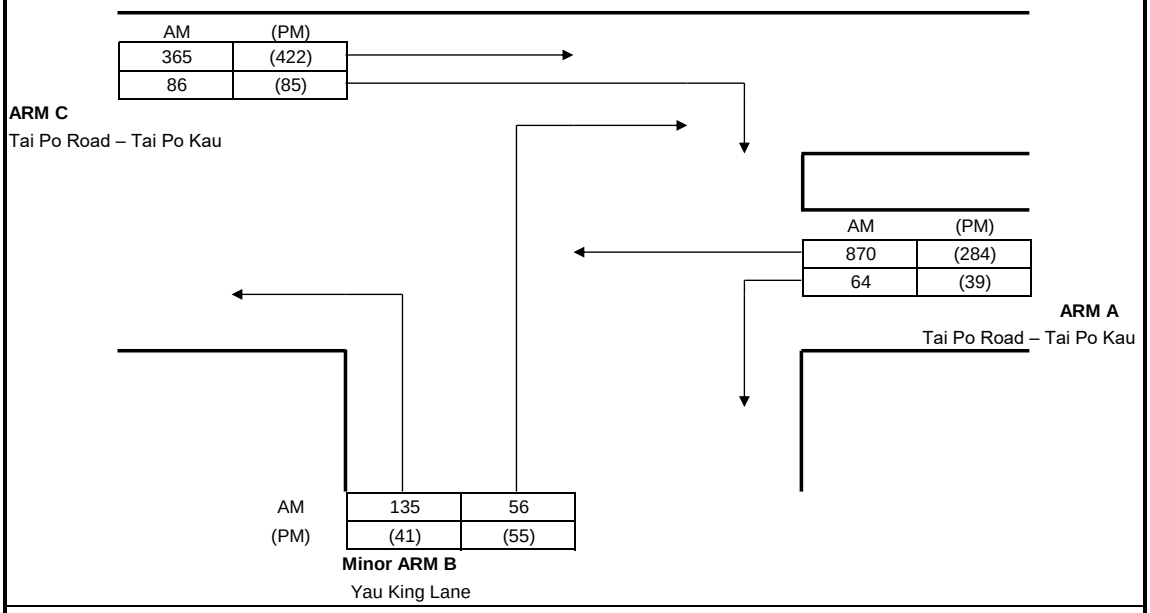
- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road – Tai Po Kau / Yau King Lane			Ref. No.:	J4D
Scheme:	2033 Design			Ref. No.:	
Year:	2033	Job No.:	J1652	Rev.:	I3
ARM A:	Tai Po Road – Tai Po Kau				
ARM B:	Yau King Lane				
ARM C:	Tai Po Road – Tai Po Kau				



GEOMETRY

Major road width	W	9.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	1.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	70	Calculated	D	0.90
	Vl(b-a)	70		E	0.95
	Vr(b-c)	70		F	0.92
	Vr(c-b)	40		Y	0.69

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		365	422
	q(c-b)		86	85
	q(a-b)		64	39
	q(a-c)		870	284
	q(b-a)		56	55
	q(b-c)		135	41
	f		0.71	0.43
CAPACITIES	Q(b-a)	1	297	424
	Q(b-c)	1	495	637
	Q(c-b)	1	472	613
	Q(b-ac)	1	414	494
RFC's	b-a		0.189	0.130
	b-c		0.273	0.064
	c-b		0.182	0.139
	b-ac		0.461	0.194
Worst RFC			**0.461**	**0.194**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

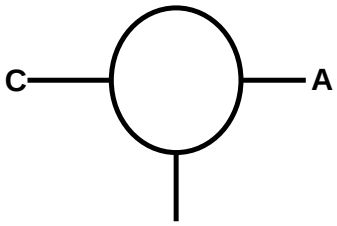
Simplified Roundabout Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	Consultancy Services for New Teaching Research Complex in Tai Po Area 39 - The Chinese University of Hong Kong		
Junction:	Tai Po Road - Ma Liu Shui / Lai Ping Road	Ref. No.:	J5D
Scheme:	2033 Design	Ref. No.:	
Year:	2033	Job No.: J1652	Rev.: I3

AM PM

ARM A: Tai Po Road - Ma Liu Shui
ARM B: Lai Ping Road
ARM C: Tai Po Road - Ma Liu Shui



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.30	4.20	8	30	30	40	0.18
B	4.00	4.20	2	20	30	40	0.16
C	4.50	4.60	2	100	30	25	0.08

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	2	207	589	51	798
B	254	0	21	600	275
C	868.5	42	9	256	919.5

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	7	258	483	49	748
B	229	0	38	516	267
C	569.9	23	26	236	618.9

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.98	3.96	0.05	1200	1.48	0.56	1151	1152	0.69	0.65
B	0.97	4.15	0.05	1258	1.48	0.57	886	932	0.31	0.29
C	1.06	4.59	0.05	1390	1.48	0.59	1307	1320	0.70	0.47

Critical Arm:	**C**	**A**
RFC:	**0.70**	**0.65**
	AM	**PM**

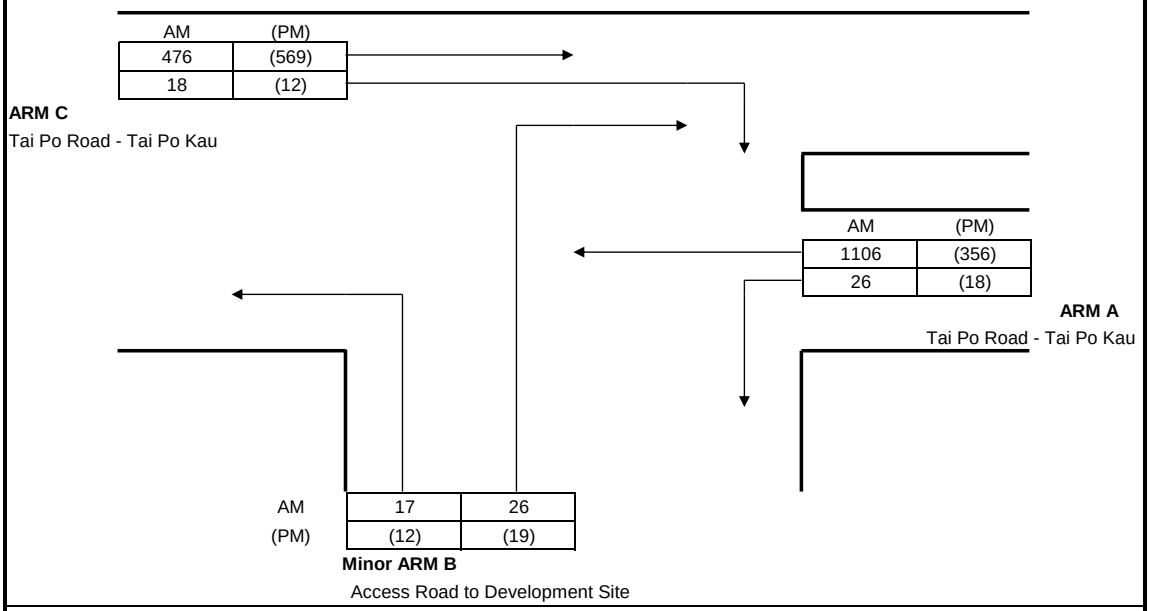
- In accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

Simplified Priority Junction Capacity Calculation

Ho Wang SPB Limited
Traffic & Transportation Consultants

Job Title:	TFS for the Proposed Development of Hong Kong Sheung Kung Hui St. Christoper's in Tai Po				
Junction:	Tai Po Road - Tai Po Kau / Access Road to Development Site			Ref. No.:	J6D
Scheme:	2033 Design			Ref. No.:	
Year:	2033	Job No.:	J1652	Rev.:	I3
ARM A:	Tai Po Road - Tai Po Kau				
ARM B:	Access Road to Development Site				
ARM C:	Tai Po Road - Tai Po Kau				



GEOMETRY

Major road width	W	9.65	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	1.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	100	Calculated	D	0.89
	Vl(b-a)	100		E	0.92
	Vr(b-c)	100		F	0.92
	Vr(c-b)	50		Y	0.67

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		476	569
	q(c-b)		18	12
	q(a-b)		26	18
	q(a-c)		1106	356
	q(b-a)		26	19
	q(b-c)		17	12
	f		0.40	0.40
CAPACITIES	Q(b-a)	1	260	413
	Q(b-c)	1	437	606
	Q(c-b)	1	434	604
	Q(b-ac)	1	310	473
RFC's	b-a		0.100	0.045
	b-c		0.039	0.020
	c-b		0.041	0.020
	b-ac		0.139	0.066
Worst RFC			**0.139**	**0.066**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	JL	Date:	Feb-24	Checked by:	TA

APPENDIX D

DEFINITIONS OF LEVEL OF SERVICE

Description of Level-of-Service (LOS)
(Reference:HCM 2000)

LOS	Flow Rate (ped/min/m)	Description
A	≤ 16	Pedestrians basically move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.
B	16 - 23	Sufficient space is provided for pedestrians to freely select their walking speeds, to bypass other pedestrians and to avoid crossing conflicts with others. At this level, pedestrians begin to be aware of other pedestrians and to respond to their presence in the selection of walking paths.
C	23 - 33	Sufficient space is available to select normal walking speeds and to bypass other pedestrians primarily in unidirectional stream. Where reverse direction or crossing movement exist, minor conflicts will occur, and speed and volume will be somewhat lower.
D	33 - 49	Freedom to select individual walking speeds and bypass other pedestrians is restricted. Where crossing or reverse-flow movements exist, the probability of conflicts is high and its avoidance requires changes of speeds and position. The LOS provides reasonable fluid flow; however considerable friction and interactions between pedestrians are likely to occur.
E	49 - 75	Virtually, all pedestrians would have their normal walking speeds restricted. At the lower range of this LOS, forward movement is possible only by shuffling. Space is insufficient to pass over slower pedestrians. Cross- and reverse-movement are possible only with extreme difficulties. Design volumes approach the limit of walking capacity with resulting stoppages and interruptions to flow.
F	> 75	Walking speeds are severely restricted. Forward progress is made only by shuffling. There are frequent and unavoidable conflicts with other pedestrians. Cross- and reverse-movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristics of queued pedestrians than of moving pedestrian streams.

APPENDIX E

SITE SURVEY PHOTO RECORDS

2021.11.22 SURVEY PERIOD – AM

07:30

07:45

08:00

08:15

2021.11.22 SURVEY PERIOD – AM

08:30

08:45

09:00

09:15

2021.11.22 SURVEY PERIOD – AM

09:30

2021.11.22 SURVEY PERIOD – PM

17:00

17:15

17:30

17:45

2021.11.22 SURVEY PERIOD – PM

18:00

18:15

18:30

18:45

2021.11.22 SURVEY PERIOD – PM

19:00

ANNEX A

RESPONSE TO TRANSPORT DEPARTMENT'S COMMENT

Proposed Hong Kong Sheng Kung Hui St. Christopher's Complex at the Remaining Portion of Taxlord Lot no. T77 in D.D. 34, Tai Po

Technical Feasibility Study and TIA - Response to Comments

Transport Department's Comment via email dated 19/7/2024	Responses to Comments
Please find our comments to the TIA below:	
R-to-C	
1. R-to-C 25: The swept path for vehicles turning from Tai Po Road – Tai Po Kau right turn into the developments is missing.	Noted. The swept path analysis of a 12m coach right turn into the development from Tai Po Road – Tai Po Kau northbound is presented in **Figure SP2**. The analysis demonstrated that there is no manoeuvring problem for the ingress of large vehicle from Tai Po Road -Tai Po Kau northbound.
2. From fig. 2.3 and 2.4, columns are present in the driveway which may render vehicles unable to maneuver into / out of the parking spaces / layby. The applicant shall ensure their schemes are technically feasible for vehicles to smoothly and safely maneuvering into / out of the parking spaces / layby / driveway. The applicant is also reminded to observe the relevant BD's requirements on the design of driveways and parking facilities.	Noted. Please refer to updated LG1/F layout plan (**Figure 2.4 rev. A**) and **Figure SP3, SP4** and **SP5** showing that all design vehicles (i.e. 11m HGV, 12m coach and 7.8m light bus) can turn into/out of the parking spaces and loading/unloading bays without any manoeuvring problem.
Other Comments	
3. Table 5.22: Please advise the GMB services assessment for Tai Po bound.	Noted. Based on the public transport utilization result presented in **Table 5.21**, there is ample capacity for GMB services for Tai Po bound to accommodate the additional passenger demands generated by proposed development site during AM and PM peak period. Thus, no additional GMB service is required.
4. Please also seek comments from our TONT division.	Noted.

By Fax and by Post
2866 4332

運輸署
Transport Department

本署檔案 Our Ref. : (NRQT0) in TD NR146/194-T20
來函檔號 Your Ref. : J1652/10
電 話 Tel. : 2399 2731
圖文傳真 Fax : 2381 3799
電 郵 Email : hiufungpang@td.gov.hk

19 October 2024

Ho Wang SPB Limited
5/F, So Hong Commercial Building
41-47 Jervois Street,
Sheung Wan
Hong Kong
(Attn.: Mr. Tommy LAM, Principal Traffic Engineer)

Dear Mr LAM,

Technical Feasibility Study for the Proposed Hong Kong Sheng Kung Hui St. Christopher's Complex at the remaining portion of Taxlord Lot No. T77 in D.D. 34, Tai Po
Traffic Impact Assessment

I refer to your above referenced letter dated 14 August 2024 regarding the subject submission. Please be advised that I have no further comment to the report. Please be reminded to seek comments from our TONT Division.

Yours faithfully,

(PANG Hiu-fung)
for Commissioner for Transport