

Proposed Amendment to the Building Height Restriction of the “Government, Institution or Community” Zone for Permitted Social Welfare Facility at No.58 Sha Chau Lei Tsuen, Ha Tsuen, Yuen Long, New Territories (Lot No. 2273 in DD 125 and the Extension Thereto) – S12A
Amendment of Plan Application

Appendix 3

Traffic Impact Assessment

26/07/2024

Reference number: CHK50749070

**THE PROPOSED REDEVELOPMENT OF POK OI HOSPITAL
YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN
LONG BY POK OI HOSPITAL**

TRAFFIC IMPACT ASSESSMENT



TABLE OF CONTENTS

CONTENTS

1.	INTRODUCTION	1
1.1	BACKGROUND	1
1.2	STUDY SCOPE	1
1.3	REPORT STRUCTURE	2
2.	PROPOSED DEVELOPMENT	3
2.1	EXISTING SITE CONDITIONS	3
2.2	INTERNAL TRANSPORT PROVISIONS	4
2.3	DEVELOPMENT ACCESS	5
3.	EXISTING TRAFFIC AND TRANSPORT CONTEXT	6
3.1	EXISTING ROAD NETWORK	6
3.2	TRAFFIC SURVEY	6
3.3	PUBLIC TRANSPORT SERVICES	7
3.4	PEDESTRIAN ACCESS ARRANGEMENT	8
4.	TRAFFIC FORECAST	9
4.1	METHODOLOGY OF TRAFFIC FORECAST	9
4.2	TRAFFIC FORECAST ASSUMPTIONS	9
4.3	FUTURE ROAD NETWORK	10
4.4	PLANNED AND COMMITTED DEVELOPMENTS	10
4.5	DEVELOPMENT TRAFFIC GENERATIONS	11
4.6	DESIGN TRAFFIC FORECASTS	13
5.	TRAFFIC IMPACT ASSESSMENT	14
5.1	FUTURE ROAD NETWORK	14
5.2	JUNCTION CAPACITY ASSESSMENT	14
6.	PEDESTRIAN IMPACT ASSESSMENT	16
6.1	PEDESTRIAN IMPACT ASSESSMENT	16
7.	SUMMARY AND CONCLUSION	18
7.1	SUMMARY	18
7.2	CONCLUSION	18

LIST OF DRAWINGS

Index	Drawing	Page No
Drawing No. 1.1	Site Location	23
Drawing No. 2.1	Layout Plan	24
Drawing No. 2.2	Development Ingress Route	25
Drawing No. 2.3	Development Egress Route	26
Drawing No. 3.1	Existing Road Network and Studied Key Junctions	27
Drawing No. 3.2	Existing Junction Layout: Ping Ha Road/ Tin Ha Road (J1)	28
Drawing No. 3.3	Existing Junction Layout: Ping Ha Road/ Minor Access Road (Sha Chau Lei Tsuen) (J2)	29
Drawing No. 3.4	Existing Junction Layout: Ping Ha Road/ Sha Chau Lei Road (J3)	30
Drawing No. 3.5	Existing Junction Layout: Ping Ha Road/ Shek Po Road (J4)	31
Drawing No. 3.6	Existing Junction Layout: Ping Ha Road/ Tin Ying Road/Hung Tin Road (at grade) (J5)	32
Drawing No. 3.7	Year 2023 Observed Traffic Flows	33
Drawing No. 3.8	Existing Public Transport Services in the Vicinity	34
Drawing No. 3.9	2024 Pedestrian Flows	35
Drawing No. 4.1	Application site Plan of HSK NDA Area	36
Drawing No. 4.2	Predicted Future Development Ingress Route	37
Drawing No. 4.3	Predicted Future Development Egress Route	38
Drawing No. 4.4	Year 2035 Reference Traffic Flows (Without Future Road Network)	39
Drawing No. 4.5	Year 2035 Reference Traffic Flows (With Future Road Network)	40
Drawing No. 4.6	Year 2035 Design Traffic Flows (With Future Road Network)	41
Drawing No. 5.1	Planned New Roundabout (J2 and J6)	42
Drawing No. 6.1	2035 Reference Pedestrian Flows	43
Drawing No. 6.2	2035 Design Pedestrian Flows	44

LIST OF TABLES

Table 2.1 Application Site Details	3
Table 2.2 Proposed Internal Transport Provisions	4
Table 3.1 Identified Key Junctions	7
Table 3.2 Current Operational Performance at Identified Key Junctions	7
Table 3.3 Existing Public Transport Services	8
Table 3.4 Peak Hour Identified for Pedestrian Flows (2-way)	8
Table 4.1 ATC Traffic Counts at Local Area from Years 2016 to 2022	9
Table 4.2 2019-based Territorial Population and Employment Data Matrix Distributions of Population and Employment in 2019, 2026 and 2031	10
Table 4.3 Population and Employment Growth Rate Based on 2019- TPEDM	10
Table 4.4 Planned and Committed Developments	11
Table 4.5 Observed Trip Rates at Surveyed Reference Site	12
Table 4.6 Trip rates adopted for the Application Site	13
Table 5.1 Planned New Junction	14
Table 5.2 Operational Performance of Key Junctions for Year 2035	14
Table 5.3 Operational Performance of Key Junctions for the Year 2035	15
Table 6.1 Observed Pedestrian Trip Rates at Reference Sites	16
Table 6.2 Pedestrian Trip Rates Adopted for the Application Site	16
Table 6.3 Peak Hour Identified for Pedestrian Flows	17
Table 6.4 Peak Hour Identified for Pedestrian Flows	17

APPENDICES

Appendix A Junction Calculation Sheets	46
Appendix B Level-Of-Service (Los) Criteria for Pedestrian Walkways	71

1. INTRODUCTION

1.1 Background

1.1.1 The Application Site is a proposed redevelopment of existing 3-storey care and attention home for the elderly into new block for the Pok Oi Hospital Yeung Chun Pui Care and Attention Home at 58 Sha Chau Lei Tsuen, Ha Tsuen, Ping Ha Road, Yuen Long at Lot No. 2273 and the Extension thereto in Demarcation District 125, bounded by Sha Chau Lei Road in the east, and a nullah running adjacent to Sha Chau Lei Road with a rezoning site area of about 3,388.7 m² and a development site area (for calculation of plot ratio and site coverage) of about 3,090 m² as shown in **Drawing No. 1.1**.

1.1.2 The Proposed redevelopment includes social welfare facilities to cater for the increasing demand for elderly, rehabilitation and childcare services, by providing more floor area and better and updated facilities, under The Special Scheme on Privately Owned Sites for Welfare Uses, administrated by Social Welfare Department (SWD) and self-financing welfare related ancillary facilities.

1.1.3 MVA Hong Kong Limited is commissioned by P&T Architects Limited, as the traffic consultant to carry out a feasibility study for the proposed redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long. The primary objective of this TIA is to study the technical feasibility of the proposed redevelopment of a care and attention home into an 47.9mPD building with various welfare activities.

1.2 Study Scope

1.2.1 The main objectives of this study are as follows:

- Transport and Traffic Impact Assessment (TTIA) Assessment for Operation stage. To assess and evaluate the nature and extent of the potential traffic impacts arising from the Project, and propose necessary traffic improvement measures;
- To study and assess the existing travel patterns, road and junction capacities in the local area adjacent to the Application Site ;
- To identify the traffic generations from the Application Site under the Development Proposal and carry out distribution and assignment of the generated traffic;
- To estimate the future traffic flows for the design year on the surrounding local road network;
- To recommend traffic improvement measures to alleviate the foreseeable traffic problems on the surrounding local road network, if necessary; and
- To propose parking and servicing provisions for required space for cars, trucks, non-emergency ambulance transfer (NEATs) vehicles and refuse collection vehicles.

1.3 Report Structure

1.3.1 Following this introductory chapter, there are five further chapters:

- **Chapter 2 – Proposed Development**, which describes and presents the Proposed Development schedule.
- **Chapter 3 - Existing Conditions**, which describes the existing traffic context in the vicinity of the Application Site, including the current local road network, a summary of the vehicular survey and an assessment of the existing traffic conditions.
- **Chapter 4 - Traffic Forecast**, which presents the estimation of traffic trip generations and distribution for the Application Site.
- **Chapter 5 - Traffic Impact Assessment**, which presents the traffic forecasting methodology and estimates the future vehicular. The traffic impact assessment will also be included in this chapter.
- **Chapter 6 - Summary and Conclusion**, which presents key findings from the study.

2. PROPOSED DEVELOPMENT

2.1 Existing Site Conditions

2.1.1 There is an existing 3-storey high building providing 143 subvented places of Care and Attention Home, located at 58 Sha Chau Lei Tsuen, Ha Tsuen, Ping Ha Road, and Yuen Long at Lot No. 2273 in DD125 and the Extension thereto accessible via Ping Ha Road. The site plan is shown in **Drawing No. 1.1**. According to the approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2, the existing site is zoned as "Government, Institution or Community" (G/IC).

2.1.2 The Proposed redevelopment includes social welfare facilities, namely elderly centre, rehabilitation services, childcare services and other welfare facilities. It is scheduled to be completed by the year 2032 tentatively. The details are summarised in **Table 2.1**.

Table 2.1 Application Site Details

Component	Existing Scheme of the Development Site	Proposed Scheme for the Redevelopment	
Site Area	Rezoning Site Area of about 3,388.7 m ² and Development Site Area of about 3,090 m ²		
Class of Site	Class A Site		
Facility	143 Places of Care and Attention Home	1. Care and Attention Home for the Elderly providing a Continuum of Care (C&A Home/CoC)	192 places
		2. Day Care Centre for the Elderly (DE)	80 places
		3. Day Activity Centre (DAC)	50 places
		4. Hostel for Severely Mentally Handicapped Persons (HSMH)	50 places
		5. Hostel for Moderately Mentally Handicapped Persons (HMMH)	40 places
		6. Integrated Vocational Rehabilitation Services Centre (IVRSC)	80 places
		7. Child Care Centre (CCC)	59 places
		8. Welfare-related Ancillary Facilities	
	• Showroom for Innovative and Gerontechnology Products	300 m ²	
	• Clinics - Chinese medicine, Western medicine and Dental service	110 m ²	
	• Massage Service Centre	100 m ²	
	• Canteen	100 m ²	

Component	Existing Scheme of the Development Site	Proposed Scheme for the Redevelopment
GFA	2,351 m ²	17,922 m ²
Plot Ratio	0.761	5.8 ⁽¹⁾
Site Coverage	25 %	58% ⁽¹⁾
Building Height	10.25 mPD	47.9 mPD
Number of Storeys	3 storeys	11 storeys

Remarks: (1) Calculated based on the Development Site Area of about 3,090m²

2.2 Internal Transport Provisions

2.2.1 There are currently no related standards in HKPSG parking and loading/unloading provisions for the Application Site. Thus, corresponding provisions are proposed based on the daily operation needs of staff, paramedics, elderly residents, and visitors.

2.2.2 The proposed internal transport provisions for the Application Site are summarized in **Table 2.2**.

Table 2.2 Proposed Internal Transport Provisions

#	Vehicle Type	Required By		Parking Space Dimension
1	Private Car	HKPSG (CLINIC)		5m (L) X 2.5m (W) X 2.4m (H)
2	Private Car	HKPSG (CLINIC)		5m (L) X 2.5m (W) X 2.4m (H)
3	Private Car	HKPSG (CLINIC)	C&AH	5m (L) X 2.5m (W) X 2.4m (H)
4	Private Car (Disabled)	HKPSG (CLINIC)		5m (L) X 3.5m (W) X 2.4m (H)
5	16-Seater Light Bus	C&AH		8m (L) X 3m (W) X 3.3m (H)
6	16-Seater Light Bus	DE		8m (L) X 3m (W) X 3.3m (H)
7	16-Seater Light Bus	DE		8m (L) X 3m (W) X 3.3m (H)
8	16-Seater Light Bus	DE		8m (L) X 3m (W) X 3.3m (H)
9	16-Seater Light Bus	DE		8m (L) X 3m (W) X 3.3m (H)
10	24-Seater Light Bus	HSMH		8m (L) X 3m (W) X 3.3m (H)
11	5.5 Tonnes Light Goods Vehicle	IVRSC		7m (L) X 3.5m (W) X 3.6m (H)
12	Refuse Collection Vehicle	FEHB		12m (L) X 5m (W) X 4.5m (H)
13	Ambulance	HKPSG (CLINIC)	C&AH/ DE	9m (L) X 3.5m (W) X 3.3m (H)

#	Vehicle Type	Required By		Parking Space Dimension
Lay- by				
1	Private Car / Taxi	HKPSG (CLINIC)		5m (L) X 2.5m (W) X 2.4m (H)
2	Medium Goods Vehicle	HKPSG (CLINIC)	C&AH/ DE/ HSMH/ IVRSC	11m (L) X 3.5m (W) X 4.7m (H)
3	Heavy Goods Vehicle	HKPSG (CLINIC)	C&AH/ DE/ HSMH/ IVRSC	11m (L) X 3.5m (W) X 4.7m (H)

Remarks: Parking Provision as per details provided by Client

2.2.3 The proposed parking spaces for private cars and the taxi/ private car lay-by will be provided at ground level. The proposed arrangement will ensure no traffic queue (if any) from the lay-by back to the main entrance at a minor access road even though the chance of a traffic queue at the elderly centre is very low.

2.2.4 The proposed loading/unloading bay for goods vehicles and ambulance lay-by will also be provided at ground level. The ground floor layout plan of the Application Site is shown in **Drawings 2.1**.

2.3 Development Access

2.3.1 As mentioned in **Section 2.1**, there is an existing 3-storey high building located at the site. The proposed run-in/out of the Application Site is at the Minor Access Road (Sha Chau Lei Tsuen). The existing major vehicular ingress/egress routings accessing the Application Site are shown in **Drawing Nos. 2.2** and **2.3** respectively.

2.3.2 As shown in **Drawing Nos. 2.2** and **2.3**, vehicles from the surrounding area will mainly travel via Ping Ha Road and Minor Access Road (Sha Chau Lei Tsuen) and leave the development before scattering into the surrounding area.

3. EXISTING TRAFFIC AND TRANSPORT CONTEXT

3.1 Existing Road Network

3.1.1 The existing road network in the vicinity of the Application Site is as shown in **Drawing No. 3.1**.

- Ping Ha Road
- Hung Tin Road (at grade)
- Tin Ying Road
- Shek Po Road
- Sha Chau Lei Road
- Tin Ha Road
- Minor Access Road (Sha Chau Lei Tsuen)

3.1.2 Ping Ha Road is a 4-lane single-carriageway, rural road running in an east-west direction. It is the main road linking the Ha Tsuen area to Yuen Long and other neighbouring towns.

3.1.3 Hung Tin Road (at grade) is a 4 lanes dual carriageway and local distributor road running in a north-south direction connecting Hung Shui Kiu to neighbouring towns.

3.1.4 Tin Ying Road is a 4 lanes dual carriageway and district distributor road running in a north-south direction connecting Tin Shui Wai to neighbouring towns.

3.1.5 Shek Po Road is a 2-lane single-carriageway road running in the north-south direction.

3.1.6 Sha Chau Lei Road is a 2-lane single-carriageway running in the north-south direction.

3.1.7 Tin Ha Road is a 2-lane single-carriageway, rural road running in the northeast-southwest direction linking the Ha Tsuen area to Hung Shui Kiu.

3.1.8 Minor Access Road (Sha Chau Lei Tsuen) is a 2-lane single-carriageway road running in the north-south direction connecting the Application Site to Ping Ha Road.

3.2 Traffic Survey

3.2.1 In order to investigate the traffic impact on the surrounding road network of the Application Site, the adjacent five key junctions are identified for traffic survey and assessment as listed in **Table 3.1**. These key junctions are selected according to the future ingress and egress routings of the subject site. The locations of the key junctions are indicated in **Drawing No. 3.1**, and the existing junction layout of the surveyed junctions is shown in **Drawing Nos. 3.2 to 3.6** respectively.

Table 3.1 Identified Key Junctions

Ref. ⁽¹⁾	Junction	Type	Drawing No.
J1	Ping Ha Road/ Tin Ha Road	Signal	3.2
J2	Ping Ha Road/ Minor Access Road (Sha Chau Lei Tsuen)	Priority	3.3
J3	Ping Ha Road/ Sha Chau Lei Road	Priority	3.4
J4	Ping Ha Road/ Shek Po Road	Priority	3.5
J5	Ping Ha Road/ Tin Ying Road/Hung Tin Road (at grade)	Signal	3.6

Remarks: (1) Junction locations refer to **Drawing No. 3.1**.

3.2.2 To establish the current traffic conditions at the identified key junctions, a manual classified traffic count survey was conducted in October 2023 from 07:30 to 09:30 and 17:00 to 19:00 during the morning and evening peak periods. The observed peak hour traffic flows in the year 2023 are shown in **Drawing No. 3.7**.

Existing Junction Condition

3.2.3 Junction capacity assessments have been conducted at the identified key junctions to observe the current operational performances based on the existing junction layouts and observed traffic flows. The results are summarised in **Table 3.2**.

Table 3.2 Current Operational Performance at Identified Key Junctions

Ref. ⁽¹⁾	Junctions	Type	RC/ RFC ⁽²⁾	
			AM Peak	PM Peak
J1	Ping Ha Road/ Tin Ha Road	Signal	34%	32%
J2	Ping Ha Road/ Minor Access Road (Sha Chau Lei Tsuen)	Priority	0.08	0.05
J3	Ping Ha Road/ Sha Chau Lei Road	Priority	0.12	0.10
J4	Ping Ha Road/ Shek Po Road	Priority	0.17	0.28
J5	Ping Ha Road/ Tin Ying Road/Hung Tin Road (at grade)	Signal	55%	50%

Remarks: (1) Junction locations refer to **Drawing No. 3.1**.

(2) RC = Reserve Capacity, RFC = Ratio to Flow Capacity.

(3) Reserve Capacity (R.C.) indicated in %, provides an indication of signal junction performance. R.C. \geq 15% implies that it is operating satisfactorily, while a negative R.C. suggests that it is overloaded.

(4) For priority junctions and roundabouts, the performance of a priority junction or roundabout is measured in the design flow/capacity ratio (DFC). DFC \leq 0.85 is the acceptance criteria; DFC over 1.00 indicates overloaded conditions.

3.2.4 Referring to the assessment results in **Table 3.2**, all key junctions are currently operating with adequate capacities during both morning and evening peak periods.

3.3 Public Transport Services

3.3.1 There are frequent franchised bus services currently operating along Ping Ha Road. Details of the public transport services within 150m walking distance of the Application Site are listed in **Table 3.3** and the bus stop locations are illustrated in **Drawing No. 3.8**. There is also a MTR station within 1km walking distance from the Application Site.

Table 3.3 Existing Public Transport Services

Route No.	Origin and Destination	Frequency (mins)	Service
<i>Franchised Bus (KMB)</i>			
53	Yoho Mall (Yuen Long) <-> Tsuen Wan (Nina Tower)	25 - 35	Daily
<i>Franchised Bus (MTR)</i>			
K65	Yuen Long Station <-> Lau Fau Shan	9 - 16	Daily
K65A	Tin Shui Wai Station <-> Lau Fau Shan	12 - 15	Mon - Fri
K75A	Tin Shui Wai Station <-> Hung Shui Kiu (Circular)	30	Daily
K75P	Tin Shui <-> Hung Shui Kiu (Circular)	10 - 15	Daily
<i>GMB</i>			
33	Ha Pak Nai To <-> Yuen Long (Tai Fung Street)	25 - 35	Daily
34A	Ha Tsuen (San Sik Road) Minibus Terminus <-> Lau Fau Shan Minibus Terminus	15 - 30	Daily
35	Sha Kiu <-> Yuen Long (Tai Fung Street)	18 - 23	Daily

Remark: Service details as of February 2024.

3.4 Pedestrian Access Arrangement

3.4.1 The pedestrian access of the proposed development is located on the left side of the proposed site by connecting it to the existing pedestrian walkway on the Minor Access Road (Sha Chau Lei Tsuen). The pedestrian access routings between the proposed development and the nearby bus stop along Ping Ha Road are shown in **Drawing No. 3.8**.

Existing Pedestrian Flow Condition

3.4.2 Pedestrian headcount surveys at the proposed redevelopment site were conducted on a normal day in 2024 from 07:30 to 09:30 and 17:00 to 19:00 during the morning and evening peak periods.

3.4.5 To evaluate the existing adjacent pedestrian footpath, the operational performance has been assessed based on the Level-of-Service (LOS) criteria adopted as an indicator in the assessment of pedestrian walkway capacity performance. According to “Highway Capacity Manual 2000” by the Transportation Research Board of National Research Council Washington, D.C., the LOS of a footpath or walkway is classified into 6 levels (i.e. A to F) as described in **Appendix B**.

3.4.6 The observed peak of our pedestrian flows in 2024 at the footpaths in ped/min/m and the corresponding LOS are summarised in **Table 3.4** and indicated in **Drawing No.3.9**

Table 3.4 Peak Hour Identified for Pedestrian Flows (2-way)

Index	Pedestrian Location	Actual Width (m)	Effective Width ⁽¹⁾ (m)	Peak Hourly Flow (ped/hr)		Peak Flow Rate (Ped/m/min)		LOS ⁽²⁾	
				AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK
P1	Minor access road	2.00	1.00	51	32	0.85	0.53	A	A

Note: (1) Effective width of footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath)

(2) Referring to TPDM Volume 6 Section 10.4.2, the LOS of a footpath is classified into 6 levels (i.e. A to F).

3.4.7 As shown in **Table 3.4**, all the assessed footpaths would operate at LOS A or better, which is a satisfactory walking environment, in the Year 2024.

4. TRAFFIC FORECAST

4.1 Methodology of Traffic Forecast

- 4.1.1 The Application Site is anticipated to be commissioned by the year 2032. As per the guidelines and requirements of TIA published by the Transport Department, the design year of the year 2035 (i.e. 3 years upon completion year) is adopted for traffic forecast purposes.
- 4.1.2 To estimate the year 2035 reference traffic flows (without Application Site) in the local road network, an appropriate growth factor was identified for the area. The derivation of this growth rate is determined with reference to historical growth trends and area planning data, which are summarised below.

4.2 Traffic Forecast Assumptions

Traffic growth trend from the Annual Traffic Census

- 4.2.1 To estimate the background traffic growth for the area, reference has been made to the historical growth trend of the Annual Traffic Census (ATC) report published annually by the Transport Department and the planning data based on the latest Territorial Population and Employment Data Matrix (TPEDM) published by Planning Department.
- 4.2.2 Based on the ATC report, the traffic count stations located within the study area have been selected for review. The record of traffic flows and the percentage change per annum, between 2016 and 2022, at these locations have been extracted from the ATC to establish the historical growth trend as summarized in **Table 4.1**.

Table 4.1 ATC Traffic Counts at Local Area from Years 2016 to 2022

Stn. No.	Station Location	Road Characteristics	Annual Average Daily Traffic (AADT) (veh/day)						
			2016	2017	2018	2019	2020	2021	2022
5689	Ping Ha Rd	Rural Road	17,060	16,800	17,210	17,090	19,360	20,320	19,710
5284	Tin Ying Rd	District Distributor	27,040	26,610	32,180	31,060	29,780	30,970	30,030
5277	Ping Ha Rd	District Distributor	15,360	15,120	19,580	19,260	18,460	19,200	18,460
5880	Tin Yiu Rd	Local Distributor	16,930	16,960	17,380	17,250	16,540	17,460	18,690
5858	Ping Ha Rd & Lau Fau Shan Rd	Rural Road	14,580	12,370	12,680	12,590	12,070	10,310	8390
Total			90,970	87,860	99,030	97,250	96,210	98,260	95,280
Annual Growth Rate = 0.77%									

Remarks: AADT estimated by growth factor

- 4.2.3 The records of average annual daily traffic (AADT) from ATC have indicated that overall growth is strengthening at the rate of 0.77% per annum from the year 2016 to 2022 in the local area despite the effects the COVID-19 impacts on the economy and general travel characteristics.

Planning Data from 2019-Based TPEDM

- 4.2.4 Reference has also been made to the 2019-Based Territorial Population and Employment Data Matrix (TPEDM) planning data published by the Planning Department for years 2019, 2026 and 2031 in the relevant Planning Data District (i.e Tin Shui Wai and Northwest New Territories (Other Area)). The estimated/projected distributions of population data in the local area in the years 2019 and 2031 are listed in **Table 4.2** and **Table 4.3**.

Table 4.2 2019-based Territorial Population and Employment Data Matrix Distributions of Population and Employment in 2019, 2026 and 2031

PDZ	2019		2026		2031	
	Population	Employment	Population	Employment	Population	Employment
Tin Shui Wai	279,950	35,050	283,250	33,100	276,050	31,950
Northwest New Territories (Other Area)	222,800	58,400	239,250	76,850	353,900	140,150
Total	502,750	93,450	522,500	109,950	629,950	172,100

Remark: Referring to 2019 – based Territorial Population and Employment Data Matrix Planning Data

Table 4.3 Population and Employment Growth Rate Based on 2019- TPEDM

PDZ	2019/2026		2019/2031	
	Population	Employment	Population	Employment
Tin Shui Wai + Northwest New Territories (Other Area)	0.55%	2.35%	1.90%	5.22%

4.2.5 It is assumed that the Hung Shui Kiu/ Ha Tsuen New Development Area is considered in the Northwest New Territories Area, hence, the growth rate of **1.90% p.a** is assumed for the projection of background traffic growth for the conservative approach.

4.3 Future Road Network

4.3.1 As per Approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2, there are major planned road infrastructure improvement projects in the vicinity of the site assumed to be done at the start of stage 3, which is around the year 2031. The Application Site phasing plan of Hung Shui Kiu/ Ha Tsuen New Development Area is shown in **Drawing No. 4.1**.

4.4 Planned and Committed Developments

4.4.1 The future planned and committed developments surrounding the Application Site, which would contribute to the road network in the vicinity have been considered and shown in **Drawing No. 4.1** and listed in **Table 4.4**.

Table 4.4 Planned and Committed Developments

Planning Area No.	Zone	Site Area (m ²)	Development Use	Maximum Plot Ratio	Domestic/ Non-Domestic Plot Ratio (DPR/NDPR)	Total GFA (m ²)
15	G/IC	15,439	Government, Institution or Community	-	-	-
16A	R(A)3	15,850	Residential	6.5	DPR	79,250
			Retail	0.3	NDPR	7,925
16B	R(A)2	20,699	Residential	6.5	DPR	113,845
			Retail	0.3	NDPR	800
			Kindergartens			1,732
16C	C(3)	17,923	Retail (20%)	5	NDPR	17,923
			Hotel (80%)			71,692
49	O	135,342	Open Space	-	-	-
56	OU	13,070	Other Specified Uses (Sewage Pumping Station)	-	-	-
57B	O	161,795	Open Space	-	-	-
58A	R(A)3	35,824	Residential	5	DPR	179,120
			Retail	0.5	NDPR	17,912
58B	R(A)4	16,304	Residential	5	DPR	81,520
58C	G/IC	18,940	Government, Institution or Community	-	-	-
59A	R(A)3	20,414	Residential	5	DPR	102,070
			Retail	0.5	NDPR	10,207
59B	R(A)4	14,343	Residential	5	DPR	71,715
59C	G/IC	18,801	Government, Institution or Community	-	-	-
59D	R(A)4	13,518	Residential	5	DPR	67,590

Remarks: Approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2 from Planning Department

4.5 Development Traffic Generations

4.5.1 Currently, there is no standard trip generation rate for elderly centres provided in “Traffic Generation and Attraction Rates” as stated in Annex D of Volume 1 - Chapter 3 in the Transport Planning and Design Manual (TPDM) published by the Transport Department, the estimated trip generation rates for vehicular traffic for the Application Site will be derived based on the following assumptions.

4.5.2 The staff’s working duties at the care and attention home for the Elderly are 24 hours, divided into AM Shift (7 am- 3 pm), PM Shift (1 pm - 9 pm) and Overnight Shift (9 pm – 7 am). It is anticipated that they will take public transport for their daily commute. Hence, the peak hour of the staff is expected around 7 am, 9 am, 1 pm, and 9 pm on weekdays and weekends. In operation, the visiting hours of the elderly centre are between 9 am and 6 pm during weekdays and weekends. Hence, the peak hour of the traffic is assumed between 7.30-8.30 in the morning and 5.00-7.00 pm in the evening to analyse the worst-case scenario.

4.5.3 Taking consideration of the above and to calculate peak traffic for elderly homes, a traffic trip generation/attraction survey has been carried out at similar sites in development nature, size and services offered by public transportation to obtain a reference trip generation/attraction for the proposed Elderly home from 07:30 to 09:30 and 5:00 to 7:00 as explained in **Section 3.2**. The traffic generation and attraction at the referenced elderly centre is counted and then based on it traffic trip rates during the peak hours were derived shown in **Table 4.5** below.

4.5.4 There are 3 sites surveyed:

1. Existing Pok Oi Hospital Yeung Chun Pui Care and Attention Home
 2. Jockey Club Rehabilitation Complex, Aberdeen, Hong Kong
 3. On Tai Estate Ancillary Facilities Block, On Sau Road, Kwun Tong
- 4.5.5 As shown in **Table 4.5**, it is observed that the trip rates for various facilities are different. Hence, to take the conservative approach trip rate of an existing Pok Oi Hospital Yeung Chun Pui Care and Attention Home is used to interpolate the trip rate for the additional proposed elderly centre places. It is calculated by deducting existing places (143) from the proposed elderly places (192).
- 4.5.6 Jockey Club Rehabilitation Complex, Aberdeen and On Tai Estate Ancillary Facilities Block, On Sau Road, Kwun Tong are selected based on their similarity in nature as complex buildings, number of ancillary facilities, car parking provision, location, and presence of public transport. Furthermore, a site with a higher trip rate, Jockey Club Rehabilitation Complex, Aberdeen, was selected for further traffic generation analysis as a conservative approach.
- 4.5.7 Whereas, the trip rate of the Jockey Club Rehabilitation Complex in Aberdeen is used to interpolate the trip rate of other facilities such as the Day Activity Centre (DAC), Day Care Centre for the Elderly (DE), Hostel for Severely Mentally Handicapped Persons (HSMH), Hostel for Moderately Mentally Handicapped Persons (HMMH), Integrated Vocational Rehabilitation Services Centre (IVRSC), Child Care Centre (CCC) and Welfare-related Ancillary Facilities.

Table 4.5 Observed Trip Rates at Surveyed Reference Site

Referenced Elderly Centre	Total Places	Observed Trip rate (pcu/hr/places)			
		AM		PM	
		Generation (Out)	Attraction (In)	Generation (Out)	Attraction (In)
Existing Pok Oi Hospital Yeung Chun Pui Care and Attention Home	143	0.26	0.29	0.19	0.17
Jockey Club Rehabilitation Complex, Aberdeen, Hong Kong	1,352	0.02	0.03	0.01	0.01
Jockey Club Rehabilitation Complex, Aberdeen, Hong Kong	501	0.02	0.02	0.01	0.01

Remark: Trip rate obtained by interpolation

- 4.5.8 Therefore, the estimated traffic generation by the Application Site is given in **Table 4.6**, which is 21 pcu/hr and attracts about 25 pcu/hr in the morning peak hour period; and generates about 13 pcu/hr and attracts about 12 pcu/hr in the evening peak hour period. This estimated traffic generation of the Application Site would be then distributed in the surrounding road network. The predicted ingress and egress routes are shown in **Drawing No 4.2** and **4.3**, respectively.

Table 4.6 Vehicular Traffic Generation and Attraction of the Application Site

Application Site Facilities	Total Places	AM		PM	
		Generation (Out)	Attraction (In)	Generation (Out)	Attraction (In)
Adopted Trip Rate (pcu/hr/places)					
Elderly Centre (Additional new places)	-	0.26	0.29	0.19	0.17
Other Facilities	-	0.02	0.03	0.01	0.01
Estimated Trips (pcu/hr)					
Elderly Centre (Additional new places)	49 ⁽¹⁾	13	14	9	8
Other Facilities	359	8	11	4	4
Total		21	25	13	12

Remark: (1) Additional Places of Elderly Centre (49) = Proposed Places (192) – Existing Places (143)

4.6 Design Traffic Forecasts

- 4.6.1 The estimated trip generations for the Application Site (i.e. Application Site and potential planned and committed development) would be superimposed onto the year 2035 reference traffic flows to produce the year 2035 design traffic flows.
- 4.6.2 There are two scenarios considered to analyse the traffic impact which are derived by the equation below and are presented in **Drawing Nos. 4.2 - 4.4**, respectively:

Scenario 1- Without Future Road Network

$$\begin{aligned}
 \text{2035 Reference Flows} &= \text{2023 Observed Flows} \\
 &+ \text{2023 - 2035 background traffic growth (1.90\%)} \\
 &\text{(Without Future Road Network)}
 \end{aligned}$$

Scenario 2- With Future Road Network

$$\begin{aligned}
 \text{2035 Reference Flows} &= \text{2023 Observed Flows} \\
 &+ \text{2023 - 2035 background traffic growth (1.90\%)} \\
 &\text{(With Future Road Network)}
 \end{aligned}$$

$$\begin{aligned}
 \text{2035 Design Flows} &= \text{2035 Reference Flows (With Future Road Network)} \\
 &+ \text{Traffic Generation}
 \end{aligned}$$

5. TRAFFIC IMPACT ASSESSMENT

5.1 Future Road Network

Planned New Junction

- 5.1.1 According to the “PWP Item No. 7787CL (Part) and 7829CL Hung Shui Kiu/Ha Tsuen New Development Area Advance works Phase 3 and Stage 2 works- Site Formation and Engineering Infrastructure” from the Civil Engineering Development Department (CEDD), there is a new roundabout (J6) along Ping Ha Road to planned to be constructed and operational at the start of stage 3, which is around the year 2031. It is anticipated that the majority of traffic load from Tin Ha Road will shift to Road L1 of a new roundabout. It is also assumed that existing Junction J2 will be merged into the roundabout changing the junction layout to a left-in, left-out priority junction. The Junction details are listed in **Table 5.1.** and illustrated in **Drawing No. 5.1.**

Table 5.1 Planned New Junction

Ref.	Junction	Type	Drawing No.	Anticipated Completion Year
Planned new junction by the year 2031				
J2 and J6	Planned New Roundabout ⁽¹⁾	Roundabout	5.1	2031

Remarks: (1) Refer to the PWP Item No. 7787CL (Part) and 7829CL Hung Shui Kiu/Ha Tsuen New Development Area Advance works Phase 3 and Stage 2 works- Site Formation and Engineering Infrastructure

5.2 Junction Capacity Assessment

Scenario 1- Without Future Road Network

- 6.2.1 To evaluate the traffic impact of the subject development on the local road network, junction assessments on the identified local key junctions have been carried out for both the Reference Scenario (without Application Site and future road network) as shown in **Table 5.1.** The detailed calculation is provided in **Appendix A.**

Table 5.2 Operational Performance of Key Junctions for Year 2035

Ref.	Junction	Type	Year 2035	
			Reference (Without Application Site and Future Road Network)	
			AM	PM
J1	Ping Ha Road/ Tin Ha Road	Signal	5%	4%
J2	Ping Ha Road/ Minor Access Road (Sha Chau Lei Tsuen)	Priority	0.15	0.08
J3	Ping Ha Road/ Sha Chau Lei Road	Priority	0.18	0.16
J4	Ping Ha Road/ Shek Po Road	Priority	0.26	0.45
J5	Ping Ha Road/ Tin Ying Road/Hung Tin Road (at grade)	Signal	23%	19%

Remarks: (1) RC = Reserve Capacity, RFC = Ratio to Flow Capacity.

(2) Reserve Capacity (R.C.) indicated in %, provides an indication of signal junction performance. R.C. \geq 15% implies that it is operating satisfactorily, while a negative R.C. suggests that it is overloaded.

(3) For priority junctions and roundabouts, the performance of a priority junction or roundabout is measured in the design flow/capacity ratio (DFC). $DFC \leq 0.85$ is the acceptance criteria; DFC over 1.00 indicates overloaded conditions.

As indicated in **Table 5.1**, all key junctions would be operating with ample capacities during peak periods under reference scenarios (Scenario 1- Without Future Road Network) in the year 2035 except Junction J1.

Scenario 2- With Future Road Network

6.2.2 In Scenario 2, the junction assessments on the identified local key junctions have been carried out for both the Reference Scenario (without Application Site) and Design Scenario (with Application Site) including the future road network as shown in **Table 5.1**. The detailed calculation is provided in **Appendix A**.

Table 5.3 Operational Performance of Key Junctions for the Year 2035

Ref.	Junction	Type	Year 2035 (DFC ⁽¹⁾ or RC ⁽²⁾)			
			Reference (With Future Road Network and Without Application Site)		Design (With Future Road Network and Application Site)	
			AM	PM	AM	PM
J1	Ping Ha Road/ Tin Ha Road	Signal	34%	27%	34%	26%
J2	Ping Ha Road/ Minor Access Road (Sha Chau Lei Tsuen)	Priority	0.10	0.06	0.15	0.09
J3	Ping Ha Road/ Sha Chau Lei Road	Priority	0.20	0.17	0.20	0.18
J4	Ping Ha Road/ Shek Po Road	Priority	0.58	0.71	0.60	0.73
J5	Ping Ha Road/ Tin Ying Road/Hung Tin Road (at grade)	Signal	18%	16%	17%	16%
J6	Planned New Roundabout	Roundabout	0.58	0.60	0.59	0.60

Remarks: (1) RC = Reserve Capacity, RFC = Ratio to Flow Capacity.

(2) Reserve Capacity (R.C.) indicated in %, provides an indication of signal junction performance. $R.C. \geq 15\%$ implies that it is operating satisfactorily, while a negative R.C. suggests that it is overloaded.

(3) For priority junctions and roundabouts, the performance of a priority junction or roundabout is measured in the design flow/capacity ratio (DFC). $DFC \leq 0.85$ is the acceptance criteria; DFC over 1.00 indicates overloaded conditions.

5.2.4 As indicated in **Table 5.1**, all key junctions would operate with ample capacities during peak periods under both reference and design scenarios with future road networks in the year 2035. Hence, no junction improvement is required.

6. PEDESTRIAN IMPACT ASSESSMENT

6.1.1 To analyse the pedestrian impact on the immediate surroundings, a pedestrian trip generation/attraction survey has been carried out at similar sites as explained in **Section 4.5** of the TIA report to obtain a reference trip generation/attraction, and then based on it pedestrian trip rates during the peak hours were derived shown in **Table 6.1** below:

Table 6.1 Observed Pedestrian Trip Rates at Reference Sites

Referenced Elderly Centre	Total Places	Observed Trip Rate (ped/hr/places)			
		AM		PM	
		Generation (Out)	Attraction (In)	Generation (Out)	Attraction (In)
Existing Pok Oi Hospital Yeung Chun Pui Care and Attention Home	143	0.14	0.22	0.12	0.10
Jockey Club Rehabilitation Complex, Aberdeen, Hong Kong	1,352	0.04	0.18	0.15	0.01

Remark: Trip rate obtained by interpolation

6.1.2 the pedestrian trip rates were also calculated by interpolation method as the same method explained in **section 4.5** and are shown in **Table 6.2**.

Table 6.2 Pedestrian Trip Generation and Attraction of the Application Site

Application Site Facilities	Total Places	AM		PM	
		Generation (Out)	Attraction (In)	Generation (Out)	Attraction (In)
Adopted Trip Rate (ped/hr/places)					
Elderly Centre (Additional new places)	-	0.14	0.22	0.12	0.10
Other Facilities	-	0.04	0.18	0.15	0.01
Estimated Trips (ped/hr)					
Elderly Centre (Additional new places)	49 ⁽¹⁾	7	11	6	5
Other Facilities	359	14	52	50	13
Total		21	62	56	18

Remark: (1) Additional Places of Elderly Centre (49) = Proposed Places (192) – Existing Places (143)

6.1.3 Therefore, the estimated pedestrian flow generation by the Application Site is given in **Table 6.2**, which is 21 pcu/hr and attracts about 62 pcu/hr in the morning peak hour period; and generates about 56 pcu/hr and attracts about 18 pcu/hr in the evening peak hour period.

6.1 Pedestrian Impact Assessment

6.1.4 A key pedestrian footpath (P1) was assessed for 2035 under the Reference Scenario (without Application Site) and Design Scenarios (with Application Site) are shown in **Tables 6.3** and **6.4** and illustrated in **Drawing No. 6.1** and **Drawing No. 6.2** respectively.

Reference Year- Pedestrian flows Condition

Table 6.3 Peak Hour Identified for Pedestrian Flows

Index	Pedestrian Location	Actual Width (m)	Effective Width ⁽¹⁾ (m)	Peak Hourly Flow (ped/hr)		Peak Flow Rate (Ped/m/min)		LOS ⁽²⁾	
				AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK
P1	Minor access road	2.00	1.00	64	40	1.07	0.67	A	A

Note: (1) Effective width of footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath)
 (2) Referring to TPDM Volume 6 Section 10.4.2, the LOS of a footpath is classified into 6 levels (i.e. A to F).

Design Year- Pedestrian Flows Condition

Table 6.4 Peak Hour Identified for Pedestrian Flows

Index	Pedestrian Location	Actual Width (m)	Effective Width ⁽¹⁾ (m)	Peak Hourly Flow (ped/hr)		Peak Flow Rate (Ped/m/min)		LOS ⁽²⁾	
				AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK
P1	Minor access road	2.00	1.00	147	115	2.46	1.91	A	A

Note: (1) Effective width of footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath)
 (2) Referring to TPDM Volume 6 Section 10.4.2, the LOS of a footpath is classified into 6 levels (i.e. A to F).

6.1.5 As shown in **Tables 6.3** and **6.4**, all the assessed footpaths would operate at LOS A or better, which is a satisfactory walking environment, in the Year 2035, for both reference and design scenarios. Thus, no improvement to this pedestrian footpath is deemed necessary.

7. SUMMARY AND CONCLUSION

7.1 Summary

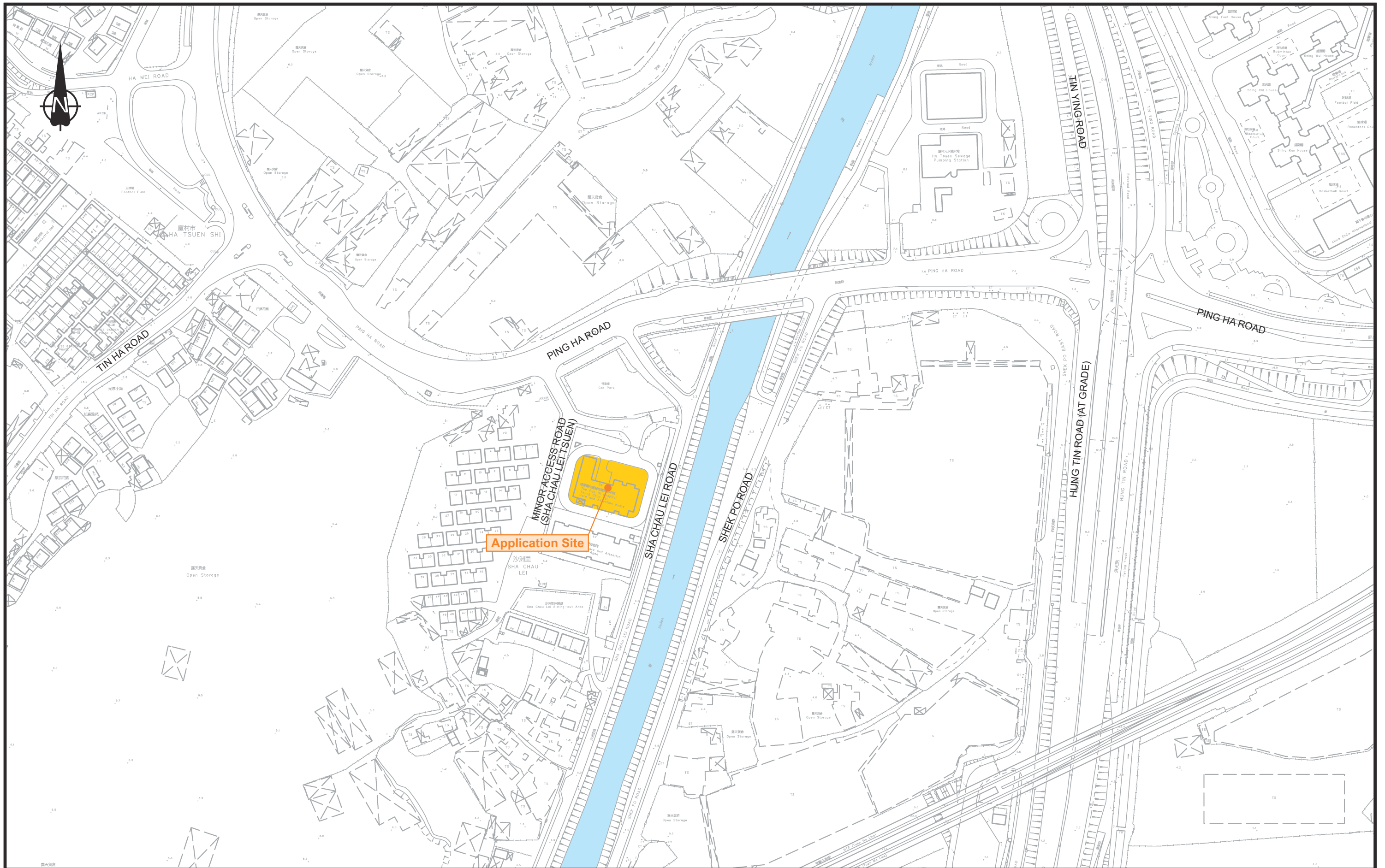
- 7.1.1 The Application Site is a proposed redevelopment of an existing 3-storey care and attention home for the elderly into the new block for the Pok Oi Hospital Yeung Chun Pui Care and Attention Home at 58 Sha Chau Lei Tsuen, Ha Tsuen, Ping Ha Road, Yuen Long at Lot No. 2273 and the Extension thereto in Demarcation District 125, bounded by Sha Chau Lei Road in the east, and a nullah running adjacent to Sha Chau Lei a rezoning site area of about 3,388.7 m² and a development site area (for calculation of plot ratio and site coverage) of about 3,090 m². The location plan is shown in **Drawing No. 2.1**.
- 7.1.2 The Proposed redevelopment includes social welfare facilities, namely an elderly centre, rehabilitation, and childcare services. It is scheduled to be completed by the year 2032 tentatively, according to the approved Hung Shui Kiu and Ha Tsuen Outline Zoning Plan No. S/HSK/2, the existing site is zoned as "Government, Institution or Community" (G/IC).
- 7.1.3 The Application Site is scheduled to be completed by the year 2032 tentatively, and thus year 2035 is adopted as a design year for assessment in this TIA study.
- 7.1.4 The traffic forecast for the design scenario is formulated by taking into consideration the background traffic growth as derived from TPEDM, the future traffic trips induced by the planned developments in the vicinity, as well as the anticipated traffic generations from the Application Site.
- 7.1.5 The vehicular access point of the Application Site will be located at an existing Minor Access Road (Sha Chau Lei Tsuen) and then connect to Ping Ha Road. The provision of the internal transport facilities is reviewed and proposed with reference to HKPSG. Since there is no related standard requirement in HKPSG for the Application Site, the provision of a carpark and L/UL facility is based on the daily operational needs.
- 7.1.6 The operational performance of the identified junctions is assessed based on the derived future traffic flows and the planned future road network in design years 2035. The results of the junction operational assessment indicated that all assessed junctions will be operating within their capacities during the morning and evening peak hour traffic. Therefore, no junction improvement is required.
- 7.1.7 The operational performance of the identified key footpath is assessed based on the derived future pedestrian flow in the design year. The results of the pedestrian assessment indicated that the identified key footpath will be operating within its capacity during the morning and evening peak hours. Therefore, no pedestrian footpath improvement is required.

7.2 Conclusion

- 7.2.1 The traffic impact assessment has demonstrated that the future traffic induced by the proposed redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home would not cause an adverse traffic impact on the surrounding road network.
- 7.2.2 In conclusion, the traffic impact of the proposed redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home is considered acceptable from a traffic engineering point-of-view.

Drawings



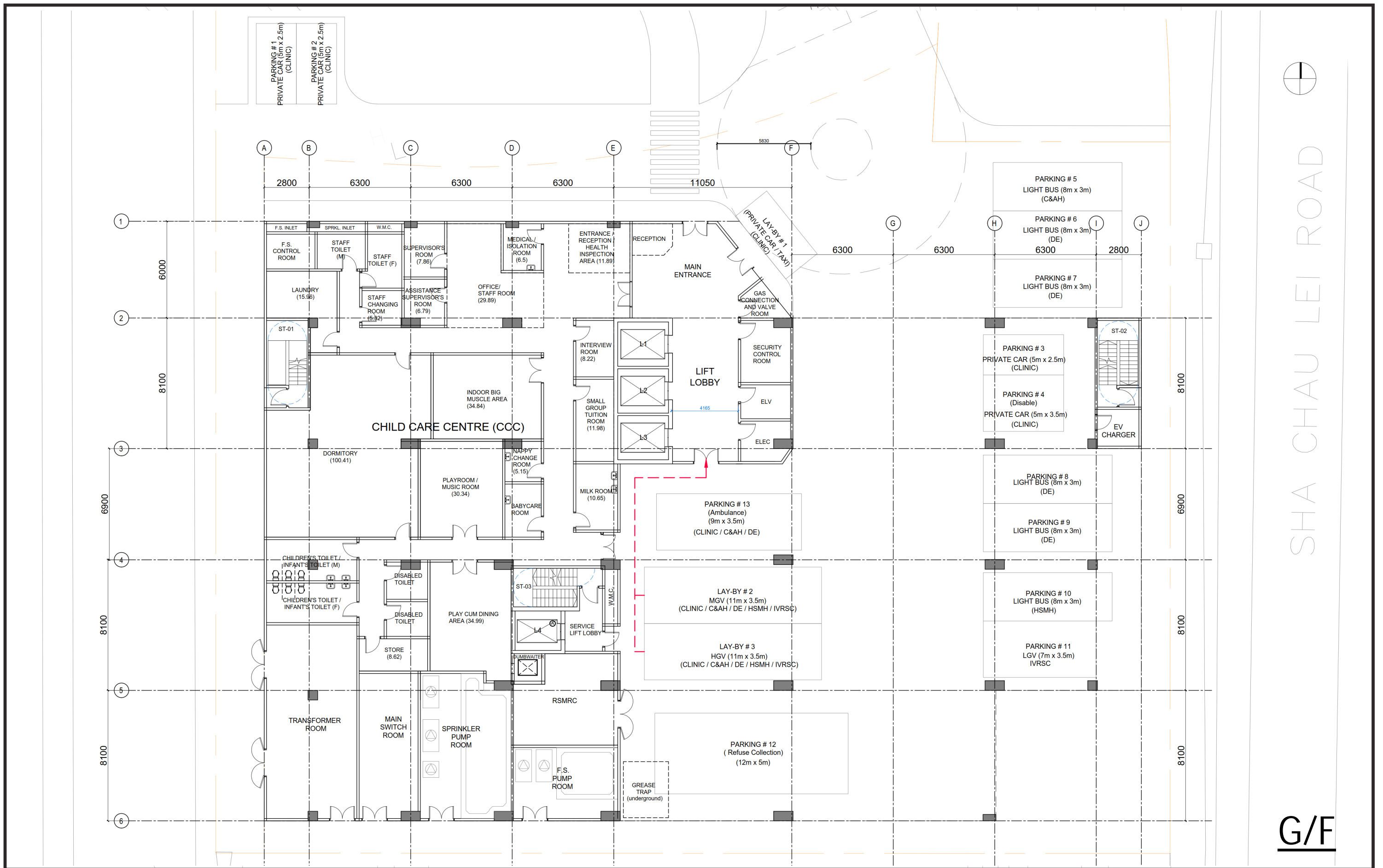


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Project Title
**ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES
 FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED
 REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI
 CARE AND ATTENTION HOME IN YUEN LONG**

Drawing Title SITE LOCATION			
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Scale	NTS	Date	FEB 2024
Drawing No.	1.1	Rev.	-





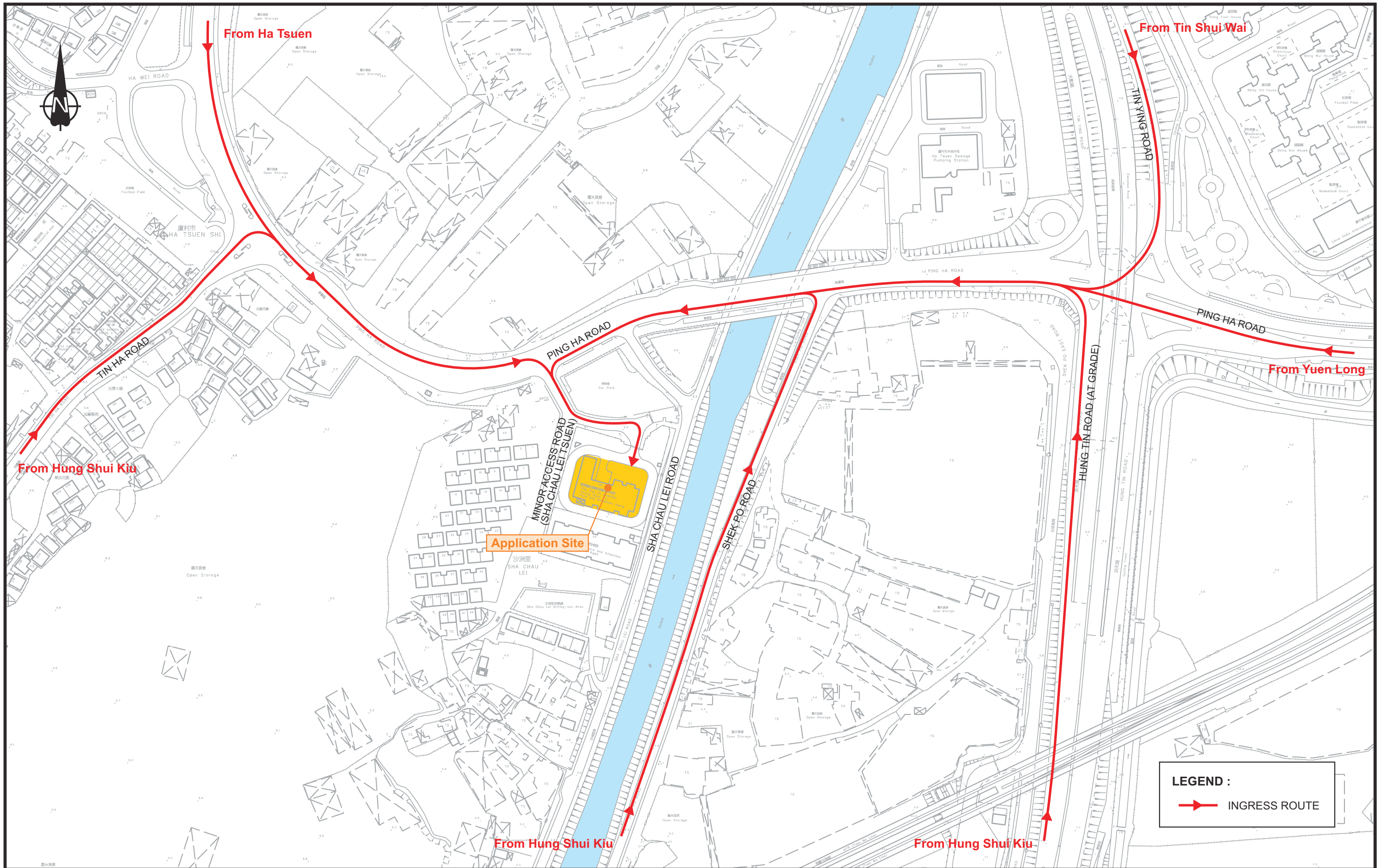
G/F

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A	AS PER SWD COMMENTS	CYH	21MAY24

Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YUENG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title			
LAYOUT PLAN			
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Drawing No.	2.1		Rev. B



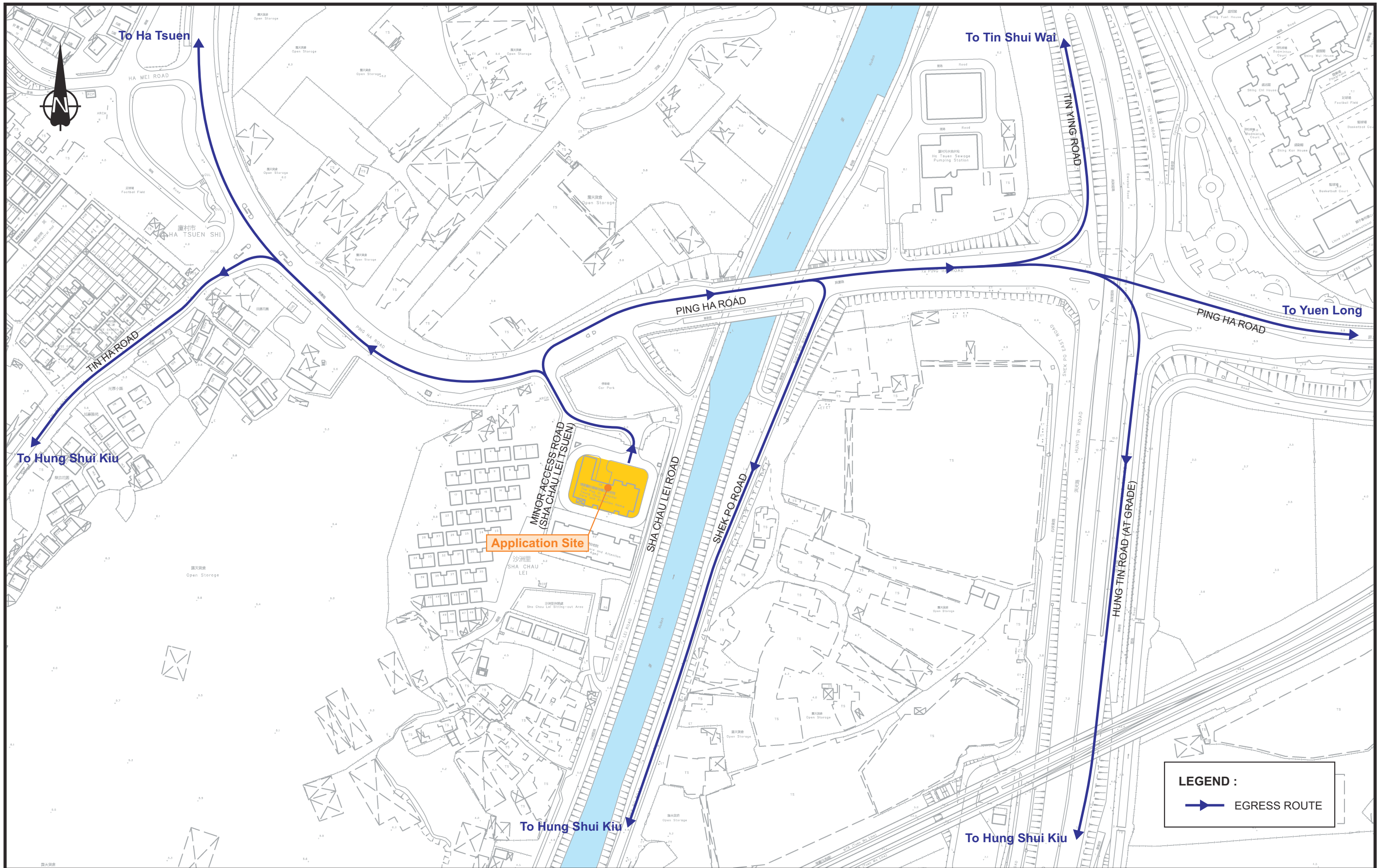


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 FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED
 REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI
 CARE AND ATTENTION HOME IN YUEN LONG**

Drawing Title DEVELOPMENT INGRESS ROUTE		Designed TAT	Checked CYH	Scale NTS	Date FEB 2024	Drawing No. 2.2	Rev. -
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LEGEND :

➡ EGRESS ROUTE

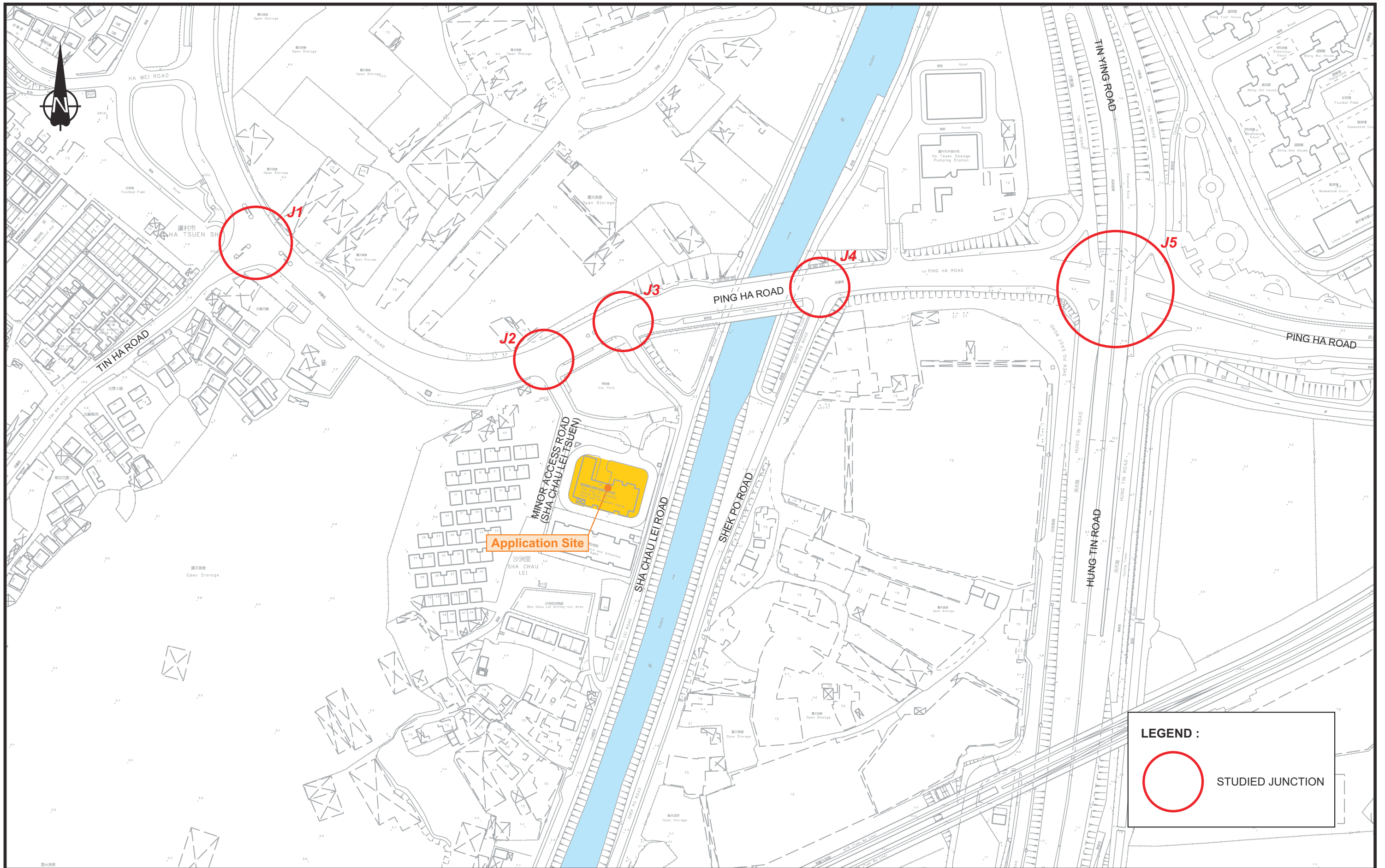
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Project Title

ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

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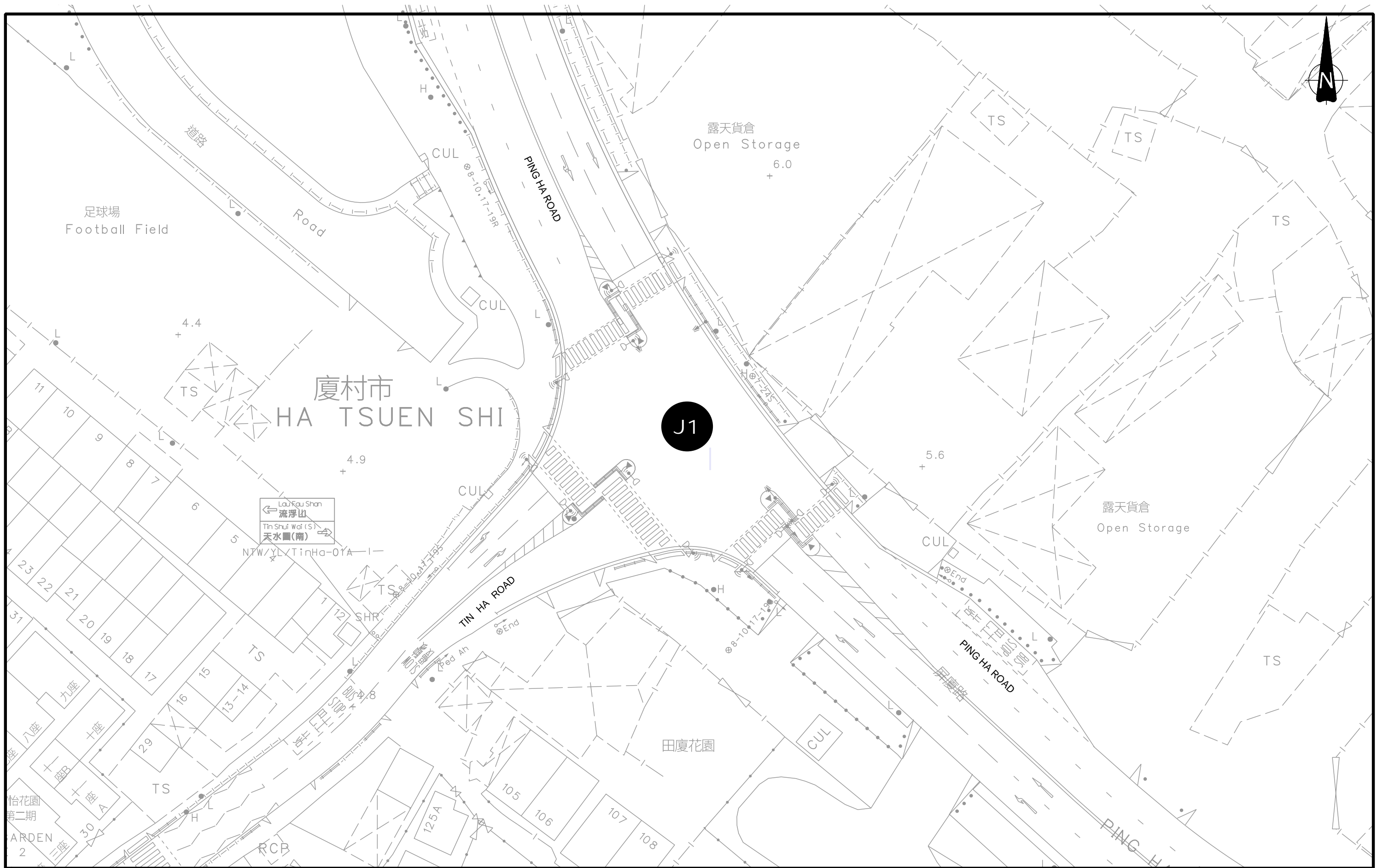


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Rev.	Description	Checked	Date

Project Title
**ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES
 FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED
 REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI
 CARE AND ATTENTION HOME IN YUEN LONG**

Drawing Title			
EXISTING ROAD NETWORK AND STUDIED KEY JUNCTIONS			
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Drawing No.		3.1	Rev.
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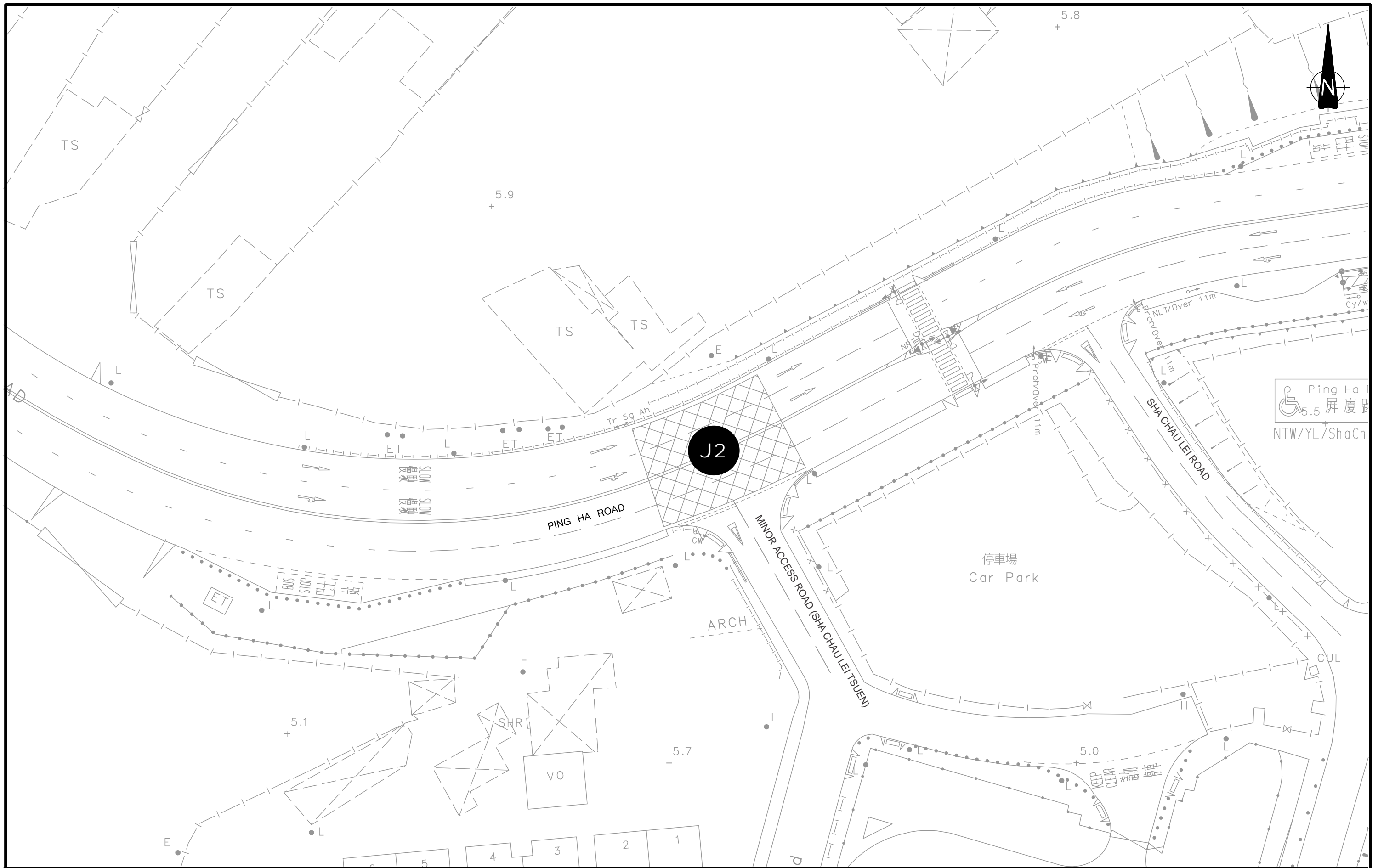
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Project Title
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 TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT
 OF POK OI HOSPITAL YEUNG CHUN PUI CARE
 AND ATTENTION HOME IN YUEN LONG

Drawing Title
**EXISTING JUNCTION LAYOUT:
 PING HA ROAD/ TIN HA ROAD (J1)**

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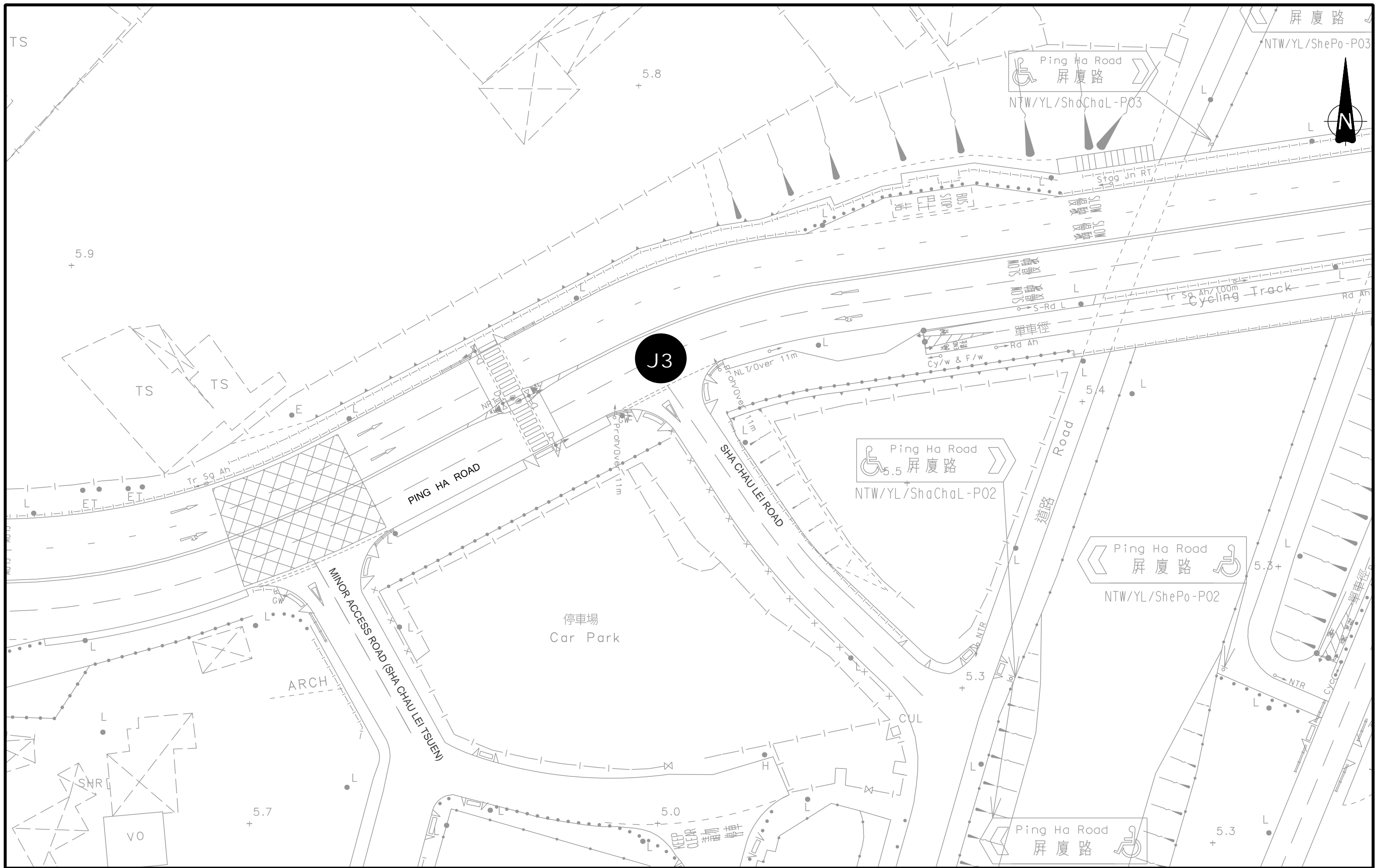
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Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title
**EXISTING JUNCTION LAYOUT:
 PING HA ROAD/ MINOR ACCESS ROAD (SHA CHAU LEI TSUEN) (J2)**

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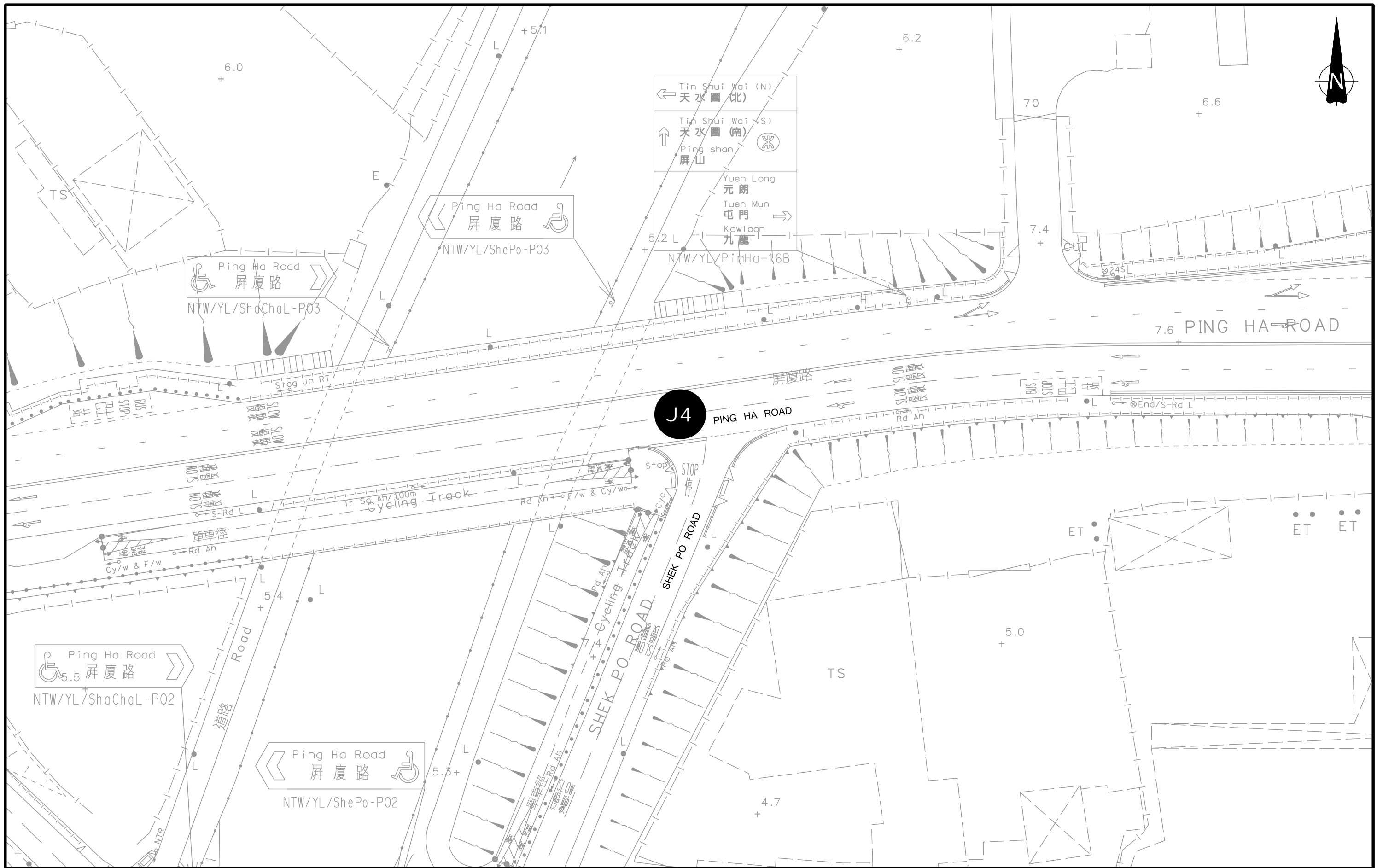
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Drawing Title
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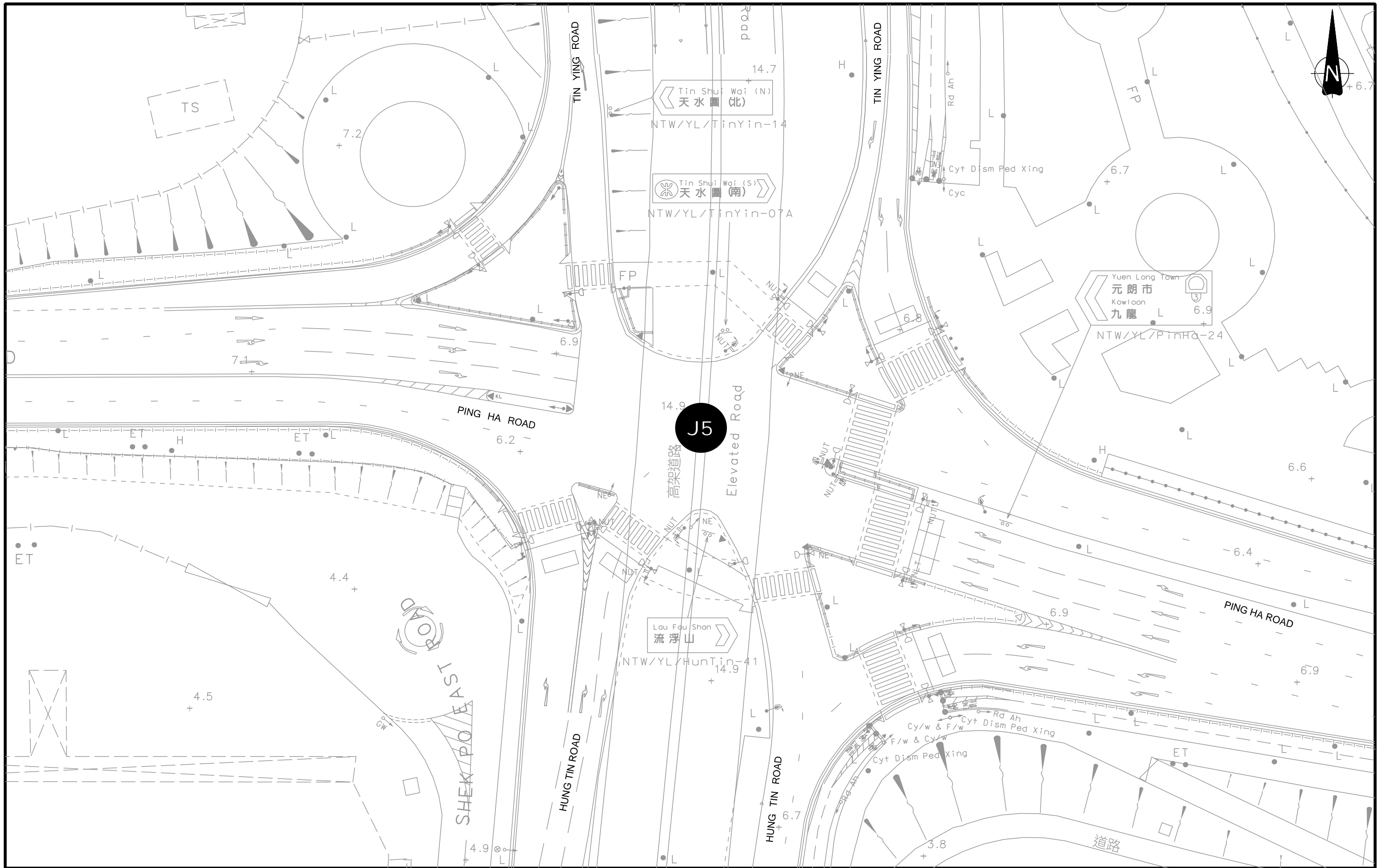
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Drawing Title
**EXISTING JUNCTION LAYOUT:
 PING HA ROAD/ SHEK PO ROAD (J4)**

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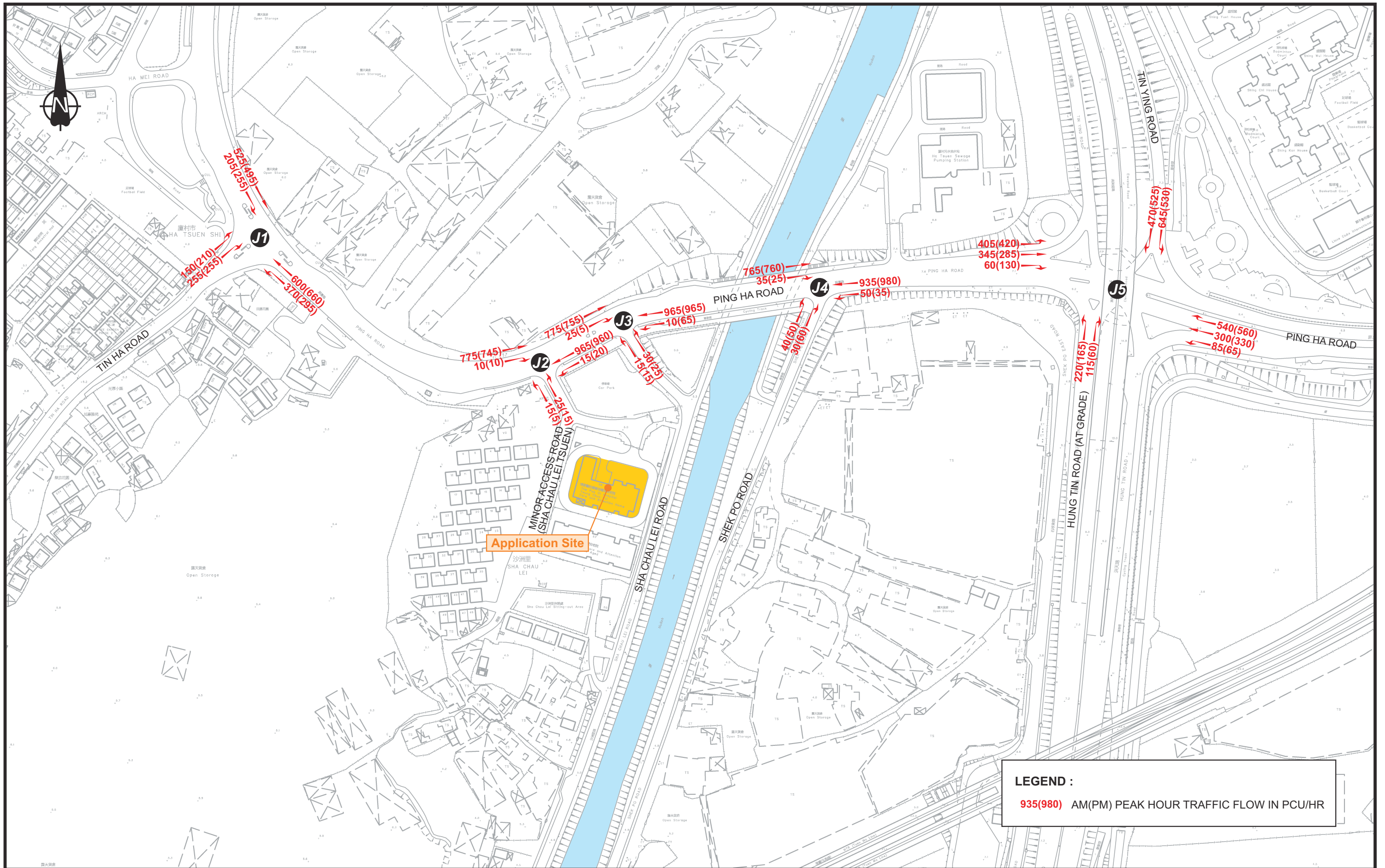
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Project Title
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Drawing Title
**EXISTING JUNCTION LAYOUT:
 PING HA ROAD/ TIN YING ROAD/ HUNG TIN ROAD (AT GRADE) (J5)**

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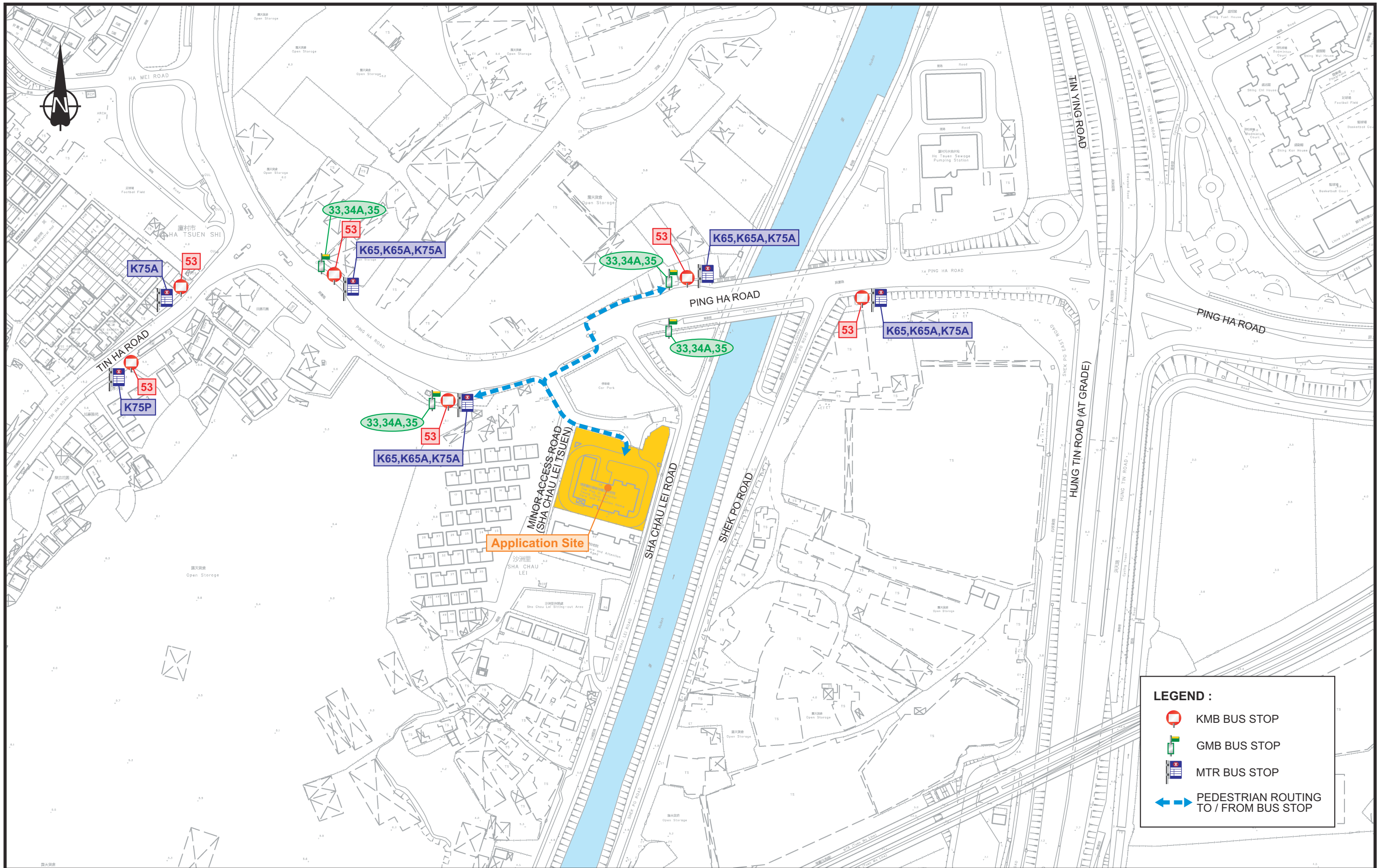
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Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title			
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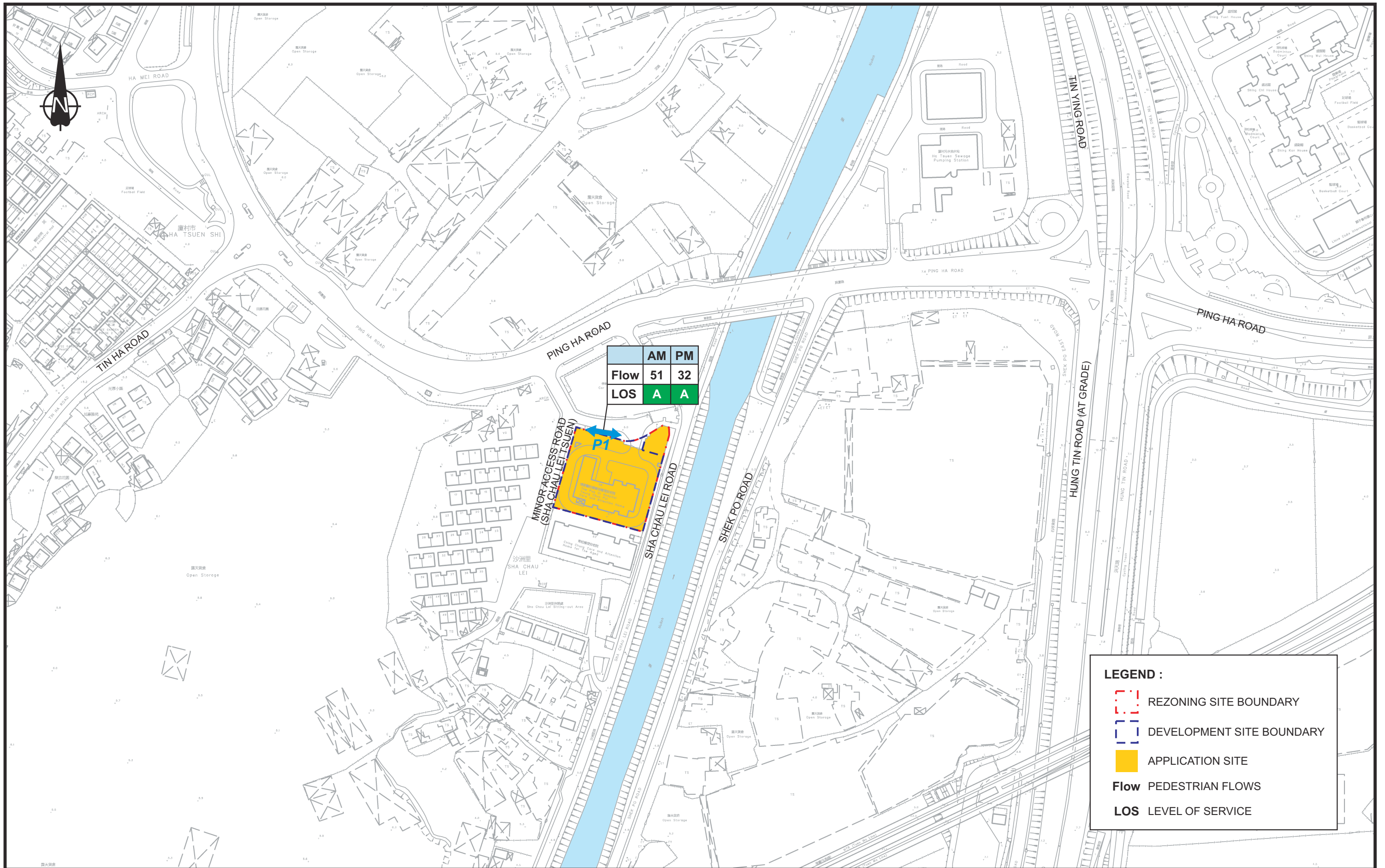
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- MTR BUS STOP
- PEDESTRIAN ROUTING TO / FROM BUS STOP

-	-	-	Project Title
-	-	-	ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YUENG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG
-	-	-	
A	TD'S COMMENT INCORPORATED	CYH	10MAY24
Rev.	Description	Checked	Date

Project Title			
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YUENG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG			
Designed	TAT	Checked	CYH

Drawing Title			
EXISTING PUBLIC TRANSPORT SERVICES IN THE VICINITY			
Designed	TAT	Checked	CYH
Scale	NTS	Date	FEB 2024
Drawing No.	3.8		Rev. A



LEGEND :

- REZONING SITE BOUNDARY
- DEVELOPMENT SITE BOUNDARY
- APPLICATION SITE
- Flow** PEDESTRIAN FLOWS
- LOS** LEVEL OF SERVICE

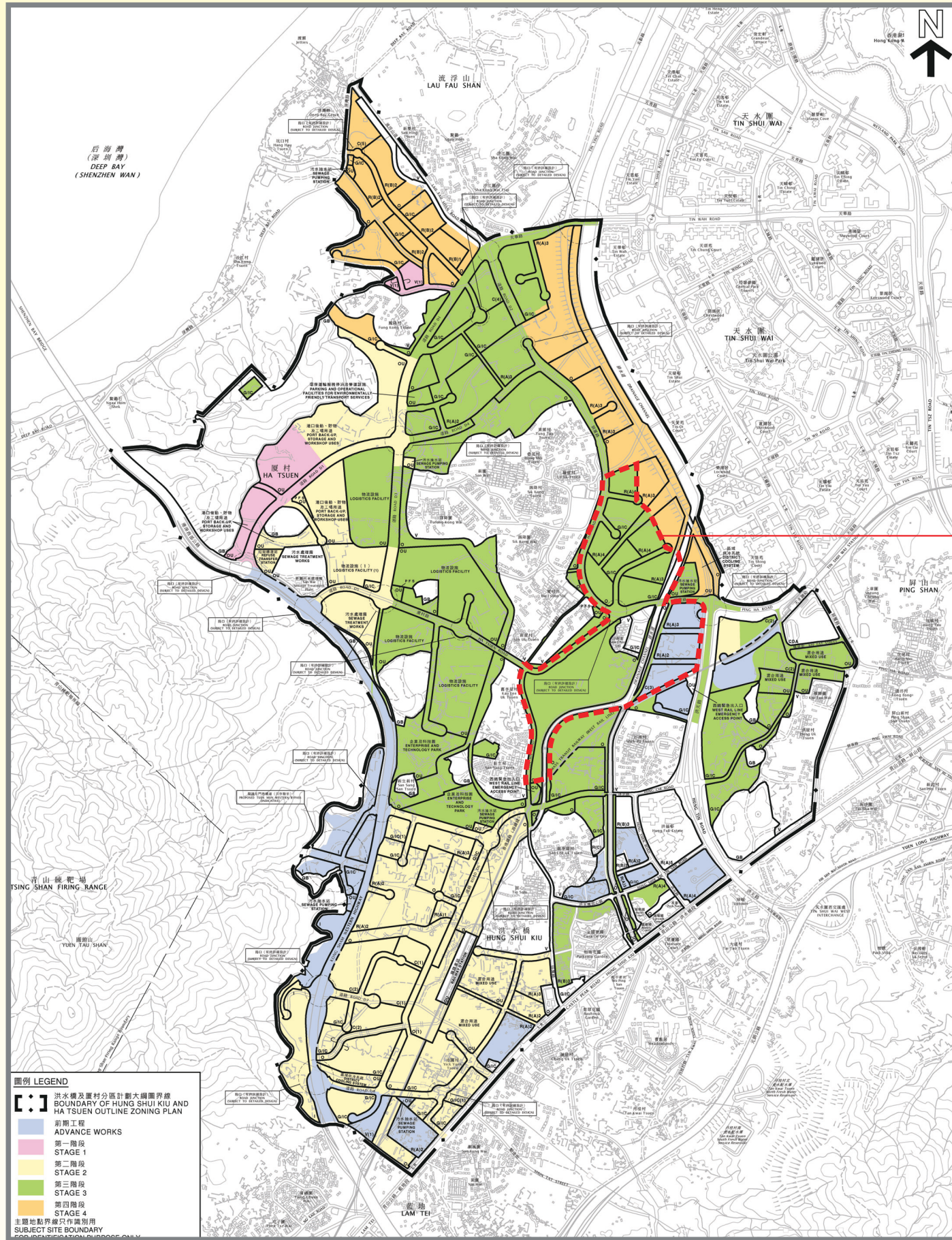
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Rev.	Description	Checked Date

Project Title

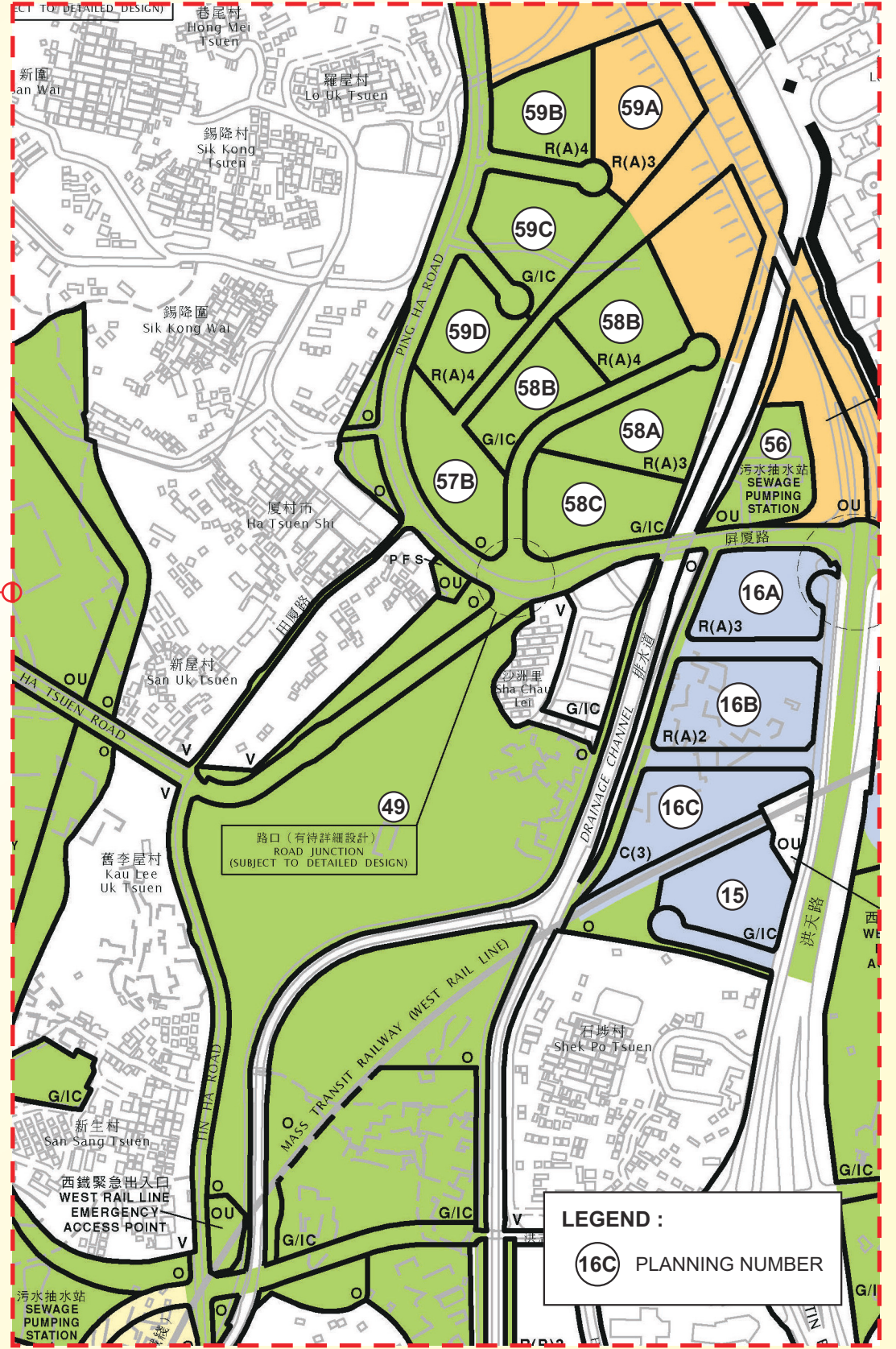
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title					
2024 PEDESTRIAN FLOWS					
Designed	TAT	Checked	CYH	Scale	NTS
Date	MAY 2024	Drawing No.	3.9	Rev.	-





Planned and Committed Developments



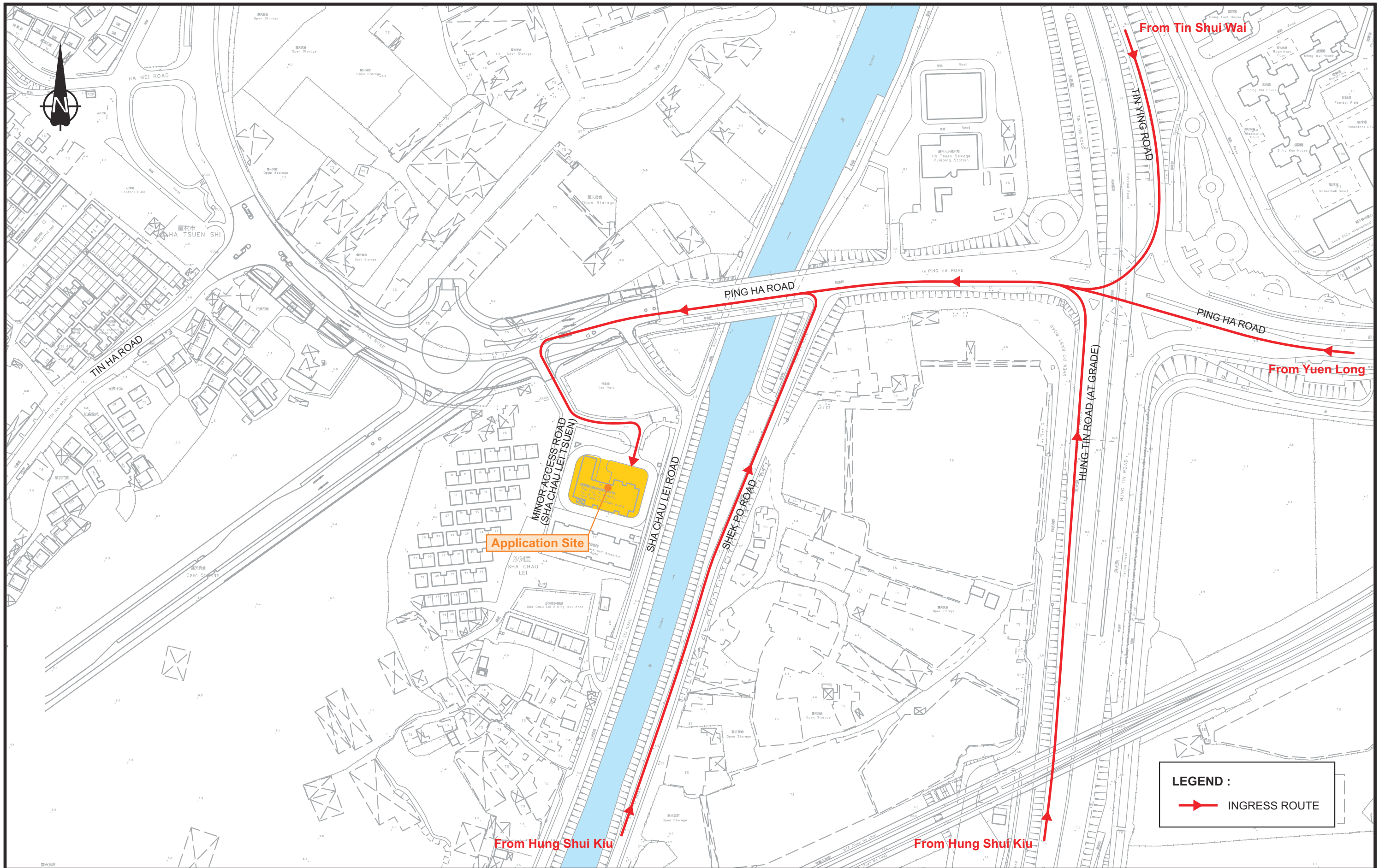
Reference :
M/SR/HSK/17/035_2, Hung Shui Kiu and Ha Tsuen Outline Development Plan No. D/HSK/2

Rev.	Description	Checked	Date
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-	-	-	-

Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title DEVELOPMENT PHASING PLAN OF HUNG SHUI KIU / HA TSUEN NDA AND PLANNED AND COMMITTED DEVELOPMENTS IN THE VICINITY			
Designed	TAT	Checked	CYH
Scale	NTS	Date	FEB 2024
Drawing No.	4.1	Rev.	-



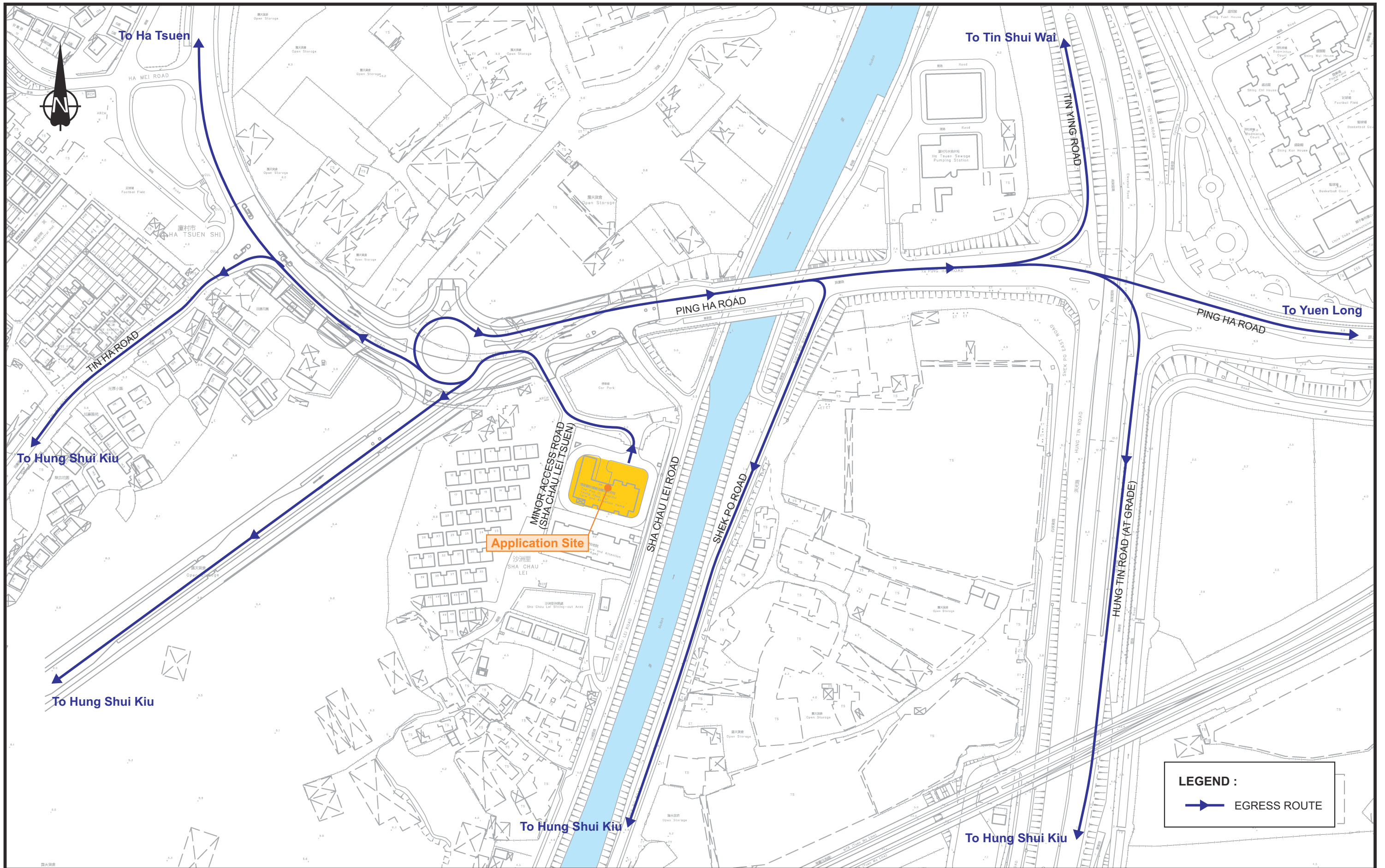


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Rev.	Description	Checked	Date

Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title PREDICTED FUTURE INGRESS ROUTE			
Designed	TAT	Checked	CYH
Scale	NTS	Date	FEB 2024
Drawing No.	4.2	Rev.	-





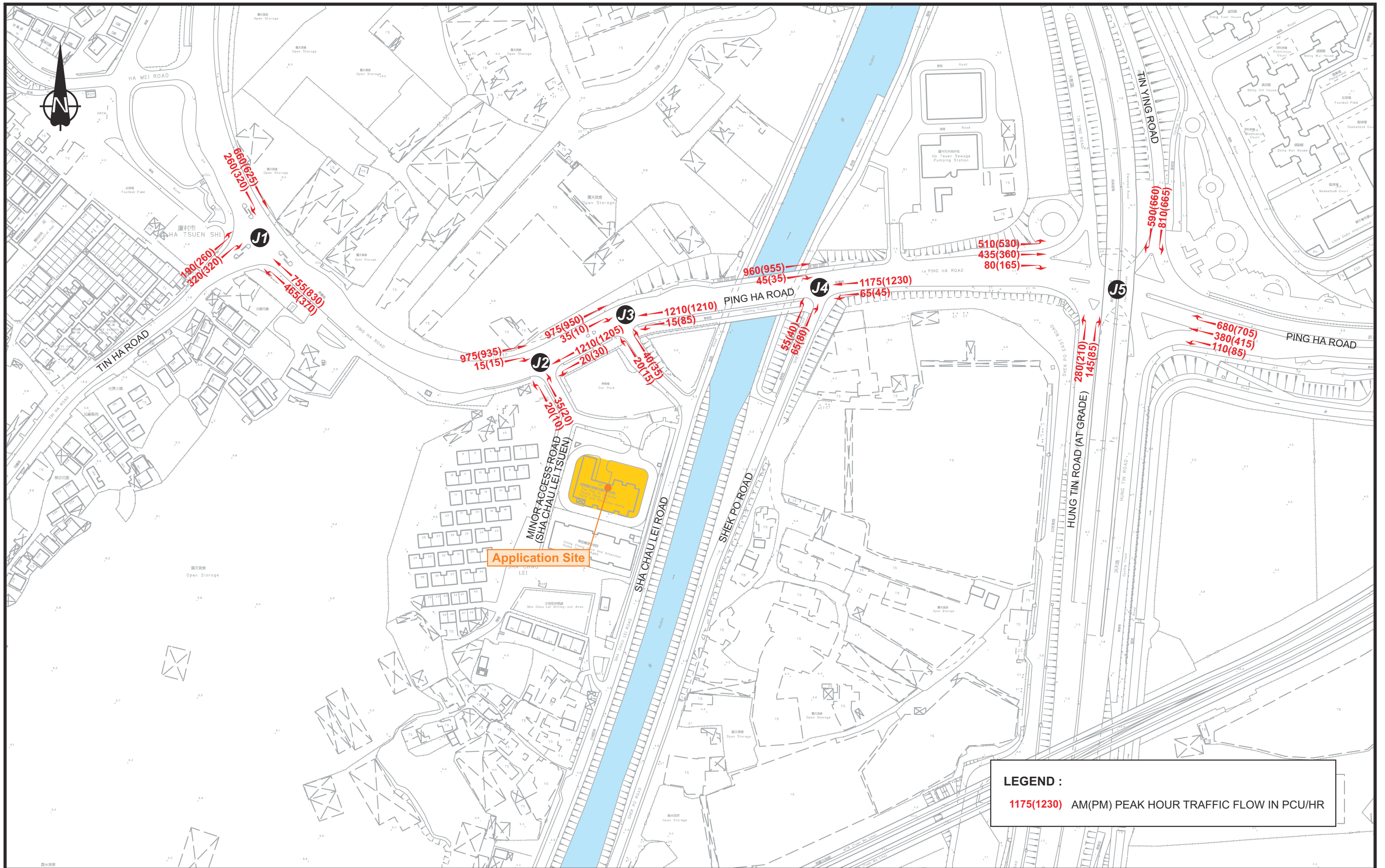
LEGEND :
 EGRESS ROUTE

-	-	-	-
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-	-	-	-
-	-	-	-
Rev.	Description	Checked	Date

Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title PREDICTED FUTURE EGRESS ROUTE			
Designed	TAT	Checked	CYH
Scale	NTS	Date	FEB 2024
Drawing No.	4.3	Rev.	-



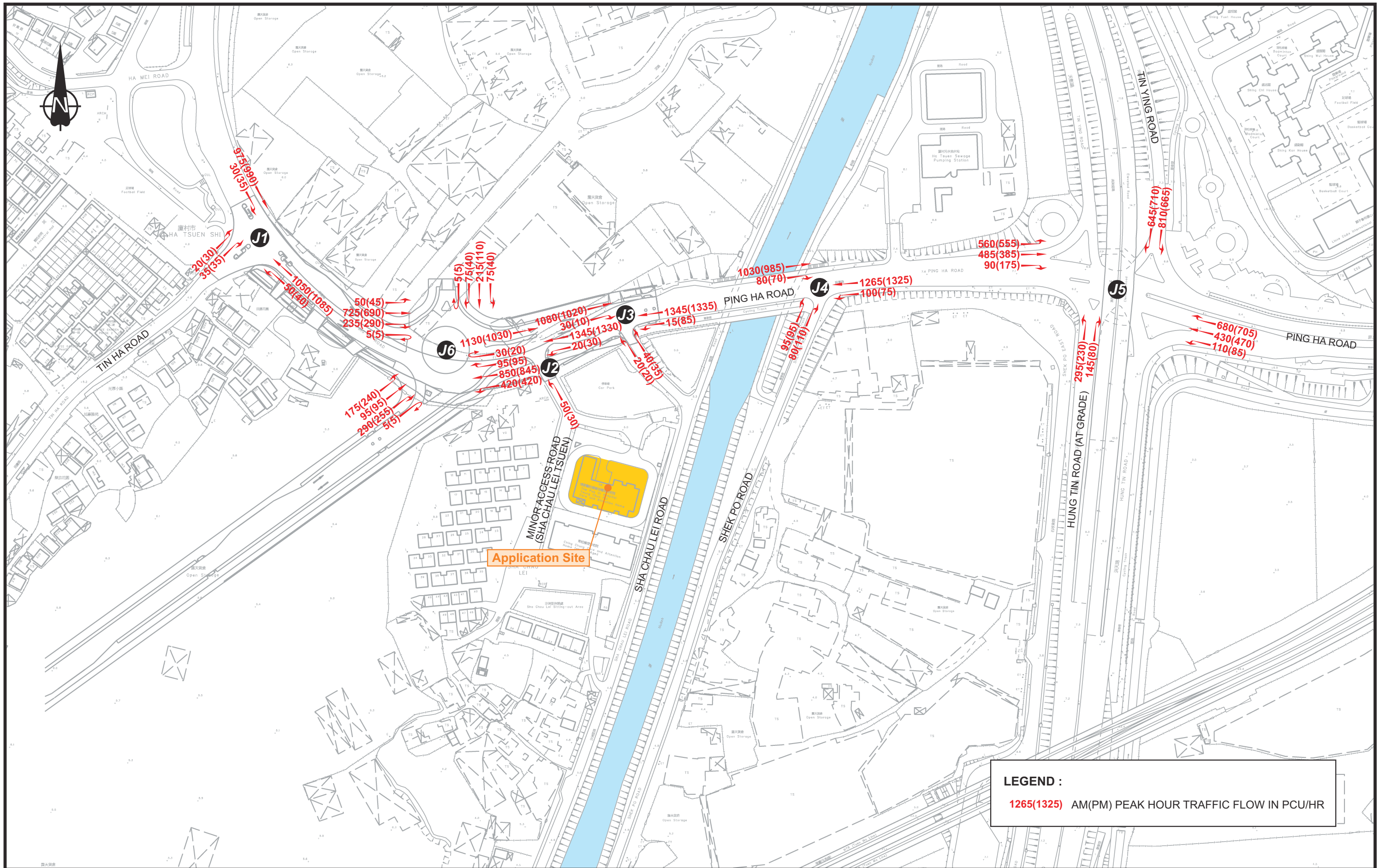


Rev.	Description	Checked	Date
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Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title YEAR 2035 REFERENCE TRAFFIC FLOWS - WITHOUT FUTURE ROAD NETWORK			
Designed	TAT	Checked	CYH
Scale	NTS	Date	FEB 2024
Drawing No.	4.4	Rev.	-





LEGEND :
1265(1325) AM(PM) PEAK HOUR TRAFFIC FLOW IN PCU/HR

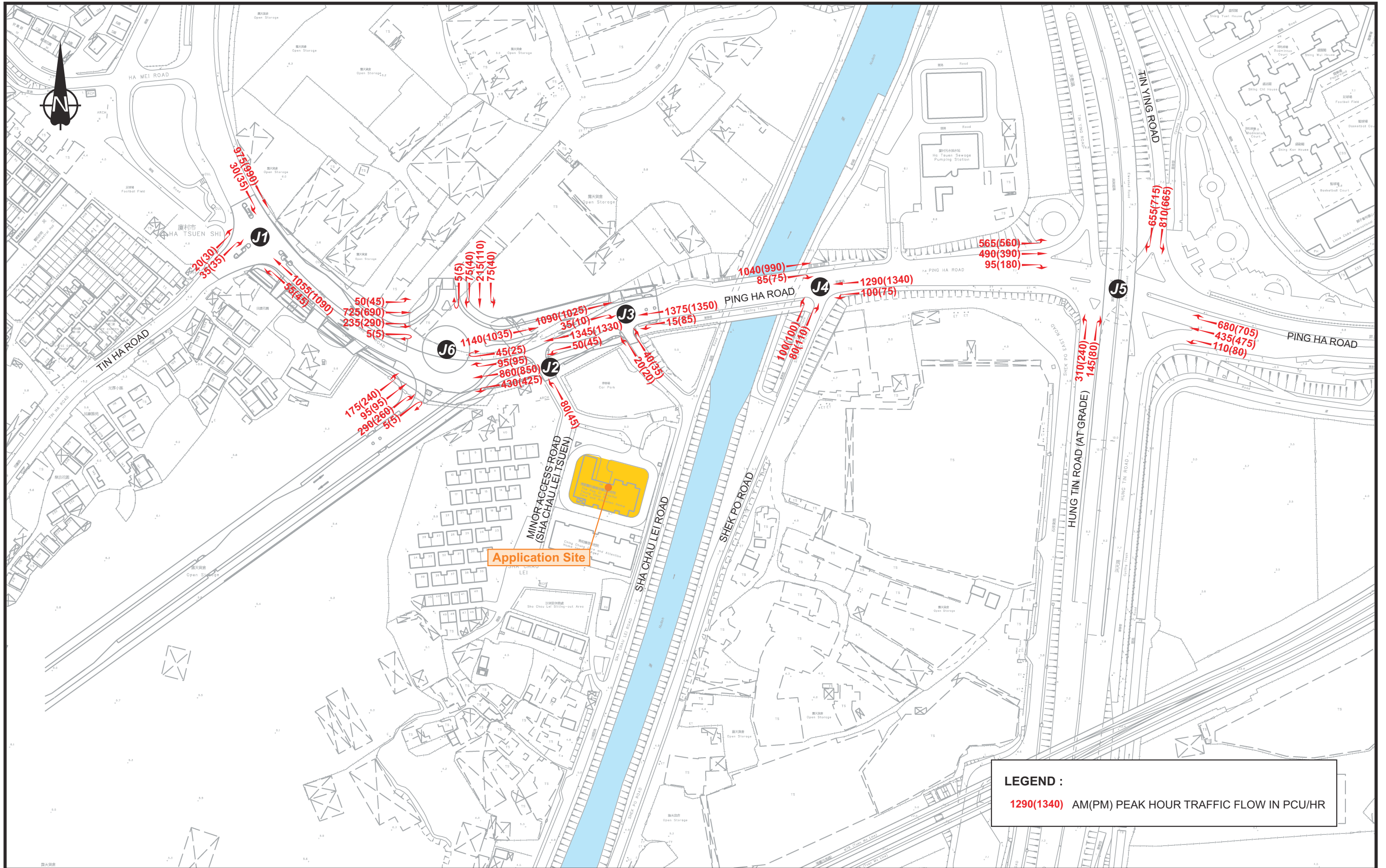
Rev.	Description	Checked	Date
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Project Title
 ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title
YEAR 2035 REFERENCE TRAFFIC FLOWS - WITH FUTURE ROAD NETWORK

Designed TAT Checked CYH Scale NTS Date FEB 2024 Drawing No. 4.5 Rev. -



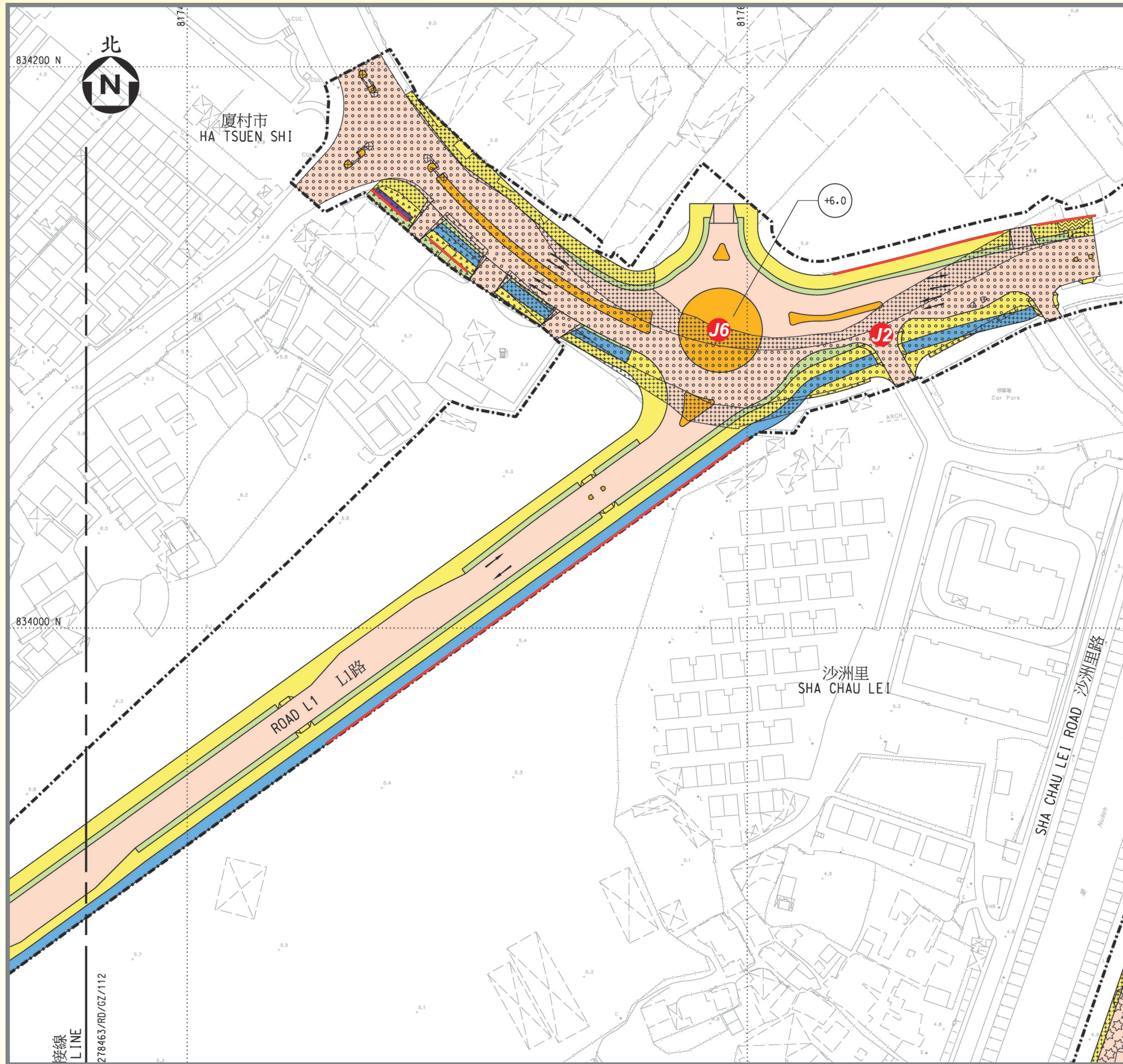


Rev.	Description	Checked	Date
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Project Title
ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title			
YEAR 2035 DESIGN TRAFFIC FLOWS - WITH FUTURE ROAD NETWORK			
Designed	TAT	Checked	CYH
Scale	NTS	Date	FEB 2024
Drawing No.	4.6		Rev.
			-





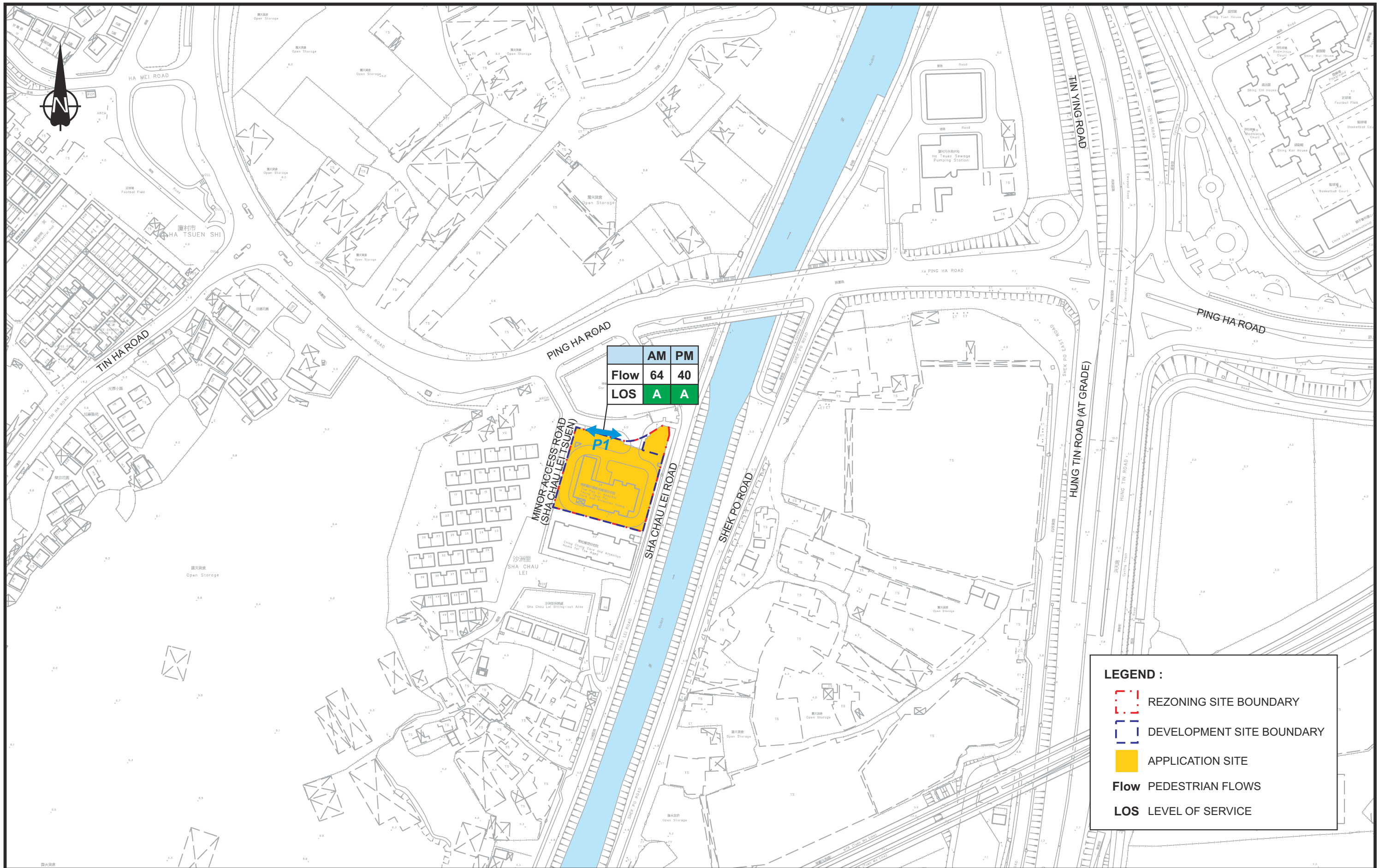
Source :
 Hung Shui Kiu / Ha Tsuen New Development
 Area Advance Works Phase 3 and Stage 2
 Works - Site Formation and Engineering
 Infrastructure

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Rev.	Description	Checked	Date

Project Title
**ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES
 FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED
 REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI
 CARE AND ATTENTION HOME IN YUEN LONG**

Drawing Title PLANNED NEW ROUNDABOUT (J6 & J2)			
Designed TAT	Checked CYH	Scale NTS	Date FEB 2024
Drawing No. 5.1		Rev. -	





LEGEND :

- REZONING SITE BOUNDARY
- DEVELOPMENT SITE BOUNDARY
- APPLICATION SITE
- Flow** PEDESTRIAN FLOWS
- LOS** LEVEL OF SERVICE

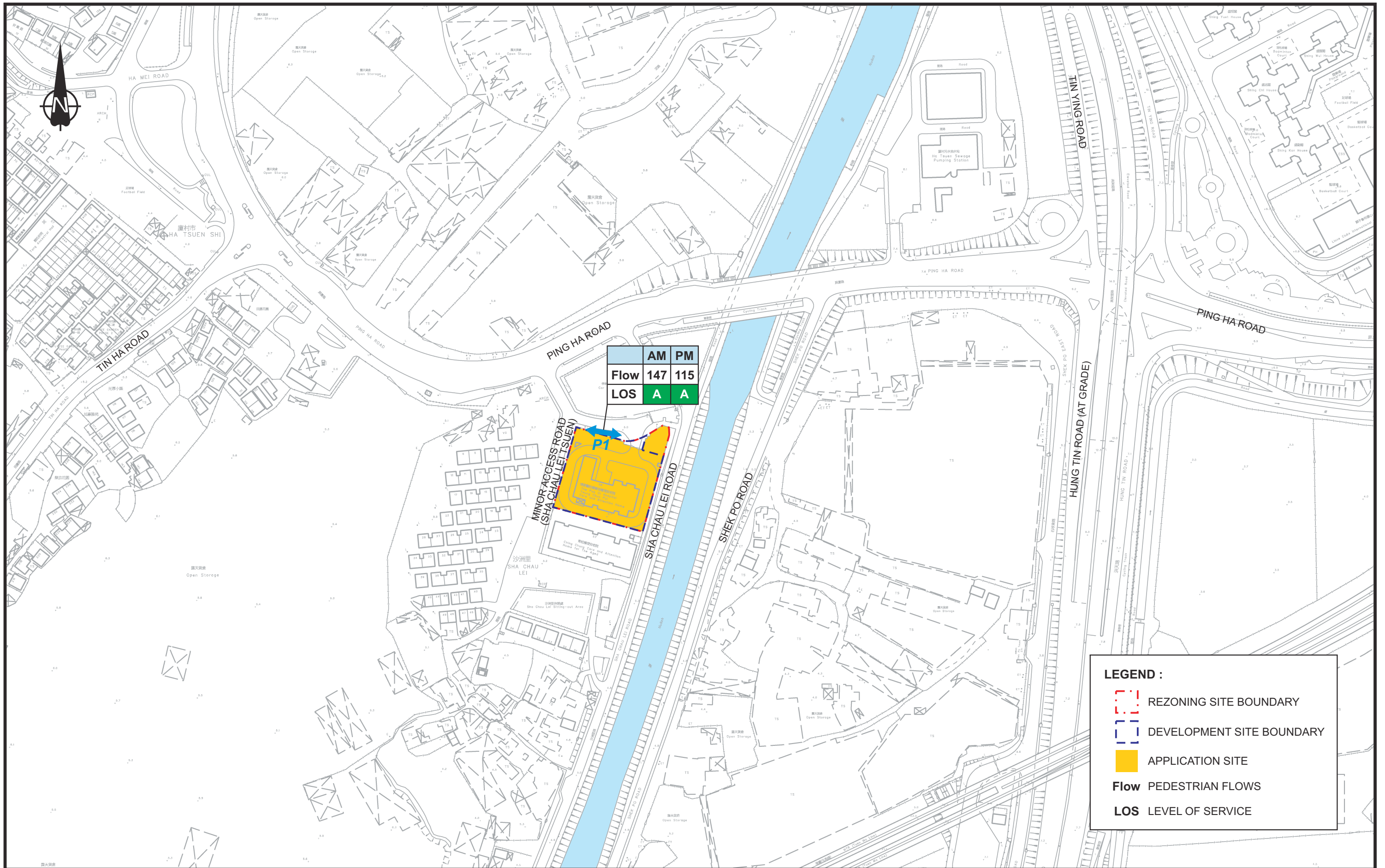
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Rev.	Description	Checked Date

Project Title

ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title		2035 REFERENCE FLOWS	
Designed	TAT	Checked	CYH
Scale	NTS	Date	MAY 2024
Drawing No.	6.1	Rev.	-





Rev.	Description	Checked	Date
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-	-	-	-

Project Title

ARCHITECTURAL AND ASSOCIATED CONSULTANCY SERVICES FOR TECHNICAL FEASIBILITY STUDY FOR PROPOSED REDEVELOPMENT OF POK OI HOSPITAL YEUNG CHUN PUI CARE AND ATTENTION HOME IN YUEN LONG

Drawing Title			
2035 DESIGN FLOWS			
Designed	Checked	Scale	Date
TAT	CYH	NTS	MAY 2024
Drawing No.		Rev.	
6.2		-	



Appendix A
Junction Calculation Sheets



TRAFFIC SIGNALS CALCULATION

Job No.: **CHK50749010**

MVA HONG KONG LIMITED

Junction: J1- Tin Ha Road/Ping Ha Road


Design Year: 2023

Description: 2023 Existing Flow

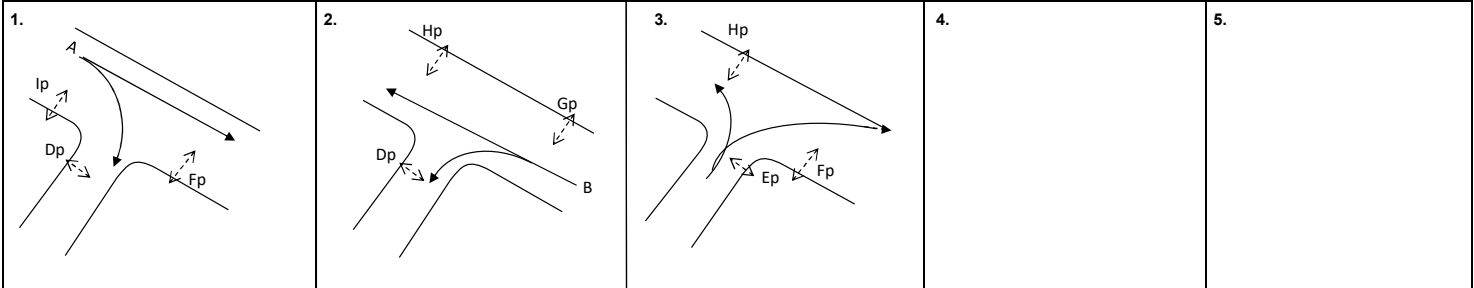
Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		AM Peak			PM Peak		
					Left	Right		AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ping Ha Road WB	↑	B	2	3.000	30			81%	65%	1840	1855	458	0.249	0.249	453	0.244	0.244
	↗	B	2	3.000													
Ping Ha Road EB	↑	A	1	3.000				59%	72%	2055	2055	383	0.186		395	0.192	0.192
	↘	A	1	3.000	30												
Tin Ha Road	↗	C	3	3.500	15					1915	1915	255	0.133	0.133	255	0.133	0.133
	↘	C	3	3.300	10												
Pedestrian Crossing		Dp	1,2	MIN GREEN + FLASH =		5	+	8	=	13							
		Ep	3	MIN GREEN + FLASH =		5	+	11	=	16							
		Fp	1,3	MIN GREEN + FLASH =		5	+	9	=	14							
		Gp	2	MIN GREEN + FLASH =		5	+	5	=	10							
		Hp	2,3	MIN GREEN + FLASH =		5	+	7	=	12							
		Ip	1	MIN GREEN + FLASH =		5	+	9	=	14							

Notes:	Flow: (pcu/hr)					
	Group	C,lp,B	C,A,B	Group	C,lp,B	C,A,B
	y	0.382	0.569	y	0.377	0.570
	L (sec)	28	21	L (sec)	28	21
	C (sec)	136	136	C (sec)	129	129
	y pract.	0.715	0.761	y pract.	0.705	0.753
	R.C. (%)	87%	34%	R.C. (%)	87%	32%

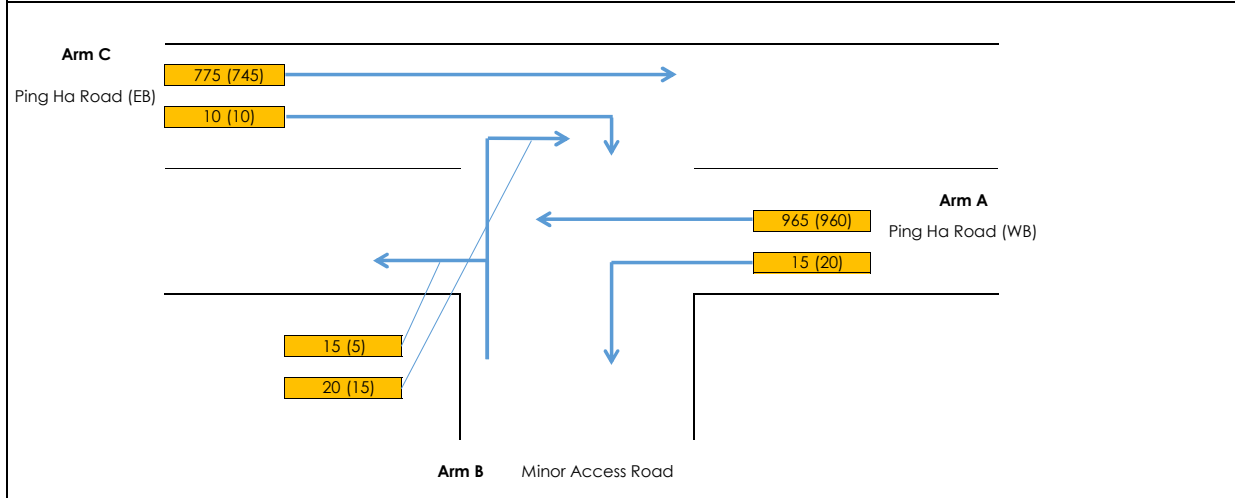
Stage / Phase Diagrams



I/G= 7	I/G= 8	I/G= 9	I/G=	I/G=
I/G= 7	I/G= 8	I/G= 9	I/G=	I/G=

Simplified Priority Junction Capacity Calculation

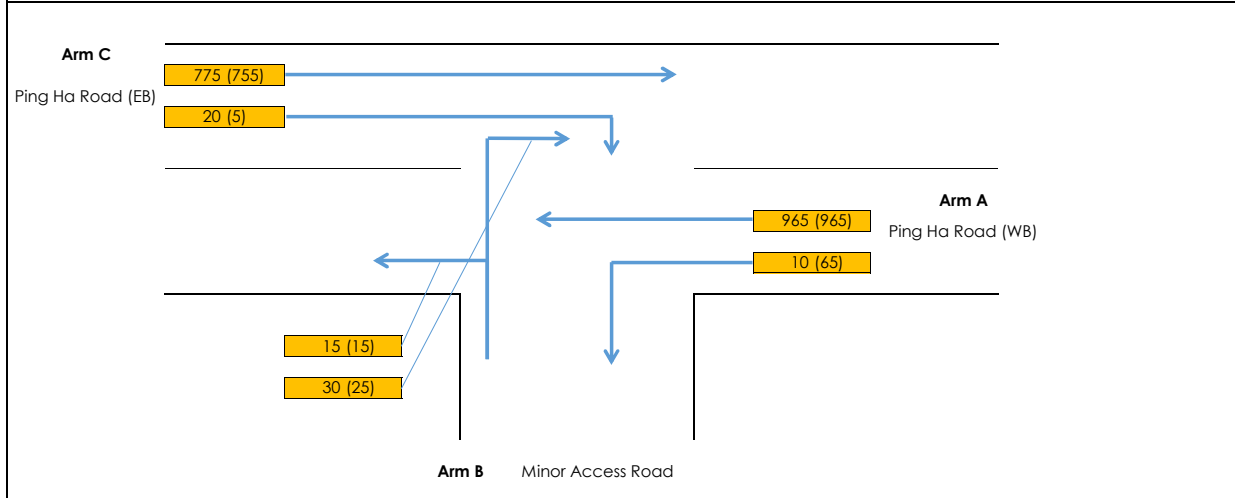
Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital			
Junction: J2 (Ping Ha Road/ Minor Access Road)			Designed by: TAT
Scheme:			
Design Year: 2023		Existing Flow	Job No.: CHK50749010
			Checked by: CYH
			Date: Feb-24
Arm A: Ping Ha Road (WB)			
Arm B: Minor Access Road			
Arm C: Ping Ha Road (EB)			



GEOMETRY					
Major Road Width (m)	W	16.50	Lane widths (m)	w(b-a)	4.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	4.00
Blockage of major road right turn	Y/N?	N		w(c-b)	4.20
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.895
	VI(b-a)	40		E	0.986
	Vr(b-c)	70		F	0.974
	Vr(c-b)	38		Y	0.431
ANALYSIS					
			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		775	745	
	a(c-b)		10	10	
	a(a-b)		15	20	
	a(a-c)		965	960	
	a(b-a)		20	15	
	a(b-c)		15	5	
	f		0.43	0.25	
CAPACITIES (pcu/hr)	Q(b-ac)		427	396	
	Q(c-b)		576	576	
RFC's	c-b		0.02	0.02	
	b-ac		0.08	0.05	
RFC			0.08	0.05	
Where VI and Vr are visibility distances to the left or right of the respective streams $D = (1 + 0.094(w(b-a) - 3.65))(1 + 0.0009(Vr(b-a) - 120))(1 + 0.0006(VI(b-a) - 150))$ $E = (1 + 0.094(w(b-c) - 3.65))(1 + 0.0009(Vr(b-c) - 120))$ $F = (1 + 0.094(w(c-b) - 3.65))(1 + 0.0009(Vr(c-b) - 120))$ $Y = 1 - 0.0345W$ 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					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

Simplified Priority Junction Capacity Calculation

Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital			
Junction: J3 (Ping Ha Road/ Sah Chau Lei Road)			Designed by: TAT
Scheme:			
Design Year: 2023		Existing Flow	Job No.: CHK50749010
			Checked by: CYH
			Date: Feb-24
Arm A: Ping Ha Road (WB)			
Arm B: Minor Access Road			
Arm C: Ping Ha Road (EB)			



GEOMETRY

Major Road Width (m)	W	16.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			

Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.879
	VI(b-a)	40		E	0.968
	Vr(b-c)	70		F	1.037
	Vr(c-b)	100		Y	0.448

ANALYSIS

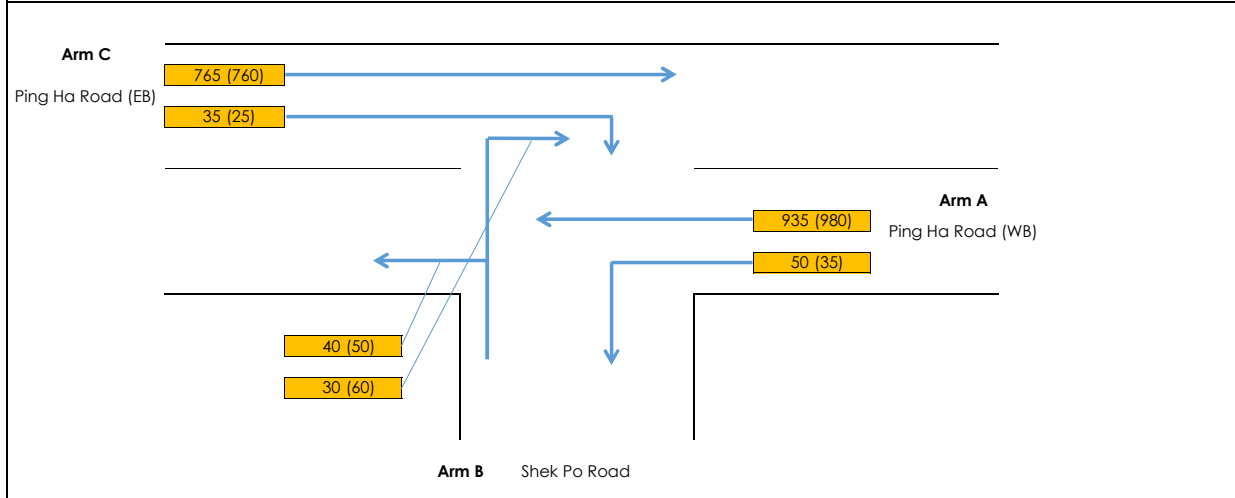
		AM PEAK	PM PEAK
TRAFFIC FLOWS (pcu/hr)	a(c-a)	775	755
	a(c-b)	20	5
	a(a-b)	10	65
	a(a-c)	965	965
	a(b-a)	30	25
	a(b-c)	15	15
	f	0	0
CAPACITIES (pcu/hr)	Q(b-ac)	391	400
	Q(c-b)	608	599
RFC's	c-b	0.03	0.01
	b-ac	0.12	0.10
RFC		0.12	0.10

Where VI and Vr are visibility distances to the left or right of the respective streams
 $D = (1 + 0.094(w(b-a) - 3.65))(1 + 0.0009(Vr(b-a) - 120))(1 + 0.0006(VI(b-a) - 150))$
 $E = (1 + 0.094(w(b-c) - 3.65))(1 + 0.0009(Vr(b-c) - 120))$
 $F = (1 + 0.094(w(c-b) - 3.65))(1 + 0.0009(Vr(c-b) - 120))$
 $Y = 1 - 0.0345W$
 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

All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1

Simplified Priority Junction Capacity Calculation

Job Title:	TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital			Designed by:	TAT	
Junction:	J4 (Ping Ha Road/ Shek Po Road)			Checked by:	CYH	
Scheme:						
Design Year:	2023	Existing Flow	Job No.:	CHK50749010	Date:	Feb-24
Arm A:	Ping Ha Road (WB)					
Arm B:	Shek Po Road					
Arm C:	Ping Ha Road (EB)					



GEOMETRY					
Major Road Width (m)	W	15.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	30	Calculated Parameters	D	0.865
	VI(b-a)	30		E	0.947
	Vr(b-c)	46		F	1.037
	Vr(c-b)	100		Y	0.483
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		765	760	
	a(c-b)		35	25	
	q(a-b)		50	35	
	q(a-c)		935	980	
	q(b-a)		30	60	
	q(b-c)		40	50	
	f		1	0	
CAPACITIES (pcu/hr)	Q(b-ac)		417	387	
	Q(c-b)		593	588	
RFC's	c-b		0.06	0.04	
	b-ac		0.17	0.28	
RFC			0.17	0.28	
<p>Where VI and Vr are visibility distances to the left or right of the respective streams $D = (1 + 0.094(w(b-a) - 3.65))(1 + 0.0009(Vr(b-a) - 120))(1 + 0.0006(VI(b-a) - 150))$ $E = (1 + 0.094(w(b-c) - 3.65))(1 + 0.0009(Vr(b-c) - 120))$ $F = (1 + 0.094(w(c-b) - 3.65))(1 + 0.0009(Vr(c-b) - 120))$ $Y = 1 - 0.0345W$ 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</p>					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

TRAFFIC SIGNALS CALCULATION

Job No.: **CHK50749010**

MVA HONG KONG LIMITED

Junction: J5-Ping Ha Road/ Tin Ying Road/Hung Tin Road

Design Year: 2023

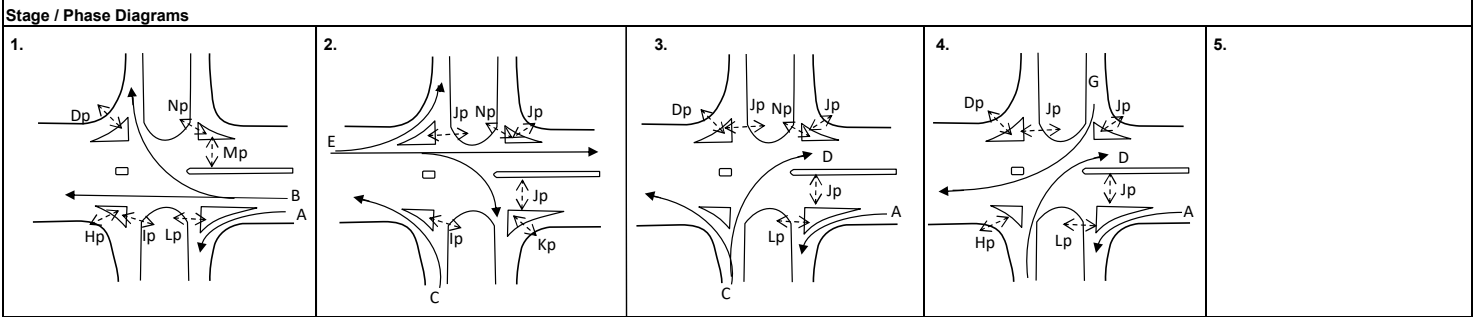
Description: 2023 Existing Flow

Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		AM Peak			PM Peak		
					Left	Right		AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ping Ha Road	↖	B	1	3.500		20				1460	1460	41	0.028		31	0.021	
		B	1	3.500		25				1590	1590	44	0.028		34	0.021	
	↑	B	1	3.500						2105	2105	150	0.071		165	0.078	
		1	1	3.500						2105	2105	150	0.071		165	0.078	
WB	↗	A	1,3,4	3.500			15			1915	1915	540	0.282	0.282	560	0.292	0.292
Hung Tin Road	↖	C	2	3.300		10				1690	1690	220	0.130		165	0.098	
		D	3,4	3.500			25			1855	1855	56	0.030		32	0.017	
	↗	D	3,4	3.500			20			1960	1960	59	0.030		33	0.017	
Ping Ha Road	↑	E	2	3.500						1965	1965	167	0.085		138	0.070	
		E	2	3.500			50	0%	0%	2105	2105	178	0.085		147	0.070	
	↖	E	2	3.500			45			2035	2035	60	0.029		130	0.064	
		E	2	3.300		10				1690	1690	405	0.240	0.240	420	0.249	0.249
Tin Ying Road	↖	F	1	3.500		20				1460	1460	309	0.212		254	0.174	
		F	1	3.500		25				1590	1590	336	0.211		276	0.174	
	↗	G	4	3.500			15			1915	1915	470	0.245		525	0.274	
Pedestrian Crossing	Hp	1,4		MIN GREEN + FLASH =	5	+	8	=	13								
	Ip	1,2		MIN GREEN + FLASH =	5	+	8	=	13								
	Jp	2,3,4		MIN GREEN + FLASH =	5	+	9	=	14								
	Kp	2		MIN GREEN + FLASH =	5	+	8	=	13								
	Lp	1,3,4		MIN GREEN + FLASH =	5	+	9	=	14								
	Mp	1		MIN GREEN + FLASH =	5	+	8	=	13								
	Np	1,2,3		MIN GREEN + FLASH =	5	+	5	=	10								
	Op	1,3,4		MIN GREEN + FLASH =	5	+	5	=	10								

Notes:	Flow: (pcu/hr)	Group	G,B,C		A,E	Group	G,B,C		A,E													
			y	L (sec)	C (sec)		y pract.	R.C. (%)	y	L (sec)	C (sec)	y pract.	R.C. (%)									
			0.447	13	120	0.803	80%	0.522	12	120	0.810	55%	0.450	13	120	0.803	78%	0.541	12	120	0.810	50%



I/G=	I/G= 5	I/G= 9	I/G=	I/G=
I/G=	I/G= 5	I/G= 9	I/G=	I/G=

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50749010 MVA HONG KONG LIMITED

Junction: J1- Tin Ha Road/Ping Ha Road

Design Year: 2035

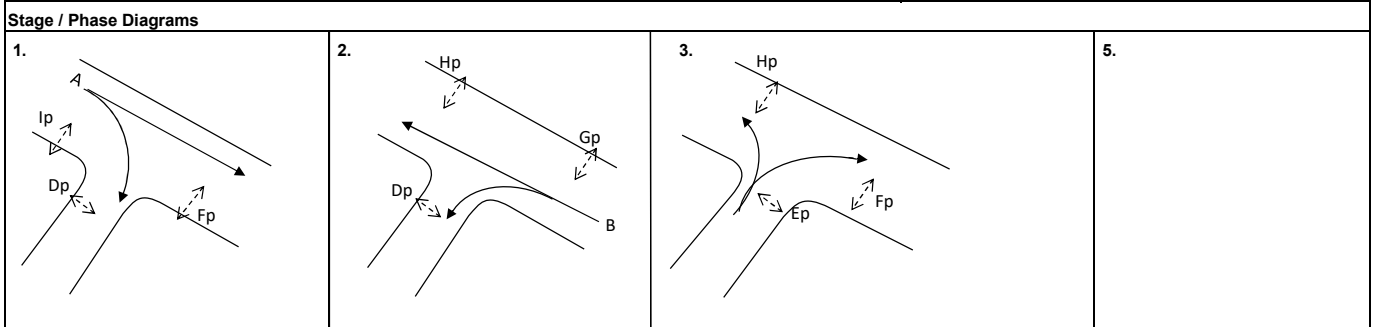
Description: 2035 Reference Flow (Without Future Road Network)

Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)					PM Peak		
					Left	Right		AM	PM	PM	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ping Ha Road WB	↑	B	2	3.000	30		81%	65%	1855	0.313	0.313	569	0.307	0.307	
	↗	B	2	3.000								2055	0.313		631
Ping Ha Road EB	↑	A	1	3.000			59%	71%	2055	0.235	0.235	497	0.242	0.242	
	↗	A	1	3.000	30							1850	0.235		448
Tin Ha Road	↗	C	3	3.500	15				1915	0.167	0.167	320	0.167	0.167	
	↑	C	3	3.300	10							1690	0.112		265
Pedestrian Crossing		Dp	1,2	MIN GREEN + FLASH =		5	+	8	13						
		Ep	3	MIN GREEN + FLASH =		5	+	11	16						
		Fp	1,3	MIN GREEN + FLASH =		5	+	9	14						
		Gp	2	MIN GREEN + FLASH =		5	+	5	10						
		Hp	2,3	MIN GREEN + FLASH =		5	+	7	12						
		Ip	1	MIN GREEN + FLASH =		5	+	9	14						

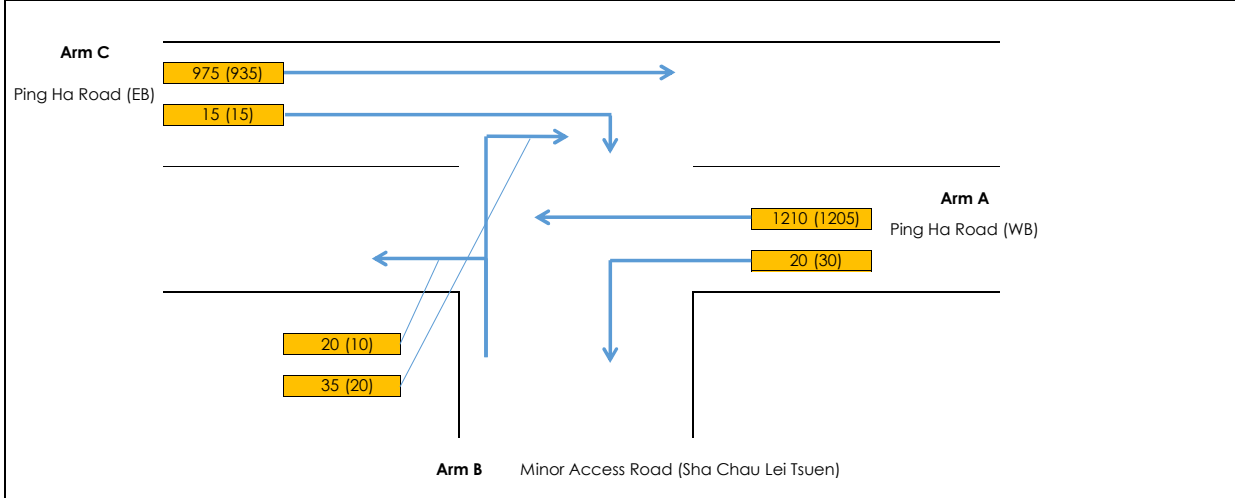
Notes:	Flow: (pcu/hr)	C,lp,B	C,A,B	Group	C,lp,B	C,A,B
		28	22	L (sec)	28	22
		136	136	C (sec)	120	120
		0.715	0.754	y pract.	0.690	0.735
		49%	5%	R.C. (%)	46%	3%



I/G= 7	I/G= 8	I/G= 10	I/G=	I/G=
I/G= 7	I/G= 8	I/G= 10	I/G=	I/G=
Date:			Junction: <u>J1- Tin Ha Road/Ping Ha Road</u>	

Simplified Priority Junction Capacity Calculation

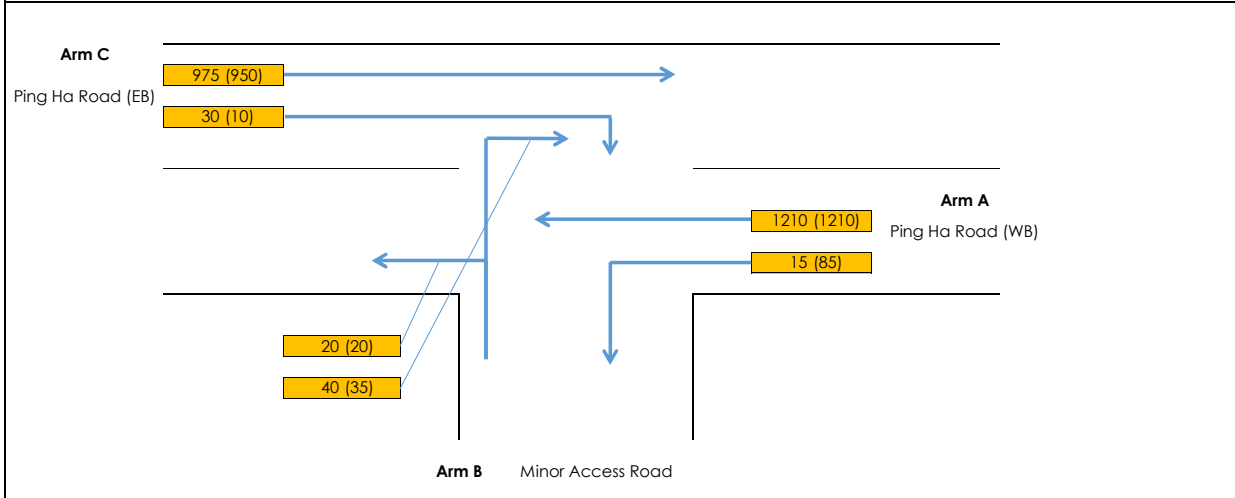
Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction: J2 (Ping Ha Road/ Minor Access Road)		Designed by: TAT
Scheme:		Checked by: CYH
Design Year: 2035 Reference Flow (Without Future Road Network)	Job No.: CHK50749010	Date: Feb-24
Arm A: Ping Ha Road (WB)		
Arm B: Minor Access Road (Sha Chau Lei Tsuen)		
Arm C: Ping Ha Road (EB)		



GEOMETRY					
Major Road Width (m)	W	16.50	Lane widths (m)	w(b-a)	4.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	4.00
Blockage of major road right turn	Y/N?	N		w(c-b)	4.20
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.895
	VI(b-a)	40		E	0.986
	Vr(b-c)	70		F	1.033
	Vr(c-b)	100		Y	0.431
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		975	935	
	a(c-b)		15	15	
	a(a-b)		20	30	
	a(a-c)		1210	1205	
	a(b-a)		35	20	
	a(b-c)		20	10	
	f		0	0	
CAPACITIES (pcu/hr)	Q(b-ac)		360	358	
	Q(c-b)		570	569	
RFC's	c-b		0.03	0.03	
	b-ac		0.15	0.08	
RFC			0.15	0.08	
<p>Where VI and Vr are visibility distances to the left or right of the respective streams</p> $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ <p>f = proportion of minor traffic turning left</p> $Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)$ Capacity of combined streams					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

Simplified Priority Junction Capacity Calculation

Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction: J3 (Ping Ha Road/ Sah Chau Lei Road)		Designed by: TAT
Scheme:		
Design Year: 2035 Reference Flow (Without Future Road Network)		Job No.: CHK50749010
Date: Feb-24		
Arm A: Ping Ha Road (WB)		
Arm B: Minor Access Road		
Arm C: Ping Ha Road (EB)		



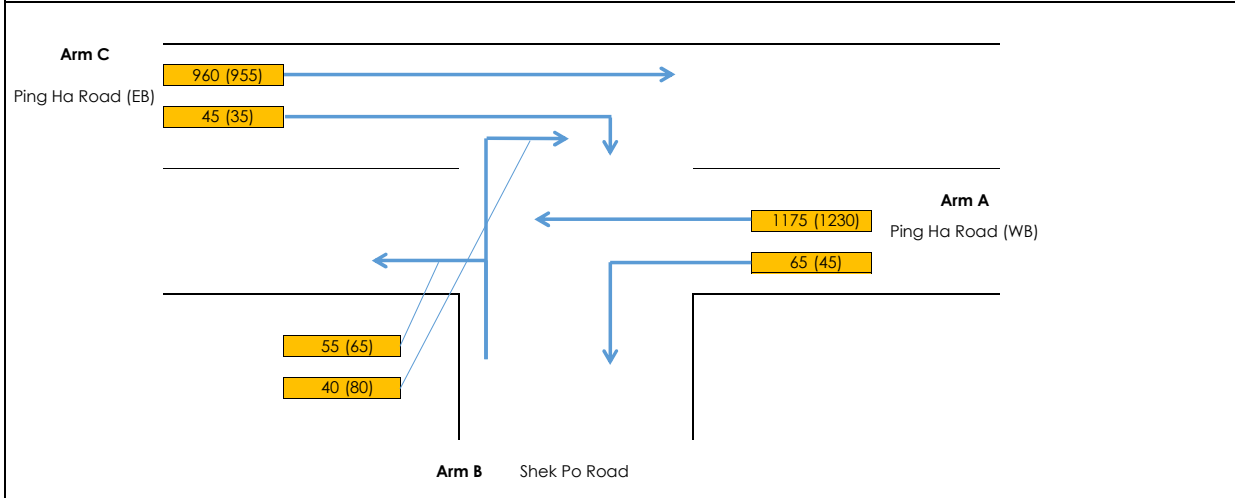
GEOMETRY					
Major Road Width (m)	W	16.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.879
	VI(b-a)	40		E	0.968
	Vr(b-c)	70		F	1.037
	Vr(c-b)	100		Y	0.448
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		975	950	
	a(c-b)		30	10	
	a(a-b)		15	85	
	a(a-c)		1210	1210	
	a(b-a)		40	35	
	a(b-c)		20	20	
	f		0	0	
CAPACITIES (pcu/hr)	Q(b-ac)		335	342	
	Q(c-b)		566	554	
RFC's	c-b		0.05	0.02	
	b-ac		0.18	0.16	
RFC			0.18	0.16	

Where VI and Vr are visibility distances to the left or right of the respective streams
 $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$
 $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$
 $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$
 $Y = 1-0.0345W$
 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

All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1

Simplified Priority Junction Capacity Calculation

Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction: J4 (Ping Ha Road/ Shek Po Road)		Designed by: TAT
Scheme:		
Design Year: 2035 Reference Flow (Without Future Road Network)		Job No.: CHK50749010
		Date: Feb-24
Arm A: Ping Ha Road (WB)		
Arm B: Shek Po Road		
Arm C: Ping Ha Road (EB)		



GEOMETRY					
Major Road Width (m)	W	15.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	30	Calculated Parameters	D	0.865
	VI(b-a)	30		E	0.947
	Vr(b-c)	46		F	1.037
	Vr(c-b)	100		Y	0.483
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		960	955	
	a(c-b)		45	35	
	q(a-b)		65	45	
	q(a-c)		1175	1230	
	q(b-a)		40	80	
	q(b-c)		55	65	
	f		1	0	
CAPACITIES (pcu/hr)	Q(b-ac)		360	325	
	Q(c-b)		547	541	
RFC's	c-b		0.08	0.06	
	b-ac		0.26	0.45	
RFC			0.26	0.45	
<p>Where VI and Vr are visibility distances to the left or right of the respective streams $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ 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</p>					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

TRAFFIC SIGNALS CALCULATION

Job No.: **CHK50749010**

MVA HONG KONG LIMITED

Junction: J5-Ping Ha Road/ Tin Ying Road/Hung Tin Road

Design Year: 2035

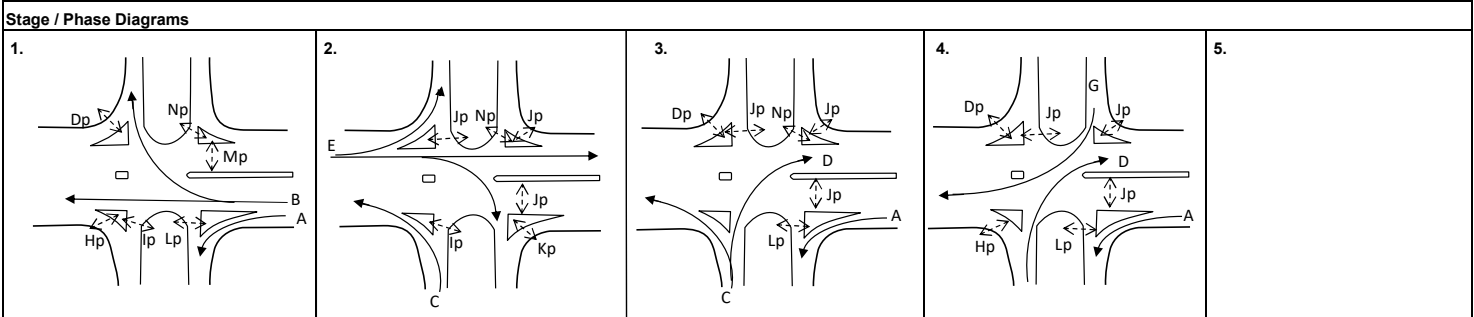
Description: 2035 Reference Flow (Without Future Road Network)

Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		AM Peak			PM Peak		
					Left	Right		AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ping Ha Road	↖ ↗ ↑	B	1	3.500	20					1460	1460	53	0.036		41	0.028	
		B	1	3.500	25					1590	1590	57	0.036		44	0.028	
		B	1	3.500						2105	2105	190	0.090		208	0.099	
WB	↑	1	1	3.500						2105	2105	190	0.090		207	0.098	
		A	1,3,4	3.500		15				1915	1915	680	0.355	0.355	705	0.368	0.368
Hung Tin Road	↖ ↗ ↑	C	2	3.300	10					1690	1690	280	0.166		210	0.124	
		D	3,4	3.500		25				1855	1855	71	0.038		41	0.022	
		D	3,4	3.500		20				1960	1960	74	0.038		44	0.022	
Ping Ha Road	↑ ↖ ↗	E	2	3.500						1965	1965	210	0.107		174	0.089	
		E	2	3.500		50	0%	0%		2105	2105	225	0.107		186	0.088	
		E	2	3.500		45				2035	2035	80	0.039		165	0.081	
EB	↖	E	2	3.300	10					1690	1690	510	0.302	0.302	530	0.314	0.314
		F	1	3.500	20					1460	1460	388	0.266		318	0.218	
Tin Ying Road	↖ ↗ ↑	F	1	3.500	25					1590	1590	422	0.265		347	0.218	
		F	1	3.500		15				1915	1915	590	0.308		660	0.345	
		G	4	3.500													
Pedestrian Crossing	Hp	1,4	MIN GREEN + FLASH =		5	+	8	=	13								
	Ip	1,2	MIN GREEN + FLASH =		5	+	8	=	13								
	Jp	2,3,4	MIN GREEN + FLASH =		5	+	9	=	14								
	Kp	2	MIN GREEN + FLASH =		5	+	8	=	13								
	Lp	1,3,4	MIN GREEN + FLASH =		5	+	9	=	14								
	Mp	1	MIN GREEN + FLASH =		5	+	8	=	13								
	Np	1,2,3	MIN GREEN + FLASH =		5	+	5	=	10								
	Op	1,3,4	MIN GREEN + FLASH =		5	+	5	=	10								

Notes:	Flow: (pcu/hr)	Group	G,B,C		A,E	Group	G,B,C		A,E								
			y	L (sec)	C (sec)		y pract.	R.C. (%)	y	L (sec)	C (sec)	y pract.	R.C. (%)				
			0.564	13	120	0.803	42%	0.657	12	120	0.810	23%	0.568	13	120	0.803	41%
			0.682	12	120	0.810	19%										



I/G=	I/G= 5	I/G= 9	I/G=	I/G=
I/G=	I/G= 5	I/G= 9	I/G=	I/G=
Date: FEB, 2024			Junction: J5	
			J5-Ping Ha Road/ Tin Ying Road/Hung Tin Road	

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50749010 MVA HONG KONG LIMITED

Junction: J1- Tin Ha Road/Ping Ha Road

Design Year: 2035

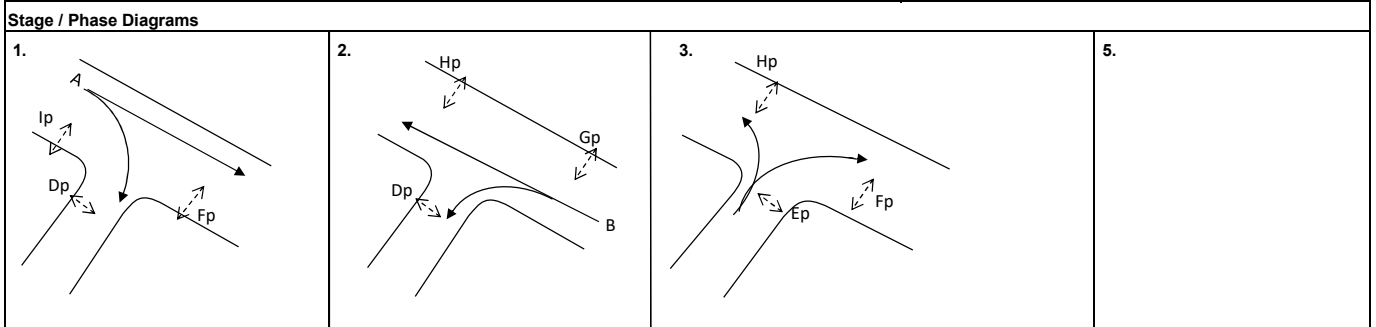
Description: 2035 Reference Flow (With Future Road Network)

Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)					PM Peak		
					Left	Right		AM	PM	PM	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ping Ha Road WB	↑	B	2	3.000	30		9%	9%	7%	1910	0.279	0.279	544	0.285	0.285
	↗	B	2	3.000				2055	0.279				586	0.285	
Ping Ha Road EB	↑	A	1	3.000			6%		7%	2055	0.254	0.254	529	0.257	0.257
	↘	A	1	3.000	30			1910	0.253				491	0.257	
Tin Ha Road	↘	C	3	3.500						1915	0.018		35	0.018	
	↙	C	3	3.300	10			1690	0.012				30	0.018	
Pedestrian Crossing	Dp	1,2	MIN GREEN + FLASH =		5	+	8	13							
	Ep	3	MIN GREEN + FLASH =		5	+	11	16							
	Fp	1,3	MIN GREEN + FLASH =		5	+	9	14							
	Gp	2	MIN GREEN + FLASH =		5	+	5	10							
	Hp	2,3	MIN GREEN + FLASH =		5	+	7	12							
	Ip	1	MIN GREEN + FLASH =		5	+	9	14							

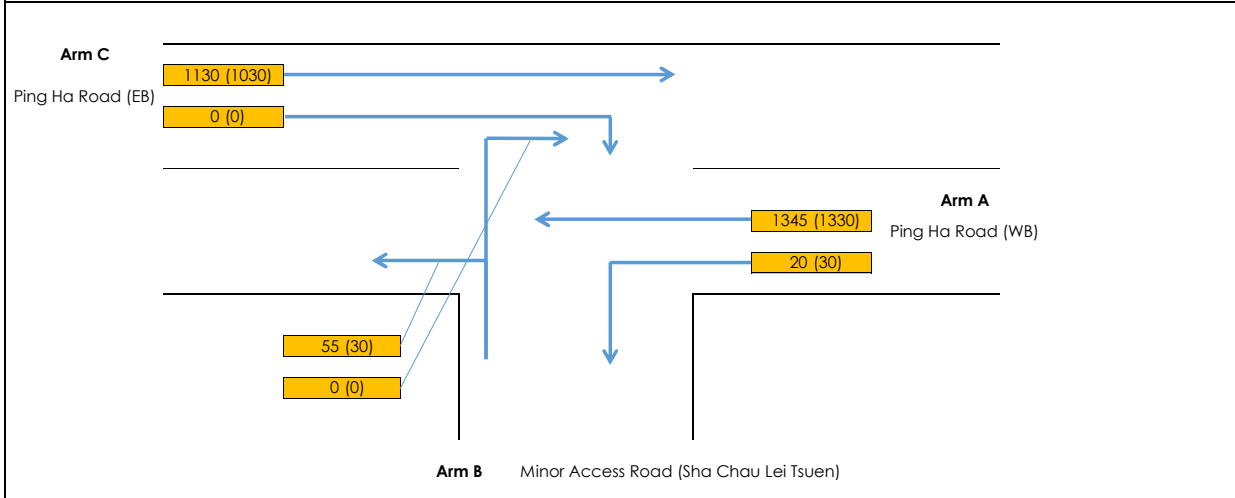
Notes:	Flow: (pcu/hr)	C,lp,B	C,A,B	Group	C,lp,B	C,A,B
		28	28	L (sec)	34	28
		136	136	C (sec)	120	120
		0.715	0.715	y pract.	0.645	0.690
		140%	34%	R.C. (%)	126%	27%



I/G= 7	I/G= 8	I/G= 10	I/G=	I/G=
I/G= 7	I/G= 8	I/G= 10	I/G=	I/G=
Date:			Junction: <u>J1- Tin Ha Road/Ping Ha Road</u>	

Simplified Priority Junction Capacity Calculation

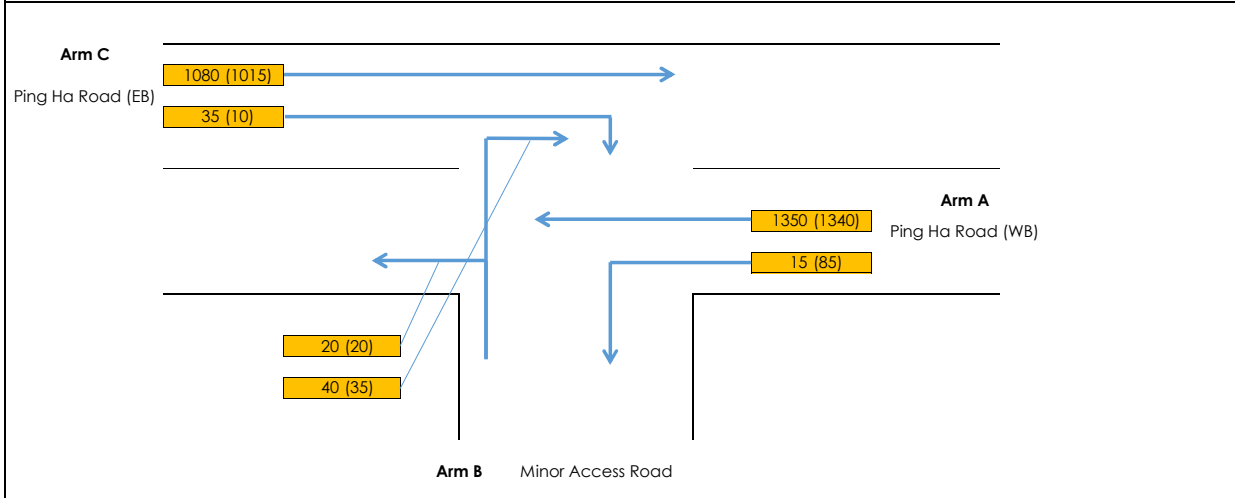
Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction: J2 (Ping Ha Road/ Minor Access Road)		Designed by: TAT
Scheme:		
Design Year: 2035 Reference Flow (With Future Road Network)		Job No.: CHK50749010
Date: Feb-24		
Arm A: Ping Ha Road (WB)		
Arm B: Minor Access Road (Sha Chau Lei Tsuen)		
Arm C: Ping Ha Road (EB)		



GEOMETRY					
Major Road Width (m)	W	16.50	Lane widths (m)	w(b-a)	4.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	4.00
Blockage of major road right turn	Y/N?	N		w(c-b)	4.20
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.895
	VI(b-a)	40		E	0.986
	Vr(b-c)	70		F	1.033
	Vr(c-b)	100		Y	0.431
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		1130	1030	
	a(c-b)		0	0	
	a(a-b)		20	30	
	a(a-c)		1345	1330	
	a(b-a)		0	0	
	a(b-c)		55	30	
	f		1	1	
CAPACITIES (pcu/hr)	Q(b-ac)		526	527	
	Q(c-b)		548	549	
RFC's	c-b		0.00	0.00	
	b-ac		0.10	0.06	
RFC			0.10	0.06	
<p>Where VI and Vr are visibility distances to the left or right of the respective streams</p> $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ <p>f = proportion of minor traffic turning left</p> $Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)$ Capacity of combined streams					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

Simplified Priority Junction Capacity Calculation

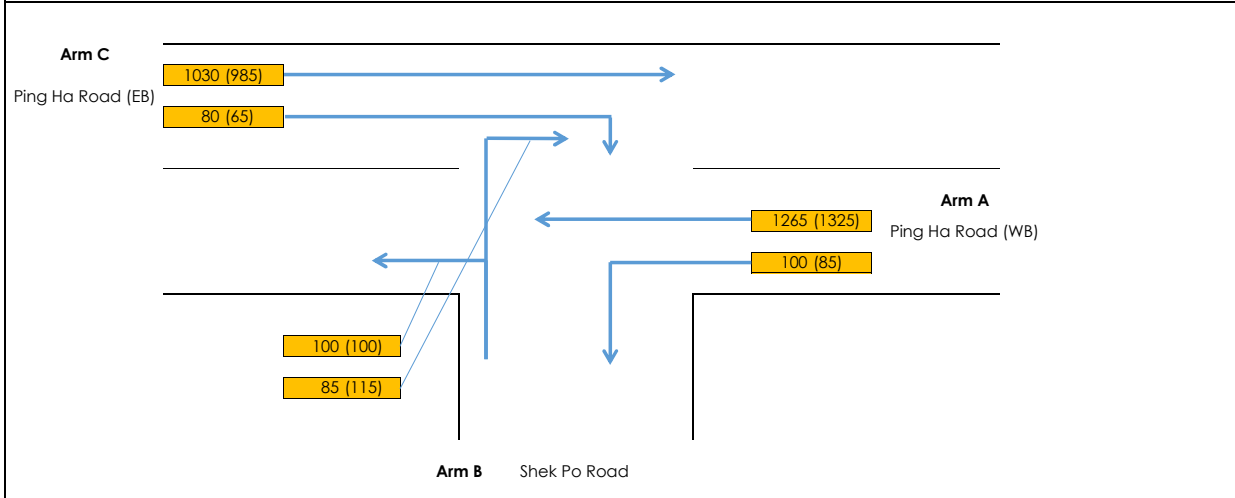
Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction: J3 (Ping Ha Road/ Sah Chau Lei Road)		Designed by: TAT
Scheme:		
Design Year: 2035 Reference Flow (With Future Road Network)		Job No.: CHK50749010
Date: Feb-24		
Arm A: Ping Ha Road (WB)		
Arm B: Minor Access Road		
Arm C: Ping Ha Road (EB)		



GEOMETRY					
Major Road Width (m)	W	16.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.879
	VI(b-a)	40		E	0.968
	Vr(b-c)	70		F	1.037
	Vr(c-b)	100		Y	0.448
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		1080	1015	
	a(c-b)		35	10	
	q(a-b)		15	85	
	q(a-c)		1350	1340	
	q(b-a)		40	35	
	q(b-c)		20	20	
	f		0	0	
CAPACITIES (pcu/hr)	Q(b-ac)		303	316	
	Q(c-b)		542	532	
RFC's	c-b		0.06	0.02	
	b-ac		0.20	0.17	
RFC			0.20	0.17	
Where VI and Vr are visibility distances to the left or right of the respective streams $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ 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					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

Simplified Priority Junction Capacity Calculation

Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction: J4 (Ping Ha Road/ Shek Po Road)		Designed by: TAT
Scheme:		
Design Year: 2035 Reference Flow (With Future Road Network)		Job No.: CHK50749010
Date: Feb-24		
Arm A: Ping Ha Road (WB)		
Arm B: Shek Po Road		
Arm C: Ping Ha Road (EB)		



GEOMETRY					
Major Road Width (m)	W	15.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	30	Calculated Parameters	D	0.865
	VI(b-a)	30		E	0.947
	Vr(b-c)	46		F	1.037
	Vr(c-b)	100		Y	0.483
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		1030	985	
	a(c-b)		80	65	
	a(a-b)		100	85	
	a(a-c)		1265	1325	
	a(b-a)		85	115	
	a(b-c)		100	100	
	f		1	0	
CAPACITIES (pcu/hr)	Q(b-ac)		321	301	
	Q(c-b)		524	516	
RFC's	c-b		0.15	0.13	
	b-ac		0.58	0.71	
RFC			0.58	0.71	
<p>Where VI and Vr are visibility distances to the left or right of the respective streams</p> $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ <p>f = proportion of minor traffic turning left</p> $Q(b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)$ Capacity of combined streams					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

TRAFFIC SIGNALS CALCULATION

Job No.: **CHK50749010**

MVA HONG KONG LIMITED

Junction: J5-Ping Ha Road/ Tin Ying Road/Hung Tin Road

Design Year: 2035

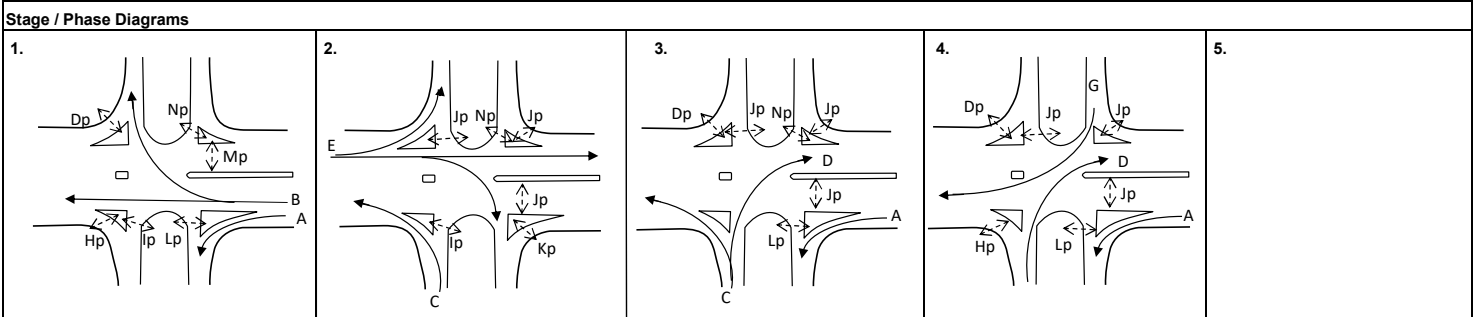
Description: 2035 Reference Flow (With Future Road Network)

Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		AM Peak			PM Peak																						
					Left	Right		AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y																				
Ping Ha Road	↖ ↗ ↑	B	1	3.500	20						1460	1460	53	0.036		41	0.028																				
																			25	1590	1590	57	0.036	44	0.028												
																										2105	2105	215	0.102	235	0.112						
WB	↑	A	1,3,4	3.500						1915	1915	680	0.355	0.355	705	0.368	0.368																				
																		Hung Tin Road	↖ ↗ ↑	C	2	3.300	10					1690	1690	295	0.175		230	0.136			
																																				NB	↖ ↗ ↑
										1960	1960	74	0.038		41	0.021																					
																		Ping Ha Road	↑ ↖ ↗	E	2	3.500				0%	0%	1965	1965	234	0.119		188	0.096			
EB	↖ ↗ ↑	E	2	3.500						2105	2105	251	0.119		202	0.096																					
Tin Ying Road	↖ ↗ ↑	F	1	3.500	20						1460	1460	388	0.266		318	0.218																				
																			SB	↖ ↗ ↑	F	1	3.500							1590	1590	422	0.265		347	0.218	
Pedestrian Crossing																																					
																				Hp	1,4	MIN GREEN + FLASH =	5	+	8	=	13										
																				Ip	1,2	MIN GREEN + FLASH =	5	+	8	=	13										
																				Jp	2,3,4	MIN GREEN + FLASH =	5	+	9	=	14										
																				Kp	2	MIN GREEN + FLASH =	5	+	8	=	13										
																				Lp	1,3,4	MIN GREEN + FLASH =	5	+	9	=	14										
																				Mp	1	MIN GREEN + FLASH =	5	+	8	=	13										
																				Np	1,2,3	MIN GREEN + FLASH =	5	+	5	=	10										
Op	1,3,4	MIN GREEN + FLASH =	5	+	5	=	10																														

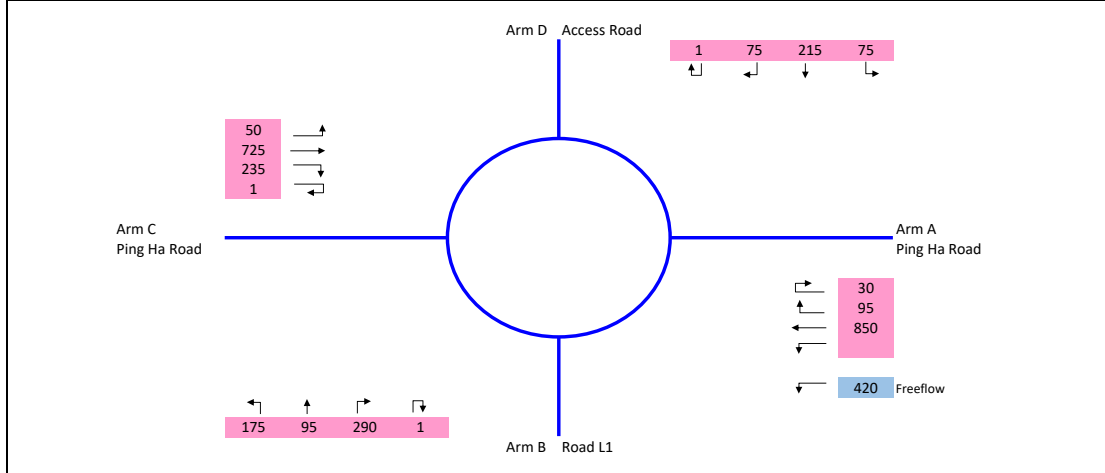
Notes:	Flow: (pcu/hr)	Group	G,B,C	A,E	Group	G,B,C	A,E
		y	0.614	0.686	y	0.621	0.700
		L (sec)	13	12	L (sec)	13	12
		C (sec)	120	120	C (sec)	120	120
		y pract.	0.803	0.810	y pract.	0.803	0.810
		R.C. (%)	31%	18%	R.C. (%)	29%	16%



I/G=	I/G= 5	I/G= 9	I/G=	I/G=
I/G=	I/G= 5	I/G= 9	I/G=	I/G=

Roundabout Capacity Calculation

Job Title:	TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction:	J6- Ping Ha Road New Planned Roundabout	Designed by:	TAT
Scheme:		Checked by:	CYH
Design Year:	2035 Reference Flow-With Future Road Network (AM Peak)	Job No.:	CHK50749010
		Date:	16 Feb 2024
Arm A	Ping Ha Road		
Arm B	Road L1		
Arm C	Ping Ha Road		
Arm D	Access Road		
Arm E			

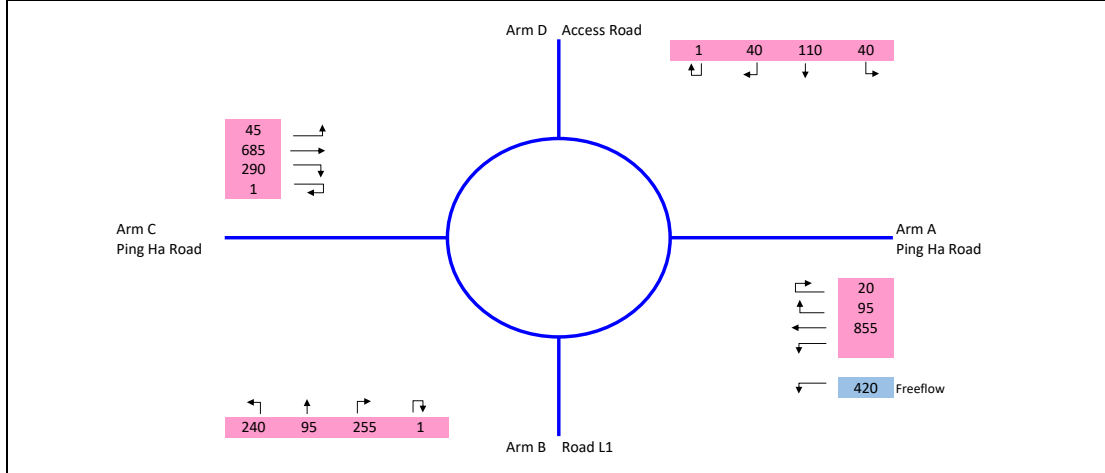


ENTRY ARM		A	B	C	D
INPUT PARAMETERS					
V	Approach Half Width (m)	7.00	4.00	7.00	5.00
E	Entry Width (m)	12.00	6.00	7.00	5.00
L	Effective Length of Flare (m)	10.00	10.00	0.00	0.00
R	Entry Radius (m)	20.00	20.00	20.00	20.00
D	Inscribed Circle Diameter (m)	50.00	50.00	50.00	50.00
A	Entry Angle (degree)	30.00	30.00	35.00	25.00
Q	Entry Flow (pcu/hour)	975	561	1,011	366
Qc	Circulating Flow Across Entry (pcu/hour)	528	1,052	512	1,282
OUTPUT PARAMETERS					
S	= 1.6 (E - V) / L Sharpness of flare	0.80	0.32	0.00	0.00
K	= 1 - 0.00347 (A-30) - 0.978 (1/R - 0.05)	1.00	1.00	0.98	1.02
X2	= V + ((E-V) / (1+2S))	8.92	5.22	7.00	5.00
M	= EXP ((D-60) /10)	0.37	0.37	0.37	0.37
F	= 303 * X2	2704	1582	2121	1515
Td	= 1 + (0.5 / (1+M))	1.37	1.37	1.37	1.37
Fc	= 0.21*Td (1 + 0.2*X2)	0.80	0.59	0.69	0.57
Qe	= K (F - Fc*Qc)	2282	965	1738	793
DFC	= Q / Qe				
	Design Flow / Capacity	0.58	0.43	0.58	0.46
	Total Entry Flows	2,913			

All the above formulas are in accordance to T.P.D.M. Vol.2 Chp.4 Sec 4.5.9

Roundabout Capacity Calculation

Job Title:	TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction:	J6- Ping Ha Road New Planned Roundabout	Designed by:	TAT
Scheme:		Checked by:	CYH
Design Year:	2035 Reference Flow-With Future Road Network (PM Peak)	Job No.:	CHK50749010
Arm A	Ping Ha Road	Date:	16 Feb 2024
Arm B	Road L1		
Arm C	Ping Ha Road		
Arm D	Access Road		
Arm E			



ENTRY ARM		A	B	C	D
INPUT PARAMETERS					
V	Approach Half Width (m)	7.00	4.00	7.00	5.00
E	Entry Width (m)	12.00	6.00	7.00	5.00
L	Effective Length of Flare (m)	10.00	10.00	0.00	0.00
R	Entry Radius (m)	20.00	20.00	20.00	20.00
D	Inscribed Circle Diameter (m)	50.00	50.00	50.00	50.00
A	Entry Angle (degree)	30.00	30.00	35.00	25.00
Q	Entry Flow (pcu/hour)	970	591	1,021	191
Qc	Circulating Flow Across Entry (pcu/hour)	443	1,012	467	1,252
OUTPUT PARAMETERS					
S	= 1.6 (E - V) / L Sharpness of flare	0.80	0.32	0.00	0.00
K	= 1 - 0.00347 (A-30) - 0.978 (1/R - 0.05)	1.00	1.00	0.98	1.02
X2	= V + ((E-V) / (1+2S))	8.92	5.22	7.00	5.00
M	= EXP ((D-60) /10)	0.37	0.37	0.37	0.37
F	= 303 * X2	2704	1582	2121	1515
Td	= 1 + (0.5 / (1+M))	1.37	1.37	1.37	1.37
Fc	= 0.21 *Td (1 + 0.2 *X2)	0.80	0.59	0.69	0.57
Qe	= K (F - Fc *Qc)	2350	988	1768	811
DFC	= Q / Qe	0.41	0.60	0.58	0.24
	Design Flow / Capacity	0.60			
	Total Entry Flows	2,773			

All the above formulas are in accordance to T.P.D.M. Vol.2 Chp.4 Sec 4.5.9

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50749010 MVA HONG KONG LIMITED

Junction: J1- Tin Ha Road/Ping Ha Road

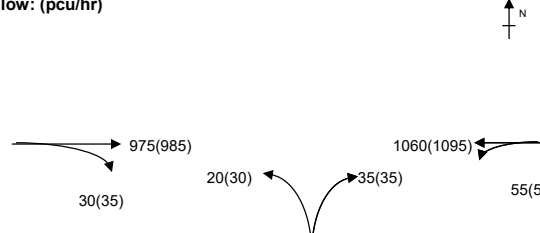
Design Year: 2035

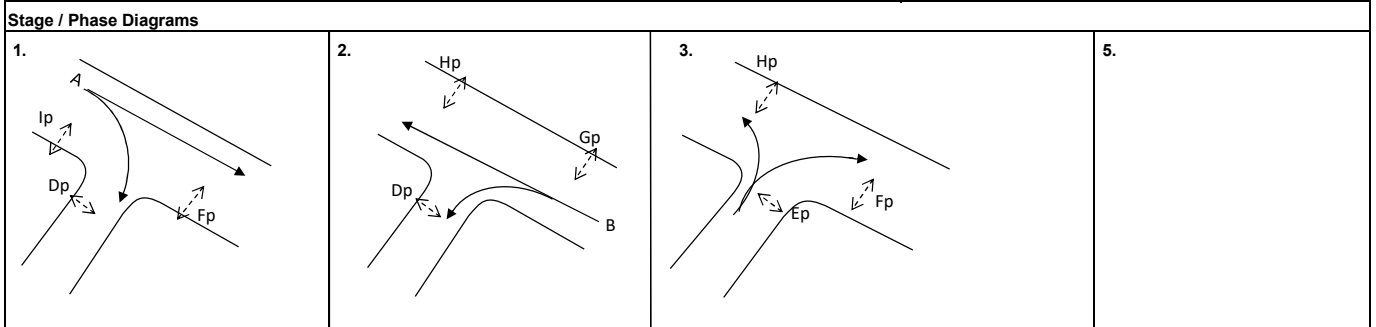
Description: 2035 Design Flow

Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)					PM Peak		
					Left	Right		AM	PM	PM	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y
Ping Ha Road WB	↑	B	2	3.000	30			10%	10%	1905	0.281	0.281	553	0.290	0.290
	↔	B	2	3.000						2055	0.282		597	0.291	
Ping Ha Road EB	↑	A	1	3.000				6%	7%	2055	0.254	0.254	529	0.257	
	↔	A	1	3.000	30					1910	0.253		491	0.257	0.257
Tin Ha Road	↔	C	3	3.500		15				1915	0.018		35	0.018	
	↑	C	3	3.300	10					1690	0.012		30	0.018	
Pedestrian Crossing	Dp	1,2		MIN GREEN + FLASH =		5	+	8	13						
	Ep	3		MIN GREEN + FLASH =		5	+	11	16						
	Fp	1,3		MIN GREEN + FLASH =		5	+	9	14						
	Gp	2		MIN GREEN + FLASH =		5	+	5	10						
	Hp	2,3		MIN GREEN + FLASH =		5	+	7	12						
	Ip	1		MIN GREEN + FLASH =		5	+	9	14						

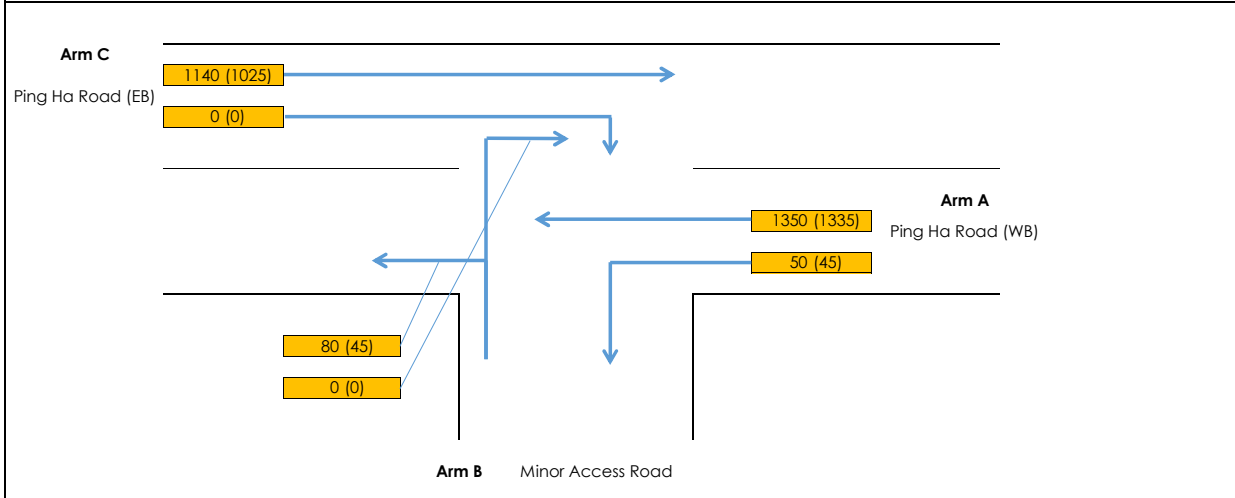
Notes:	Flow: (pcu/hr)	C,Ip,B	C,A,B	Group	C,Ip,B	C,A,B
		0.300	0.535	y	0.290	0.547
		28	28	L (sec)	34	28
		136	136	C (sec)	120	120
		0.715	0.715	y pract.	0.645	0.690
		139%	34%	R.C. (%)	122%	26%



I/G= 7	I/G= 8	I/G= 10	I/G=	I/G=
I/G= 7	I/G= 8	I/G= 10	I/G=	I/G=
Date:			Junction:	
			J1- Tin Ha Road/Ping Ha Road	

Simplified Priority Junction Capacity Calculation

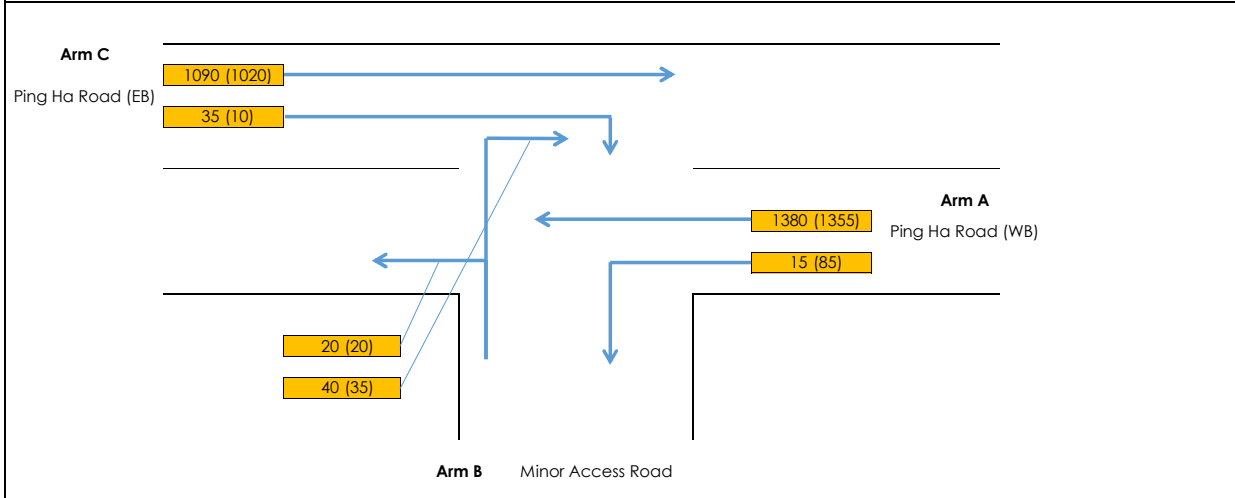
Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital			
Junction: J2 (Ping Ha Road/ Minor Access Road)			Designed by: TAT
Scheme:			Checked by: CYH
Design Year: 2035	DesignFlow	Job No.: CHK50749010	Date: Feb-24
Arm A: Ping Ha Road (WB)			
Arm B: Minor Access Road			
Arm C: Ping Ha Road (EB)			



GEOMETRY					
Major Road Width (m)	W	16.50	Lane widths (m)	w(b-a)	4.00
Central Reserve Width (m)	Wcr	0.00		w(b-c)	4.00
Blockage of major road right turn	Y/N?	N		w(c-b)	4.20
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.895
	VI(b-a)	40		E	0.986
	Vr(b-c)	70		F	1.033
	Vr(c-b)	100		Y	0.431
ANALYSIS				AM PEAK	PM PEAK
TRAFFIC FLOWS (pcu/hr)	a(c-a)			1140	1025
	a(c-b)			0	0
	q(a-b)			50	45
	q(a-c)			1350	1335
	q(b-a)			0	0
	q(b-c)			80	45
	f			1	1
CAPACITIES (pcu/hr)	Q(b-ac)			523	526
	Q(c-b)			543	546
RFC's	c-b			0.00	0.00
	b-ac			0.15	0.09
RFC				0.15	0.09
Where VI and Vr are visibility distances to the left or right of the respective streams $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ 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					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

Simplified Priority Junction Capacity Calculation

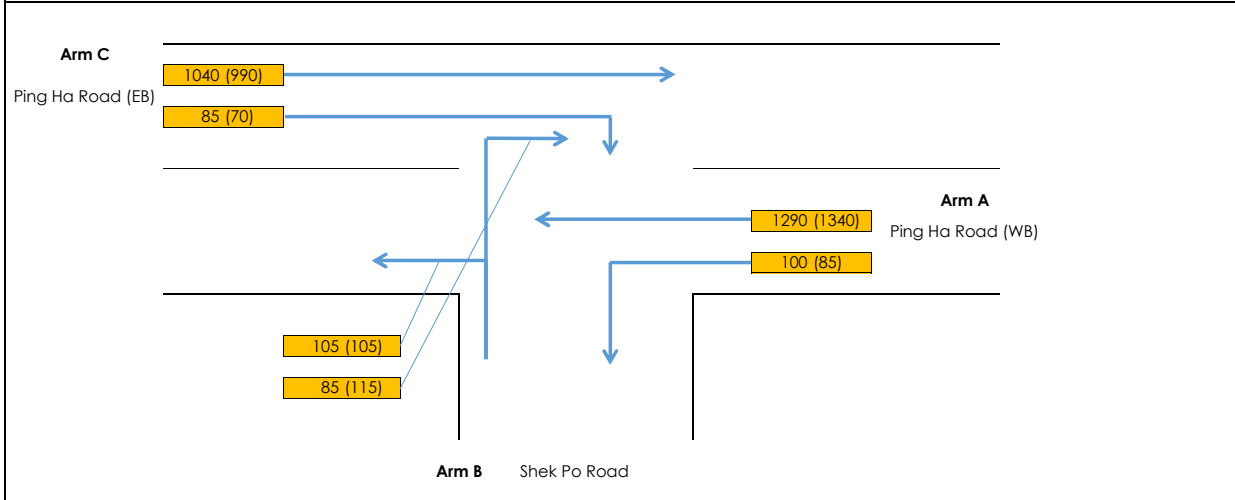
Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital			
Junction: J3 (Ping Ha Road/ Sah Chau Lei Road)			Designed by: TAT
Scheme:			
Design Year: 2035 DesignFlow			Checked by: CYH
Job No.: CHK50749010		Date: Feb-24	
Arm A: Ping Ha Road (WB)			
Arm B: Minor Access Road			
Arm C: Ping Ha Road (EB)			



GEOMETRY					
Major Road Width (m)	W	16.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	40	Calculated Parameters	D	0.879
	VI(b-a)	40		E	0.968
	Vr(b-c)	70		F	1.037
	Vr(c-b)	100		Y	0.448
ANALYSIS			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		1090	1020	
	a(c-b)		35	10	
	a(a-b)		15	85	
	a(a-c)		1380	1355	
	a(b-a)		40	35	
	a(b-c)		20	20	
	f		0	0	
CAPACITIES (pcu/hr)	Q(b-ac)		297	313	
	Q(c-b)		537	529	
RFC's	c-b		0.07	0.02	
	b-ac		0.20	0.18	
RFC			0.20	0.18	
<p>Where VI and Vr are visibility distances to the left or right of the respective streams $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ 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</p>					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

Simplified Priority Junction Capacity Calculation

Job Title: TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital			
Junction: J4 (Ping Ha Road/ Shek Po Road)			Designed by: TAT
Scheme:			Checked by: CYH
Design Year: 2035	DesignFlow	Job No.: CHK50749010	Date: Feb-24
Arm A: Ping Ha Road (WB)			
Arm B: Shek Po Road			
Arm C: Ping Ha Road (EB)			



GEOMETRY					
Major Road Width (m)	W	15.00	Lane widths (m)	w(b-a)	3.80
Central Reserve Width (m)	Wcr	0.00		w(b-c)	3.80
Blockage of major road right turn	Y/N?	N		w(c-b)	4.25
Combined stream on minor arm	Y/N?	Y			
Visibility Distances (m)	Vr(b-a)	30	Calculated Parameters	D	0.865
	VI(b-a)	30		E	0.947
	Vr(b-c)	46		F	1.037
	Vr(c-b)	100		Y	0.483
ANALYSIS					
			AM PEAK	PM PEAK	
TRAFFIC FLOWS (pcu/hr)	a(c-a)		1040	990	
	a(c-b)		85	70	
	a(a-b)		100	85	
	a(a-c)		1290	1340	
	a(b-a)		85	115	
	a(b-c)		105	105	
	f		1	0	
CAPACITIES (pcu/hr)	Q(b-ac)		317	300	
	Q(c-b)		520	513	
RFC's	c-b		0.16	0.14	
	b-ac		0.60	0.73	
RFC			0.60	0.73	
<p>Where VI and Vr are visibility distances to the left or right of the respective streams $D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(VI(b-a)-150))$ $E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))$ $F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))$ $Y = 1-0.0345W$ 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</p>					
All the above formulas are in accordance to T.P.D.M. Volume 2 Chapter 4 Appendix 1					

TRAFFIC SIGNALS CALCULATION

Job No.: **CHK50749010**

MVA HONG KONG LIMITED

Junction: J5-Ping Ha Road/ Tin Ying Road/Hung Tin Road

Design Year: 2035

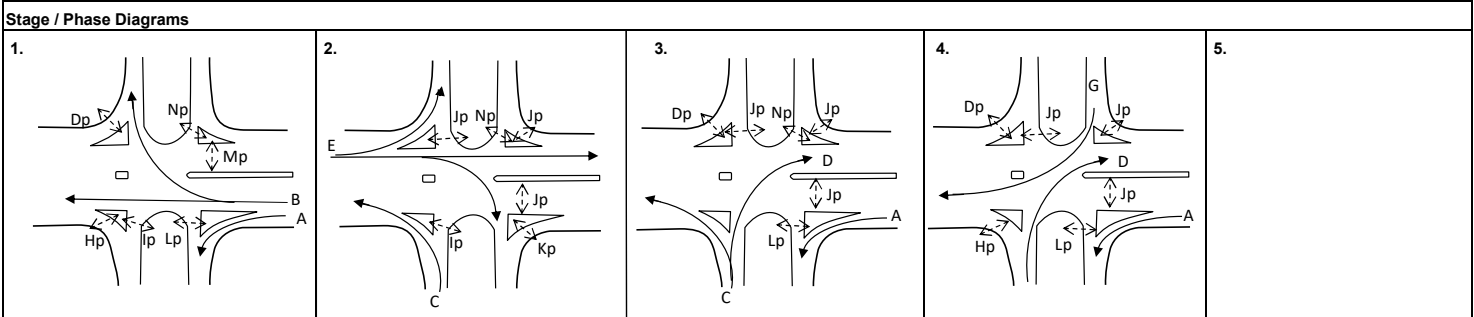
Description: 2035 Design Flow

Designed By: TAT

Checked By: CYH

Approach	Movements	Phase	Stage	Width (m)	Radius (m)		Gradient (%)	Pro. Turning (%)		Revised Saturation Flow (pcu/hr)		AM Peak			PM Peak			
					Left	Right		AM	PM	AM	PM	Flow (pcu/hr)	y Value	Critical y	Flow (pcu/hr)	y Value	Critical y	
Ping Ha Road	↖	B	1	3.500		20				1460	1460	53	0.036		41	0.028		
		B	1	3.500		25				1590	1590	57	0.036		44	0.028		
	↑	B	1	3.500						2105	2105	218	0.104		238	0.113		
		1	1	3.500						2105	2105	217	0.103		237	0.113		
WB	↗	A	1,3,4	3.500			15				1915	1915	680	0.355	0.355	705	0.368	0.368
Hung Tin Road	↖	C	2	3.300		10				1690	1690	310	0.183		240	0.142		
		D	3,4	3.500			25			1855	1855	71	0.038		39	0.021		
	NB	↗	D	3,4	3.500			20			1960	1960	74	0.038		41	0.021	
Ping Ha Road	↑	E	2	3.500						1965	1965	237	0.121		191	0.097		
		E	2	3.500			50	0%	0%	2105	2105	253	0.120		204	0.097		
	↖	E	2	3.500			45			2035	2035	95	0.047		180	0.088		
		E	2	3.300		10				1690	1690	565	0.334	0.334	565	0.334	0.334	
Tin Ying Road	↖	F	1	3.500		20				1460	1460	388	0.266		318	0.218		
		F	1	3.500		25				1590	1590	422	0.265		347	0.218		
	SB	↗	G	4	3.500			15			1915	1915	655	0.342		720	0.376	
Pedestrian Crossing	Hp	1,4	MIN GREEN + FLASH =		5	+	8	=	13									
	Ip	1,2	MIN GREEN + FLASH =		5	+	8	=	13									
	Jp	2,3,4	MIN GREEN + FLASH =		5	+	9	=	14									
	Kp	2	MIN GREEN + FLASH =		5	+	8	=	13									
	Lp	1,3,4	MIN GREEN + FLASH =		5	+	9	=	14									
	Mp	1	MIN GREEN + FLASH =		5	+	8	=	13									
	Np	1,2,3	MIN GREEN + FLASH =		5	+	5	=	10									
	Op	1,3,4	MIN GREEN + FLASH =		5	+	5	=	10									

Notes:	Flow: (pcu/hr)	Group	G,B,C		A,E	Group	G,B,C		A,E			
			y	L (sec)	C (sec)		y pract.	R.C. (%)	y	L (sec)	C (sec)	y pract.
			0.629	13	120	0.803	28%	0.689	12	120	0.810	17%
			0.631	13	120	0.803	27%	0.702	12	120	0.810	15%

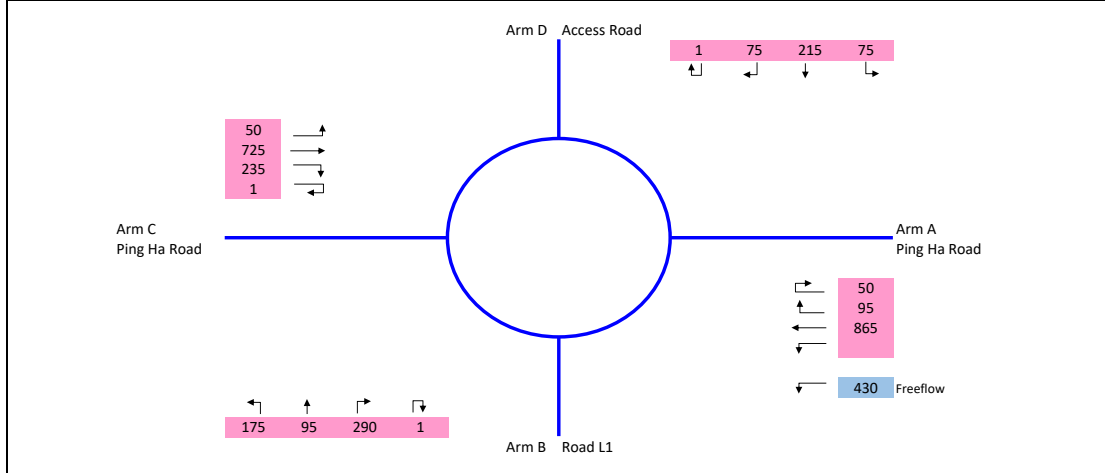


I/G=	I/G= 5	I/G= 9	I/G=	I/G=
I/G=	I/G= 5	I/G= 9	I/G=	I/G=

Date: **FEB, 2024** Junction: **J5**
 J5-Ping Ha Road/ Tin Ying Road/Hung Tin Road

Roundabout Capacity Calculation

Job Title:	TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction:	J6- Ping Ha Road New Planned Roundabout	Designed by:	TAT
Scheme:		Checked by:	CYH
Design Year:	2035 Design Flow (AM Peak)	Job No.:	CHK50749010
Arm A	Ping Ha Road	Date:	16 Feb 2024
Arm B	Road L1		
Arm C	Ping Ha Road		
Arm D	Access Road		
Arm E			

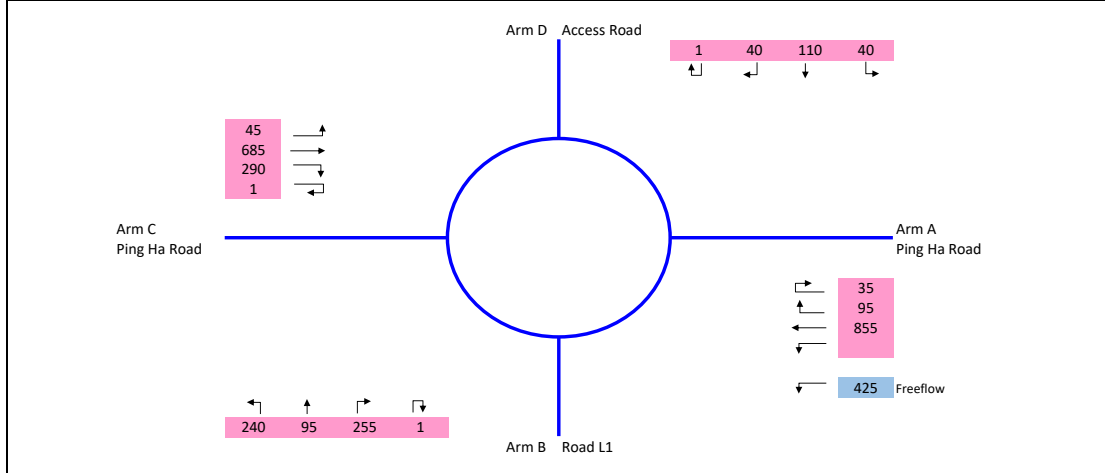


ENTRY ARM		A	B	C	D
INPUT PARAMETERS					
V	Approach Half Width (m)	7.00	4.00	7.00	5.00
E	Entry Width (m)	12.00	6.00	7.00	5.00
L	Effective Length of Flare (m)	10.00	10.00	0.00	0.00
R	Entry Radius (m)	20.00	20.00	20.00	20.00
D	Inscribed Circle Diameter (m)	50.00	50.00	50.00	50.00
A	Entry Angle (degree)	30.00	30.00	35.00	25.00
Q	Entry Flow (pcu/hour)	1,010	561	1,011	366
Qc	Circulating Flow Across Entry (pcu/hour)	528	1,087	532	1,302
OUTPUT PARAMETERS					
S	= 1.6 (E - V) / L Sharpness of flare	0.80	0.32	0.00	0.00
K	= 1 - 0.00347 (A-30) - 0.978 (1/R - 0.05)	1.00	1.00	0.98	1.02
X2	= V + ((E-V) / (1+2S))	8.92	5.22	7.00	5.00
M	= EXP ((D-60) /10)	0.37	0.37	0.37	0.37
F	= 303 * X2	2704	1582	2121	1515
Td	= 1 + (0.5 / (1+M))	1.37	1.37	1.37	1.37
Fc	= 0.21*Td (1 + 0.2*X2)	0.80	0.59	0.69	0.57
Qe	= K (F - Fc*Qc)	2282	944	1724	782
DFC	= Q / Qe				
	Design Flow / Capacity	0.59	0.44	0.59	0.47
	Total Entry Flows	2,948			

All the above formulas are in accordance to T.P.D.M. Vol.2 Chp.4 Sec 4.5.9

Roundabout Capacity Calculation

Job Title:	TFS for the Proposed Redevelopment of Pok Oi Hospital Yeung Chun Pui Care and Attention Home In Yuen Long by Pok Oi Hospital		
Junction:	J6- Ping Ha Road New Planned Roundabout	Designed by:	TAT
Scheme:		Checked by:	CYH
Design Year:	2035 Design Flow (PM Peak)	Job No.:	CHK50749010
Arm A	Ping Ha Road		
Arm B	Road L1		
Arm C	Ping Ha Road		
Arm D	Access Road		
Arm E			



ENTRY ARM		A	B	C	D
INPUT PARAMETERS					
V	Approach Half Width (m)	7.00	4.00	7.00	5.00
E	Entry Width (m)	12.00	6.00	7.00	5.00
L	Effective Length of Flare (m)	10.00	10.00	0.00	0.00
R	Entry Radius (m)	20.00	20.00	20.00	20.00
D	Inscribed Circle Diameter (m)	50.00	50.00	50.00	50.00
A	Entry Angle (degree)	30.00	30.00	35.00	25.00
Q	Entry Flow (pcu/hour)	985	591	1,021	191
Qc	Circulating Flow Across Entry (pcu/hour)	443	1,027	482	1,267
OUTPUT PARAMETERS					
S	= 1.6 (E - V) / L Sharpness of flare	0.80	0.32	0.00	0.00
K	= 1 - 0.00347 (A-30) - 0.978 (1/R - 0.05)	1.00	1.00	0.98	1.02
X2	= V + ((E-V) / (1+2S))	8.92	5.22	7.00	5.00
M	= EXP ((D-60) /10)	0.37	0.37	0.37	0.37
F	= 303 * X2	2704	1582	2121	1515
Td	= 1 + (0.5 / (1+M))	1.37	1.37	1.37	1.37
Fc	= 0.21 *Td (1 + 0.2 *X2)	0.80	0.59	0.69	0.57
Qe	= K (F - Fc *Qc)	2350	980	1758	802
DFC	= Q / Qe				
	Design Flow / Capacity	0.60	0.42	0.60	0.58
	Total Entry Flows	2,788			

All the above formulas are in accordance to T.P.D.M. Vol.2 Chp.4 Sec 4.5.9

APPENDIX B

Level-Of-Service (Los) Criteria for Pedestrian Walkways



DESCRIPTION OF LEVEL-OF-SERVICE (LOS) CRITERIA FOR PEDESTRIAN WALKWAYS

(Reference: HCM 2000 Exhibit 18-3 and Transport Planning and Design Manual Volume 6 Chapter 10.5 Section 10.5.2)

LOS	Space (m ² /ped)	Flow Rate (ped/min/m)	Description
A	> 5.6	≤ 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	> 3.7 – 5.6	> 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	> 2.2 – 3.7	> 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	> 1.4 – 2.2	> 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	> 0.75 – 1.4	> 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	≤ 0.75	> 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.

Remark:

- i. The criteria range from LOS "A" (best) to LOS "F" (worst)
- ii. LOS "A", standing and free circulation through the walkway is possible without disturbing others

- iii. LOS "F" is described as "virtually all persons are standing in direct physical contact with those surrounding them. This density is extremely discomforting with potential for panic exists in large crowds at this density".
- iv. The minimum acceptable LOS from Transport Department is "C" for all newly proposed pedestrian facilities and "D" for existing facilities.

