Rezoning Planning Application for a Religious Institution and Columbarium in Hip Tin Temple at Tai Kong Po, Pat Heung, New Territories

Traffic Impact Assessment Study
Final Report
Aug 2024

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1 INTRODUCTION

1.1 Background

1.1.1 Hip Tin Temple is located at Tai Kong Po, Pat Heung (hereafter referred as the "Application Site"). The Application Site falls within the "Agriculture" ("AGR") zone on the Approved Kam Tin North Outline Zoning Plan No. S/YL-KTN/11.

1.1.2 The Applicant intents regularize a pre-cut-off columbarium with 2,911 niches in Hip Tin Temple at Tai Kong Po, Pat Heung, New Territories.

1.1.3 Ozzo Technology (HK) Limited has been commissioned to undertake a Traffic Impact Assessment (TIA) Study to assess the potential traffic impact to be induced by the continued operation on the road network in the vicinity.

1.2 Study Objectives

1.2.1 The objectives of the TIA study are as follows:

- To review the existing traffic situation of the surrounding road network during grave sweeping festival period;
- To estimate the traffic generations/attractions to be induced by the Proposed Development during grave sweeping festival periods;
- To assess the future traffic situation of the surrounding road network during grave sweeping festival periods;
- To appraise the potential traffic impact of the Proposed Development on the surrounding road network during grave sweeping festival periods;
- To recommend traffic and crowd management and control plans to be implemented if necessary.

1.3 Report Structure

1.3.1 Following this introductory chapter, this report is arranged as follow:

- Chapter 2 summarizes the existing traffic condition in the vicinity of the Application Site during grave sweeping festival periods;
- Chapter 3 describes the Proposed Development;
- Chapter 4 describes the proposed Crowd Management Plan to be implemented;
- Chapter 5 provides the forecast traffic to be generated by the Proposed Development;
- Chapter 6 describes the traffic impact assessment approach and reports the assessment results; and
- a summary of the findings and conclusion of this TIA study are given in Chapter 7.

2 EXISTING TRAFFIC SITUATION

2.1 Site Location and Study Area

2.1.1 The Application Site is located at Tai Kong Po, Pat Heung as shown in **Figure 2-1**.

2.1.2 **Figure 2-1** also shows the proposed Study Area for this TIA study. The proposed Study Area covers the key junctions along the major vehicular routes to be used by the traffic to be induced by the Proposed Development.

2.2 Existing Road Network

2.2.1 The Application Site is served by a feeder road named Chi Ho Road. It sits along Kam Tin River and runs parallel to Kam Tin Bypass. Chi Ho Road can be connected to Kam Tin Bypass by Kong Tai Road in the east and by Kam Hing Road in the west.

2.2.2 Kam Tin Bypass is a dual two-lane Rural Trunk Road connects the north Kam Tin Town Centre connecting to Kam Tin Road via roundabouts at the eastern and western ends of the town centre.

2.2.3 Tung Wui Road is a dual two-lane Rural Road with divider initiated from the roundabout with Kam Tin Bypass and Kam Tin Road in the north and connecting with the Kam Sheung Road MTR station in the south.

2.3 Existing Public Transport Services

2.3.1 There are several existing public transport provisions in the vicinity of the Application Site as shown in **Figure 2-2**. **Table 2-1** lists out the regular and special franchised bus, and GMB routes serving the area.

Table 2-1 Existing Public Transport Services.

Route No.	Terminating Points		Remarks
Franchised Bus Services			
251B	Pat Heung Road	Sheung Tsuen (Circular)	Daily Service every 20-30 mins
251M	Sheung Tsuen	Tsuen Wan	Mon to Fri. (Except Public Holidays) at 7:00am,8:00am and 9:00am
54	Yuen Long (West)	Sheung Tsuen (Shek Kong) (Circular)	Daily services every 20-30 mins
77K	Sheung Shui	Yuen Long (Fung Cheung Road)	Daily services every 12-30 mins
E36P	Sheung Tsuen	Asia World Expo	Mon to Sat. departures at AM peak 05:10, 06:10 and PM peak 17:40, 18:10
Green Minibus Services			
602	Tai Kong Po	Yuen Long (Fung Cheung Road)	Daily services every 15-20 mins
608	Wong Toi Shan	Yuen Long (Fung Cheung Road) (Circular)	Daily services every 10-13 mins

Note: Information is updated as of date of 26 July 2024.

2.4 Existing Traffic Conditions

2.4.1 To gain an understanding of the existing traffic condition of the vicinity of the Application Site, traffic count surveys were undertaken at the key locations on Ching Ming Festival in 2024, the survey period of 08:00-18:00. The locations of the traffic surveys are shown in **Figure 2-3**.

2.4.2 All vehicular flows in the subsequent analysis are converted to passenger car unit (PCU) based on the PCU factors for signal and priority traffic according to Table 2.3.1.1 of Volume 2 of "Transport Planning and Design Manual" (TPDM) as shown in **Table 2-2**.

Table 2-2 Passenger Car Unit Conversion Factors

	PCU Conversion Factor	
	Traffic Signal	Priority
Car / Taxi	1.00	1.00
Public Light Bus / Minibus	1.50	1.50
Light Goods Vehicle	1.50	1.50
Medium/ Heavy Goods Vehicle	1.75	2.80
Bus / Coach	2.00	2.80

2.4.3 By applying the above PCU factors, the hourly vehicular traffic flows in PCUs are calculated and the peak hour is identified to occur at 12:00 – 13:00. The peak hour traffic flows are shown in **Figure 2-4**.

2.4.4 Based on the observed peak hour traffic flows, the performances of the key junctions in the Study Area are assessed. The results are summarized in **Table 2-3** and detailed junction capacity calculation sheets are given in **Appendix A**.

2.4.5 For signal-controlled junctions, the reserve capacity index, R.C. is calculated based on current cycle time in accordance with the methods stated in Chapter 2.4 of Volume 4 TPDM.

Table 2-3 2024 Ching Ming Festival Peak Hour Junction Capacity Assessment

Ref No.	Location (1)	Junction Type	Capacity Index (2)	Observed Peak
J1	Kam Tin Bypass / Kam Tin Road / Tung Wui Road	Roundabout	DFC	0.29
J2	Chi Ho Road / Kong Tai Road	Priority	DFC	0.07
J3	Kam Tin Bypass / Kong Tai Road	Signalized	R.C.(C)	100%+
J4	Kam Tin Bypass / Kam Tin Road / Kam Ho Road	Roundabout	DFC	0.47
J5	Chi Ho Road / Kam Hing Road	Priority	DFC	0.11
J6	Kam Tin Bypass / Kam Hing Road	Signalized	R.C.(C)	100%+

*Notes: (1) Locations refer to **Figure 2-3**.*
(2) DFC = Design Flow to Capacity for Priority junction
R.C. = Reserve Capacity under Current cycle time

2.4.6 The results reveal that the assessed junction and road link are currently operating satisfactorily during the peak hours of 2024 Ching Ming Festival.

2.5 Pedestrian Impact Assessment

2.5.1 Pedestrian count surveys were also undertaken along the key pedestrian links in the vicinity of the Application Site on Ching Ming Festival in 2024 with survey period of 08:00-18:00. The survey locations are shown in **Figure 2-3**. LOS are undertaken based on the observed maximum peak 5-min flows recorded through the day at the key pedestrian links and the results are shown in **Table 2-4**.

Table 2-4 Existing Level of Services of Key Footways

Location (1)	Actual Footway Width	Effective Footway Width(2)	Peak 5-Minute Flow	Peak Minute Flow /Metre	Level of Service
P1	3.4 m	2.9 m	10	0.69	A
P2	2.0 m	1.5 m	6	0.83	A
P3	1.9 m	1.4 m	0	0.00	A

*Note: (1) Locations refer to **Figure 2-3**.*
(2) Effective width = Actual width minus 0.5m shy zone.

2.5.2 **Table 2-4** indicates that the LOS of the pedestrian links in the vicinity of the development are all with A value.

3 THE PROPOSED DEVELOPMENT

3.1 The Proposed Development

3.1.1 The Application Site is proposed to provide a total of 2,911 niches. As summarized in **Table 3-1**, among the total of 2,911 niches, 16 niches were occupied before 30 June 2017.

Table 3-1 Occupation Statues

Occupation Statues	Niche Number
Occupied	16
Vacant	2,895
Total	**2,911**

3.2 Internal Transport Facilities

3.2.1 The detailed internal layout is shown in **Figure 3-1**. Due to the site constraint, no internal transport facilities will be provided within the Application Site.

3.2.2 Visitors must use shuttle bus provided by the Applicant and loading and unloading at the specified layby at Kam Tin Bypass, and then walk through a footpath to access the Application Site.

4 CROWD MANAGEMENT PLAN

4.1 Opening Hours

4.1.1 The columbarium operates daily from 09:00 am to 06:00 pm during non-grave-sweeping festival periods, from 07:00 am to 06:00 pm during the grave sweeping festival periods, including Ching Ming and Chung Yeung Festival Day, and two weeks before the festival day and two weeks after the festival day. The operation hours are summarized and presented in **Table 4-1**.

Table 4-1 Operation Hours of the Columbarium

Time Period	Operation Hours
Festival Period • Festival Day (Ching Ming / Chung Yeung Festival) • Two Weeks (Monday – Sunday) before the Festival Day • Two Weeks (Monday – Sunday) after the Festival Day	07:00 – 18:00
Non-Festival Period – Daily (Monday – Sunday)	09:00 – 18:00

4.1.2 To minimize the traffic impact to the vicinity, crowd management plans are proposed to be implemented. Expecting large volume of visitors during the grave sweeping festival periods, special crowd control would be implemented on the following Peak Grave Sweeping Days:

(i) 2nd Saturday before Ching Ming / Chung Yeung Festival Day,

(ii) 2nd Sunday before Ching Ming / Chung Yeung Festival Day,

(iii) 1st Saturday before Ching Ming / Chung Yeung Festival Day,

(iv) 1st Sunday before Ching Ming / Chung Yeung Festival Day,

(v) Ching Ming / Chung Yeung Festival Day,

(vi) 1st Saturday after Ching Ming / Chung Yeung Festival,

(vii) 1st Sunday after Ching Ming / Chung Yeung Festival,

(viii) 2nd Saturday after Ching Ming / Chung Yeung Festival,

(ix) 2nd Sunday after Ching Ming / Chung Yeung Festival, and / or

(x) Other public holidays within (i) and (ix).

4.1.3 Any change in operation date or operation hours will be notified 14 days in advance via the official website of the Proposed Development. In addition, Paper Notice will also be put up outside the Application Site.

4.1.4 The detailed crowd management measures include the followings.

4.2 Admission Control

4.2.1 Admission control will be performed at the entrance. The advanced booking procedures are mandatory. Only visitors with the valid booking confirmations will be allowed to admit the columbarium buildings.

4.2.2 Only niche owners and their family members with proofs of memberships are allowed to enter the Columbarium. Other visitors will only be allowed to access the Columbarium when leaded and permitted by the staff of the Columbarium.

4.2.3 Niche purchasers are required to accept a set of Sale Agreement at time of purchase, which will include House Rules. These House Rules are legally binding on the purchasers in their use of the niches and effective in controlling their conduct.

4.2.4 The House Rules regulates visitors of the columbarium must use the visit by appointment system. It also includes special management measures such as, visitors must take the free shuttle bus and loading and unloading at the specified layby at Kam Tin Bypass on Peak Grave Sweeping Days **(Shuttle Bus Only Policy)**.

4.2.5 Other than the Peak Grave Sweeping Days, Shuttle Bus Only Policy are also appliable during non-peak seasons. Visitors must take the free shuttle bus and loading and unloading at the specified layby (**Table 4-3** refers). Upon valid booking, a shuttle bus (a private car size or a 7-seat MVP size whichever are applicable) will be arranged by the Applicant for the visitors at the reserved time. Such requirement will be included to the set of Sale Agreement, and should be agreed at time of purchase.

4.2.6 By signing the Sales Agreement which includes the “Shuttle Bus Only Policy ", the purchasers of the niches are supposed to follow the signed agreement and not to travel by private car or taxi to visit but only shuttle bus to/from Application Site.

4.2.7 To regulate the conduct of the visitors to use the proposed layby at Kam Tin Bypass, management measure will be implemented. A staff will be stationed at the proposed layby and dispense coloured stickers to each passenger who uses the subject layby for unloading. The sticker is essential for admission of the Proposed Development. **Only visitors who have both the sticker and the valid booking record can manage to access the columbarium building.**

4.2.8 Thus, for those who did not drop-off at the specified layby, the sticker for admission to the Proposed Development will not be given and shall be rejected from admission.

4.3 Visit by Appointment System

4.3.1 During the Peak Grave Sweeping Days (section 4.2.1 refers), "Visit-By-Appointment" system will be implemented to control the number of visitors entering the site. Booking by telephone and WhatsApp messages will be available for all visitors. Only visitors with the valid booking confirmations will be allowed to admit the columbarium buildings. The admission time will be 15-minute.

4.3.2 Visitors will be guided to wait in the waiting areas within the Application Site as shown in **Figure 3-1**. When some visitors leave the columbarium building, certain number of visitors will be allowed to enter the columbarium building.

4.3.3 The columbarium building has limited area and has maximum holding capacity of a total of 30 persons in view of fire safety according to "Code of Practice for Fire Safety in Buildings". Thus, for safety concerns, the Columbarium will be restricted to accommodate not more than 30 visitors staying in the building at any time. As a conservative consideration, some visitors may come early before their session, the number of visitors per session (15-min) will be limited to 15 persons.

4.3.4 Therefore, through entrance control, the number of visitors would be 60 persons per hour (i.e., four 15-minutes sessions with 15 persons per session).

Table 4-2 Daily Visitor Profile with Visit-by-Appointment System on Peak Grave Sweeping Days

Session	Time Period (15-Minutes Session)	Number of Visitors	
		In	Out
1	0700-0800	60	60
2	0800-0900	60	60
3	0900-1000	60	60
4	1000-1100	60	60
5	1100-1200	60	60
6	1200-1300	60	60
7	1300-1400	60	60
8	1400-1500	60	60
9	1500-1600	60	60
10	1600-1700	60	60
11	1700-1800	60	60
Daily Total		660	660

4.3.5 As shown in **Table 4-2**, with implementation of visit-by-appointment, an hourly limit of 60 visitors will be allowed to enter the columbarium building, i.e., 660 visitors per day during Peak Grave Sweeping Days.

4.3.6 Other than the Peak Grave Sweeping Days, visit-by-appointment will also be implemented. The maximum hourly visitor number will be constrained to 10 visitors, so that the maximum vehicular trips could be constrained to around 3-4 trips per hour. Hence, the traffic impact to the vicinity could be further minimized.

4.4 Proposed Shuttle Bus Services

4.4.1 As no internal transport facilities are provided within the Application Site, to minimize the traffic impact to the vicinity of the Proposed Development, and to minimize the amount of vehicular traffic and in line with the Government Policy to encourage public transport use with railway as the backbone, the Applicant proposes to provide free shuttle bus services for visitors between the Bay at Kam Tin Bypass Eastbound (close to Kong Tai Road) and Kam Sheung Road MRT station.

4.4.2 As signed up in the Sales Agreement, visitors must take the free shuttle bus and drop-off at the specified layby and walk through a footpath (around 400m) to the Proposed Development. The location of the proposed layby is shown in **Figure 4-1**.

4.4.3 Visitors must take the shuttle bus to the Proposed Development with valid booking confirmation. Advance booking for the shuttle bus service is always required before a visit. The proposed routing is shown in **Figure 4-1**. Free shuttle bus operation details are summarized in **Table 4-3.**

Table 4-3 Proposed Shuttle Bus Services

Free Shuttle Bus Route (Circular)		Operation Schedule
Loading / Unloading Bay at Kam Tin Bypass Eastbound (close to Kong Tai Road)	MTR West Rail Kam Sheung Road Station	Peak Grave Sweeping Days 06:50 – 18:00 Departure Every 12 min
		Other than Peak Grave Sweeping Days 08:50 – 18:00 Upon visitor's booking

5 TRAFFIC FORECAST OF THE PROPOSED DEVELOPMENT

5.1 Pedestrian Trip Generations during Festival Period

5.1.1 With reference to some columbarium with similar locality, i.e. sites sit around 500m walk away from public transport. The traffic trip generation on Grave Sweeping Festival Day of the reference columbarium and the Application Site is shown in the table as below:

Table 5-1 Observed Peak Hour Pedestrian Trip Generations at Reference Columbarium on Grave Sweeping Festival Day

Location	Survey Date	Peak Hour	Pedestrian Trips			
			Peak Hour Flows (person/hr)		Trip Rates (person/hr /(niche/tablet))	
			In	Out	In	Out
Filial Park (1), Tuen Mun (1,160 niches and memorial tablets occupied)	2017 Ching Ming	10:30 – 11:30	250 (two-way)		0.216 (two-way)	
	2017 Chung Yeung	10:30 – 11:30	235 (two-way)		0.203 (two-way)	
Fat Yuen Ching Shea(2), Tuen Mun (4,105 niches occupied)	2017 Ching Ming	11:15 – 12:15	643	929	***0.157***	***0.226***
	2018 Ching Ming	11:00 – 12:00	733	712	0.131	0.124
Poh Yea Ching Shea(3), Tai Po (968 niches occupied)	2016 Ching Ming	13:15 – 14:15	97	74	0.100	0.076
Buddhist Cheung Ha Temple(4), Tai Po (7,385 niches and memorial tablets sold)	2018 Ching Ming	10:50 – 11:50	818	888	0.111	0.120
Pun Chun Yuen(5), Tai Po (2,466 niches occupied) With visit-by-appointment	2021 Ching Ming	11:00 – 12:00	186	170	0.075	0.069

Note: (1) data was extracted from TIA report of its approved planning application [A/TM/527];
(2) data was extracted from TIA report of the approved planning application [A/TM/548];
(3) data was extracted from TIA report of its approved planning application [A/TP/657];
(4) data was extracted from TIA report of planning application [Y/TP/35];
(5) data was extracted from TIA report of its approved planning application [A/TP/681].

5.1.2 By comparing the observed trip generation rates among the reference columbarium, the rate observed on Ching Ming Day in 2017 from Fat Yuen Ching Shea was higher than the others and the subject trip rate will be adopted in estimating the future trips by the proposed columbarium at the Application Site without visit-by-appointment.

5.1.3 As described in Chapter 4, the Applicant proposes to adopt "Visit-by-Appointment" system to manage and strictly control the site to accommodate not more than 30 visitors staying within the columbarium building at any time for safety concerns.

5.1.4 The proposed appointment system is to smoothen and diversify the concentration of peak hour visitor demands by dividing the daily operation into several 15-minutes sessions during grave sweeping periods and assigning a quota of maximum of 15 visitors for each session. As shown in **Table 4-2**, with adoption of the proposed appointment system, the hourly number of visitors staying in the Application Site will be limited to 60 persons, and a total of 660 visitors are allowed visit daily during grave sweeping periods. The future trips for the proposed columbarium at the Application Site is summarized in **Table 5-2**.

Table 5-2 Estimated Peak Hour Pedestrian Trip Generations at Proposed Columbarium on Grave Sweeping Festival Day

Proposed Site (2,911 niches)	Peak Hour Pedestrian Trips			
	Peak Hour Trip Rates (person/ niches)		Estimated Peak Hour Flows (person)	
	In	Out	In	Out
Without Visit by Appointment (1)	0.157	0.226	457	658
With Visit by Appointment (2)	0.021	0.021	60	60

*Note: (1) Refer to **Table 5-1** for the Fat Yuen Ching Shea peak hour trip rates without visit by appointment*
*(2) Refer to **Table 4-2** for the number of peak hour visits under Visit-by-Appointment System during Grave Sweeping Days*

5.1.5 **Table 5-2** indicates that the estimated trip generations will be greatly decreased with the implementation of the crowd management plan.

5.2 Vehicular Trip Generations during Festival Period

5.2.1 Reference is also made to some columbarium in terms of vehicular traffic with similar locality, i.e. sites sit around 500m walk away from public transport. The traffic trip generation on Grave Sweeping Festival Day of the reference columbarium and the Application Site is shown in the table as below:

Table 5-3 Observed Peak Hour Vehicular Trip Generations at Reference Columbarium on Grave Sweeping Festival Day

Location	Survey Date	Peak Hour Vehicular Trips			
		Peak Hour Flows (pcu/hr)		Trip Rates (pcu/hr /(niche/tablet))	
		In	Out	In	Out
Filial Park (1), Tuen Mun (1,160 niches and memorial tablets occupied)	2017 Ching Ming	35	30	***0.030***	***0.026***
	2017 Chung Yeung	20	20	0.017	0.017
Fat Yuen Ching Shea(2), Tuen Mun (4,105 niches occupied)	2017 Ching Ming	95	109	0.023	0.027
Buddhist Cheung Ha Temple(3), Tai Po (7,385 niches and memorial tablets sold)	2018 Ching Ming	59	63	0.008	0.008
Pun Chun Yuen(4), Tai Po (2,466 niches occupied) With visit-by-appointment	2021 Ching Ming	33	34	0.013	0.014

Note: (1) data was extracted from TIA report of its approved planning application [A/TM/527];
(2) data was extracted from TIA report of the approved planning application [A/TM/548];
(3) data was extracted from TIA report of planning application [Y/TP/29];
(4) data was extracted from TIA report of its approved planning application [A/TP/681].

5.2.2 By comparing the observed trip generation rates among the reference columbarium, the rate observed on Ching Ming Day in 2017 from Filial Park was higher than the others and the subject trip rate will be adopted in estimating the future trips by the proposed columbarium at the Application Site without visit-by-appointment.

Table 5-4 Estimated Peak Hour Trip Generations at Proposed Columbarium on Grave Sweeping Festival Day (without TCMP)

Proposed Site (2,911 niches)	Peak Hour Vehicular Trips			
	Trip Rates (pcu/hr /(niche)		Peak Hour Flows (pcu/hr)	
	In	Out	In	Out
	Without Visit-By-Appointment			
	0.030	***0.026***	88	76

5.2.3 As mentioned in Chapter 4, with implementation of crowd management by Applicant, i.e., all the visitors should make an appointment before visiting and take the free shuttle bus travelling between the Application Site and MTR Kam Sheung Road Station, the estimated traffic generation by the proposed columbarium will be regulated. The estimated traffic generation of the proposed columbarium is summarized in **Table 5-5.**

Table 5-5 Estimated Peak Hour Vehicular Trip Generations at Proposed Columbarium on Grave Sweeping Festival Day (with TCMP)

Transportation Mode	Percentage	In			Out		
		Visitors /hr	Vehicles /hr	PCU/hr	Visitors /hr	Vehicles /hr	PCU/hr
With Visit-By-Appointment							
Shuttle Bus (1)	100%	60	3	5	60	3	5

Note: (1) Based on 24-seat light bus.

5.2.4 As indicated in **Table 5-5**, with implementation of TCMP, only a total of 10 pcu's (5 in and 5 out) will be induced during peak hour during Ching Ming / Chung Yeung Festival.

5.2.5 In addition, based on the TCMP, the Applicant will constrain the maximum hourly visit to not more than 10 visitors per hour. Thus, there would be not more than 4 pcu to be generated during peak hour on the opening days other than Grave Sweeping Festival Days. The traffic impact would be minimal.

6 TRAFFIC IMPACT ASSESSMENT

6.1 Assessment Approach

6.1.1 The anticipated licensing year is 2027. The assessment year for this traffic impact assessment study is set as 2030, i.e, 3 years after commissioning of the columbarium.

6.1.2 In forecasting the future traffic flows on the road network in the Study Area, due considerations are given to the following information and factors:

- The forecast population and employment from the 2019-based Territorial Population and Employment Data Matrices (TPEDM) planning data published by Planning Department;
- Historical traffic data from Annual Traffic Census (ATC) published by Transport Department;
- Committed and planned developments in the Study Area.

6.1.3 The following steps are undertaken to derive the 2030 Peak Hour Reference Flows (i.e. without the proposed redevelopment) and Design Flows (i.e. with the proposed redevelopment):

- 2030 Background Flows = 2024 Observed Flows x annual growth factors
- 2030 Reference Flows = 2030 Background Flows + additional traffic by planned and committed developments
- 2030 Design Flows = 2030 Reference Flows + Development traffic

6.1.4 The traffic impact to be induced by the Redevelopment is assessed by comparing the Peak Hour Reference Traffic Flows against the Design Traffic Flows for both Design Years.

6.2 2030 Peak Hour Background Flows

6.2.1 Reference is made to the 2019-based Territorial Population and Employment Data Matrices (TPEDM) planning data published by Planning Department. **Table 6-1** presents the population and employment data in Yuen Long District and Northwest New Territories for 2019, 2026 and 2031. As indicated in the table, the population and employment places in

Yuen Long District and Northwest New Territories are anticipated to increase by +2.73% over the period of 2019 – 2031.

Table 6-1 2019-Based TPEDM for Yuen Long District and Northwest New Territories

Category	2019	2026	2031	2019-2031 Average Growth (% p.a.)
Population	397,950	411,600	513,750	2.15%
Employment Places	126,500	147,550	210,400	4.33%
Total	524,450	559,150	724,150	2.73%

Source: 2019, 2026 & 2031 population and employment places are extracted from 2019-based TPEDM published by Planning Department.

6.2.2 Reference is also made to the historical traffic data from Annual Traffic Census (ATC) published by Transport Department. **Table 6-2** shows the AADT recorded at the relevant stations in the Study Area and the percent changes from 2017 to 2022. On average, there was an increase of +2.79% per annum in the area over the period from 2017 to 2022.

Table 6-2 Historical Traffic Data from Annual Traffic Census

Stn. No.	Road Name	Between		Average Annual Daily Traffic (AADT)						Growth (p.a.)
				2017	2018	2019	2020	2021	2022	
6051	Kam Tin Rd	Castle Peak Rd -Yuen Long	Kam Sheung Rd Western Junction	34,880	41,960	41,820	41410	43,020	44,200	4.85%
				--	20.3%	-0.33%	-0.98%	3.89%	2.74%	
6109	Kam Ho Rd	Kam Tin Rd	Tung Wui Rd	9,780	10,400	10,360	10,260	10,660	10,560	1.55%
				--	6.34%	-0.38%	-0.97%	3.9%	-0.94%	
6208	Kam Sheung Rd	Kam Tin Rd	Kam Tin Rd	7,860	8,120	8,080	9,400	8,960	9,600	4.08%
				--	3.31%	-0.49%	16.34%	-4.68%	7.14%	
6110	Kam Tin Bypass	Kam Tin Rd	Kam Tin Rd	14,120	15,470	14,990	12,810	12,450	12,980	-1.67%
				--	9.56%	-3.1%	-14.54%	-2.81%	4.26%	
6207	Kam Tin Rd	Kam Sheung Rd	Fan Kam Rd	20,550	20,390	21,300	21640	20,490	20,520	-0.03%
				--	-0.78%	4.46%	1.6%	-5.31%	0.15%	
5254	Kam Tin Rd	Fan Kam Rd	Kam Sheung Rd Eastern Junction	14,540	16,210	18,510	18,330	19,040	18,850	5.33%
				--	11.49%	14.19%	-0.97%	3.87%	-1.00%	
6212	Fan Kam Rd	Kam Tin Rd	Castle Peak Rd	10,780	11,570	11,660	12,250	12,450	12,400	2.84%
				--	7.33%	0.78%	5.06%	1.63%	-0.40%	
Total				**112,510**	**124,120**	**126,720**	**126,100**	**127,070**	**129,110**	**2.79%**
				--	**10.32%**	**2.09%**	**-0.49%**	**0.77%**	**1.61%**	

Source: Annual Traffic Census published by Transport Department.

6.2.3 For conservative, the annual growth rate derived from TPEDM (**i.e. +2.79%)** will be adopted and applied to the 2024 Peak Hour Observed Flows to derive the 2030 background flows.

6.3 2030 Peak Hour Reference Flows

6.3.1 According to the published information from Town Planning Board, there is no major planned or committed development in the vicinity of the Proposed Development, while several planned housing developments are proposed near Kam Sheung Road Station. The major planned developments are summarized in **Table 6-3**.

Table 6-3 Estimated Peak Hour Trip Generations by Planned Developments

Location	Land Use	Commission Year	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			In	Out	In	Out
Kam Sheung Road Station Project (1)	Private Housing (2,700 flats) (2)	2025	139	240	130	96
	Retail (40,000m² GFA) (5)		61	52	105	95
	Kindergarten (1 no.) (3)		10	10	10	10
Temporary Transitional Housing Development in Kam Tin, Yuen Long [A/YL-KTS/899](4)	Temporary Transitional Housing (1,028 flats) (4)	Date of Intake: Feb 2024	5	5	5	5
Site 1, Kam Tin South, Yuen Long	PRH(3,700 flats) (5)	2026	121	160	111	88
	Primary School (3)		15	15	15	15
	Social Welfare Facilities(3)		15	15	15	15
Site 4a, Kam Tin South, Yuen Long (4)	PRH (3,750 flats)	2026	122	162	113	89
Site 6, Kam Tin South, Yuen Long	PRH (1,550 flats) (5)	2026	51	67	47	37
	Primary School (3)		15	15	15	15
Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, N.T. [A/YL-KTN/791] (2)	Proposed Residential Development (330 flats)	Approved with condition(s) on 14/01/2022	14	24	12	9
Lot 291 (Part) in D.D. 109, Kam Sheung Road, Kam Tin, Yuen Long [A/YL-KTS/974]	Temporary Shop and Services (955m² GFA) (6)	Approved with condition(s) on 19/04/2024	3	3	4	3
Lots 341, 342, 343, 344 (Part) and 350 (Part) in in D.D. 109, Kam Tin, Yuen Long [A/YL-KTS/972]	Temporary Shop and Services, Eating Place (1,663m² GFA) (6)	Approved with condition(s) on 10/11/2023	5	4	6	6
Lots 670 (Part), 671, 673, 674, 675, 676, 677 (Part), 679, 680, 681 RP (Part), 682 RP, 683 RP (Part) in D.D. 106 and Adjoining Government Land, Yuen Long, New Territories [A/YL-KTS/950]	Temporary Place of Recreation, Sports or Culture (6)	Approved with condition(s) on 23/06/2023	23	22	34	30
	Total		**599**	**794**	**622**	**513**

Notes: (1) Information extracted from District Council Discussion Papers "dc_paper_2015_039"

(2) Peak Hour trip rates for Private Housing, TPDM Volume 1, Chapter 3, Appendix 1, Annex C, Table 1.

(3) Due to no detailed published scheme:

Assuming 10 pcu/hr (each way) for each kindergarten;

Assuming 15 pcu/hr (each way) for each Primary School;

Assuming 15 pcu/hr (each way) for Social Welfare Facilities.

(4) Trip generations and attraction extracted from TIA reports of approved planning applications (A/YL-KTS/899).

(5) Peak Hour trip rates for Public Rental Housing, TPDM Volume 1, Chapter 3, Appendix 1, Annex C, Table 1.

(6) Peak Hour trip rates for Retail / Shopping Complex, TPDM Volume 1, Chapter 3, Appendix 1, Annex C, Table 2.

6.3.2 The additional development trips by the planned housing developments and that will affect the traffic of the study area are then added to the 2030 Peak Hour Background Flows to derive the 2030 Peak Hour Reference Flows (i.e., without the proposed development) and the results are shown in **Figure 6-1**.

6.4 2030 Peak Hour Design Flows on Festival Day

6.4.1 By adding the peak hour development flows (**Figure 6-2**) to the forecast 2030 Peak Hour Reference Flows, the 2030 Design Flows are derived and is shown in **Figure 6-3**. Junction capacity assessment are undertaken and the results are shown in **Table 6-4** and with detailed calculation sheets provided in **Appendix B**.

Table 6-4 2030 Peak Hour Junction Capacity Assessment

Ref No.	Junction Location	Junction Type	Capacity Index (1)	2030 Ref	2030 Des
J1	Kam Tin Bypass / Kam Tin Road / Tung Wui Road	Roundabout	DFC	0.37	0.37
J2	Chi Ho Road / Kong Tai Road	Priority	DFC	0.08	0.08
J3	Kam Tin Bypass / Kong Tai Road	Signalized	R.C.(C)	100%+	100%+
J4(2)	Kam Tin Bypass / Kam Tin Road / Kam Ho Road	Roundabout	DFC	0.52	0.52
J5	Chi Ho Road / Kam Hing Road	Priority	DFC	0.13	0.13
J6	Kam Tin Bypass / Kam Hing Road	Signalized	R.C.(C)	100%+	100%+

Notes: (1) DFC = Design Flow to Capacity ratio.
R.C. = Reserve Capacity under Current cycle time
(2) The junction improvement works will be carried out by CEDD under project PWP Item No. 7804CL: Site Formation and Infrastructure Works for Development at Kam Tin South, Yuen Long -Advance Works. Assessment results are presented with improvement works.

6.4.2 It is noted that improvement works has been proposed by CEDD on junction J4. The proposed scheme is attached in **Appendix C**. After the improvement work, performance of J4 will be improved to an acceptable DFC value less than 0.85 which indicates a satisfactory condition.

6.4.3 Overall, all the key junctions in the Study Area would also perform satisfactorily for both the Reference Scenario (i.e., without proposed development) and Design Scenario (i.e., with proposed development).

6.5 Pedestrian Impact Assessment

6.5.1 Similar to the vehicular traffic impact assessment, an annual growth factor of 2.79% was applied to the existing pedestrian flows to derive the 2030 peak hour background pedestrian flows.

6.5.2 The additional pedestrian flows by the Project Site in **Table 4-2** are then assigned onto the main pedestrian routes and the resulting 2030 Peak Hour Pedestrian Flows with the Project Site.

6.5.3 Visitors are assigned to the pedestrian routes in the study area and the results are presented **Table 6-5**.

Table 6-5 2030 Level of Services of Key Footways

Location	Actual Footway Width	Effective Footway Width(1)	Peak 5-Minute Flow	Peak Minute Flow /Metre	Level of Service
P1	3.4 m	2.9 m	17	1.17	A
P2	2.0 m	1.5 m	12	2.00	A
P3	1.9 m	1.4 m	5	0.71	A

*Note: (1) Locations refer to **Figure 2-1**.*
(2) Effective width = Actual width minus 0.5m shy zone.

6.5.4 **Table 6-5** indicate that the concerned footways affected by the proposed columbarium development would perform in a satisfactorily LOS level during the peak period on Festival Day in the design year of 2030.

6.6 Capacity of Loading / Unloading Bay at Kam Tin Bypass (Eastbound)

6.6.1 The proposed pick-up/drop-off point at Kam Tin Bypass (para. 4.4.3 refers) is with 13m in length (tappers not counted). Given the length of the proposed layby, at most 2 vehicles could be served at same time. Based on observation on a Sunday in 2024, it is found that no loading / unloading activities were ever observed at the subject layby during 08:00 – 18:00.

6.6.2 As the round trip for the shuttle bus will be only about 8 min, and the frequency of the proposed bus is to provide one ride every 12min, thus, one fleet of 24-seat shuttle bus will be enough to serve the route. It would be at most one shuttle bus using the proposed layby for loading / unloading activities during the Grave Sweeping Festival Days. In addition,

there would be less than 5 trips per hour that would approach the subject layby due to the Application Site in reality.

6.6.3 Given the above, the proposed layby will be of ample capacity for the proposed shuttle bus of the Application Site.

7 Summary and Conclusion

7.1 Summary of Findings

7.1.1 The Applicant intends to regularize a pre-cut-off columbarium with 2,911 niches. Ozzo Technology (HK) Limited are commissioned to undertake a Traffic Impact Assessment (TIA) Study to assess the potential traffic impact to be induced by the Proposed Development.

7.1.2 The assessment year is set as 2030, i.e., 3 years from the licencing year in 2027.

7.1.3 In order to minimise the amount of vehicular traffic in the area, the Applicant proposes to provide free shuttle bus services for visitors between the Proposed Development and West Rail Kam Sheung Road Station. Also, a maximum of 60 visitors per hour would be allowed to access the proposed columbarium and visitors are required to make appointment via Visit-by-Appointment system before their visits.

7.1.4 It is estimated that around 10 pcu's (5 in and 5 out) are to be induced by the Proposed Development during the peak hour during the festival period.

7.1.5 The 2030 Peak Hour Reference Traffic Flows (i.e., without the proposed columbarium) are estimated taking into account the planned and committed developments, as well as the future population and employment in Yuen Long District and Northwest New Territories.

7.1.6 The additional traffic to be induced by the Proposed Development is added to the 2030 Reference Flows to obtain the 2030 Design Flows (i.e. with the Proposed Development).

7.1.7 Junction capacity assessments are carried out for all the key junctions within the Study Area. With the improvement works, the results indicated that the key junctions in the area would perform satisfactorily in the design year of 2030 with the proposed management plans by the Proposed Development. The traffic impact to be induced by the Proposed Development would be acceptable without creating adverse impact on the nearby road network with the proposed management plans.

7.2 Conclusion

7.2.1 The results of the assessment indicate that, with the provision of free shuttle bus services to be provided by the Applicant, the amount of traffic to be induced by the Proposed Development would be small and hence the potential traffic impact to be induced by the proposed columbarium would not pose adverse traffic impacts to the road network in the vicinity of the Application Site.

Figures

Application Site

Kam Tin Bypass

Chi Ho Road

Kong Tai Road

Kam Tin Road

Kam Ho Road

Tung Wui Road

MTR Kam Sheung Road Station

KAM TIN

KONG A LENG

Cheung Kong Tsuen

Shui Mei

Rak Wai Tsuen

Shui Tau

Kam Hing Wai

Tai Kong Po

Ko Po Tsuen

Ko Po San Tsuen

Kiu Tau Tsuen

Pang Ka Tsuen

Ng Ka Tsuen

Au Tau Water Treatment Works

Kam's Terrace

The NASCENT

Seasons Monarch

Kam Shan Road Station

Works in progress

KAM TIN RIVER

KAM TAI ROAD

KAM TIN BYPASS

KAM KONG ROAD

KAM PO ROAD

KAM SHEUNG ROAD

CHI HO ROAD

TSING LONG HIGHWAY

SHEK KONG AIRFIELD RD

PARK AVENUE

HILLSIDE AVENUE

POOLSIDE AVENUE

0 60 120 180 240

LEGEND:

- Application Site
- Study Area
- MTR Station

協天宮

Project Title

S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

Site Location and Study Area

Date 26/07/2024

Scale 1:6000

OZZO TECHNOLOGY

Project No. 82269

Dwg No. Figure 2-1

Rev. -

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Application Site

Kam Tin Bypass

Kam Tin Road

KMB: 251B,251M,
54,77K,E36P
GMB: 602,608

GMB: 602

GMB: 602

0 25 50 75 100

LEGEND:

Application Site

Bus Stop

GMB Stop

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Project Title

S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

Existing Public Transport in the Vicinity of the Application Site

Date 26/07/2024

Scale 1:2500

OZZO TECHNOLOGY

Project No. 82269

Dwg No. Figure 2-2

Rev. -

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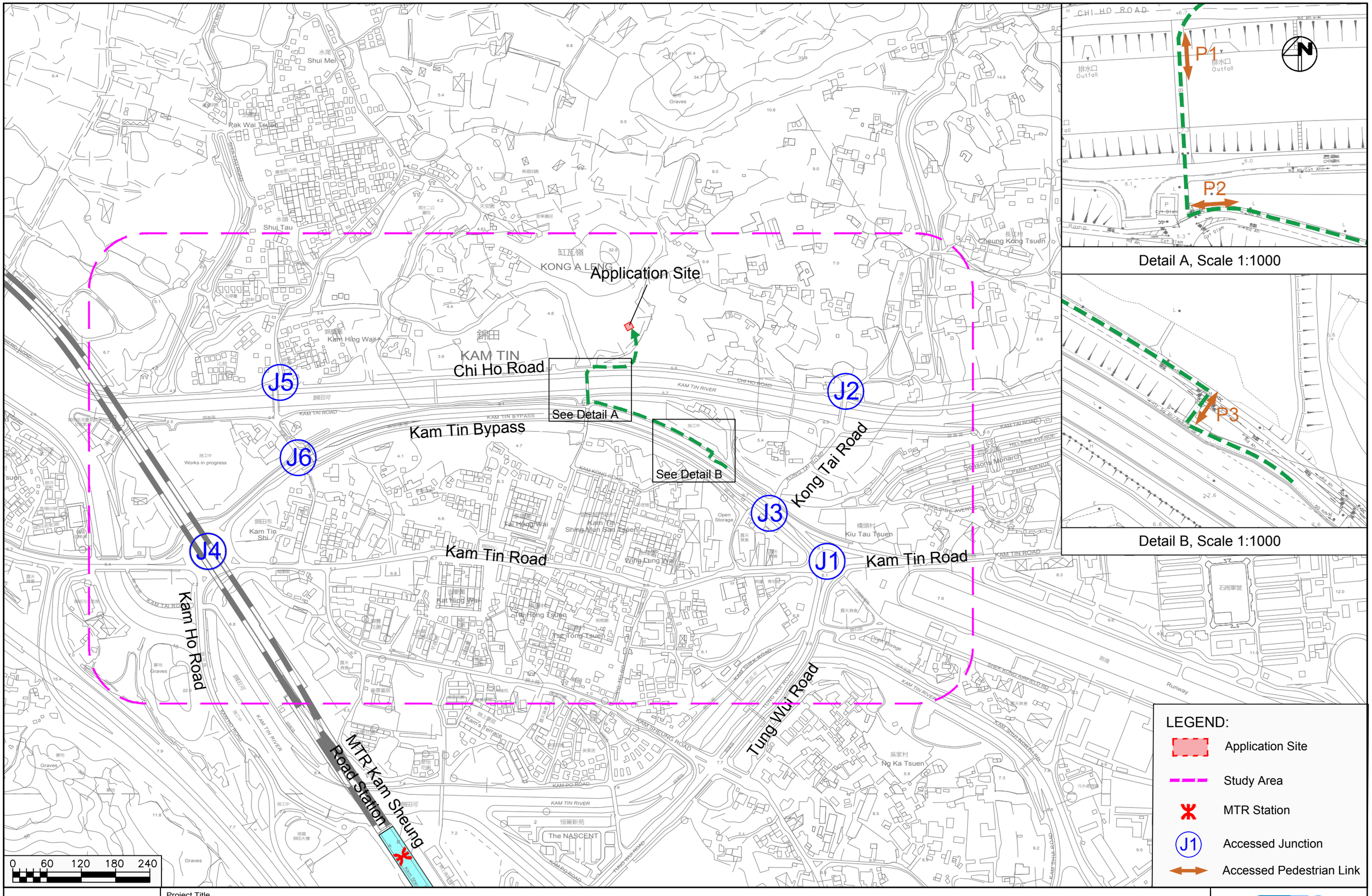

Detail A, Scale 1:1000

Detail B, Scale 1:1000

LEGEND:

- Application Site
- Study Area
- MTR Station
- J1 Accessed Junction
- Accessed Pedestrian Link

协天宫

Project Title

S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

Locations of Surveyed Key Junctions

Date	Scale
26/07/2024	1:6000

OZZO TECHNOLOGY

Project No. 82269	Rev.
Dwg No. Figure 2-3	-

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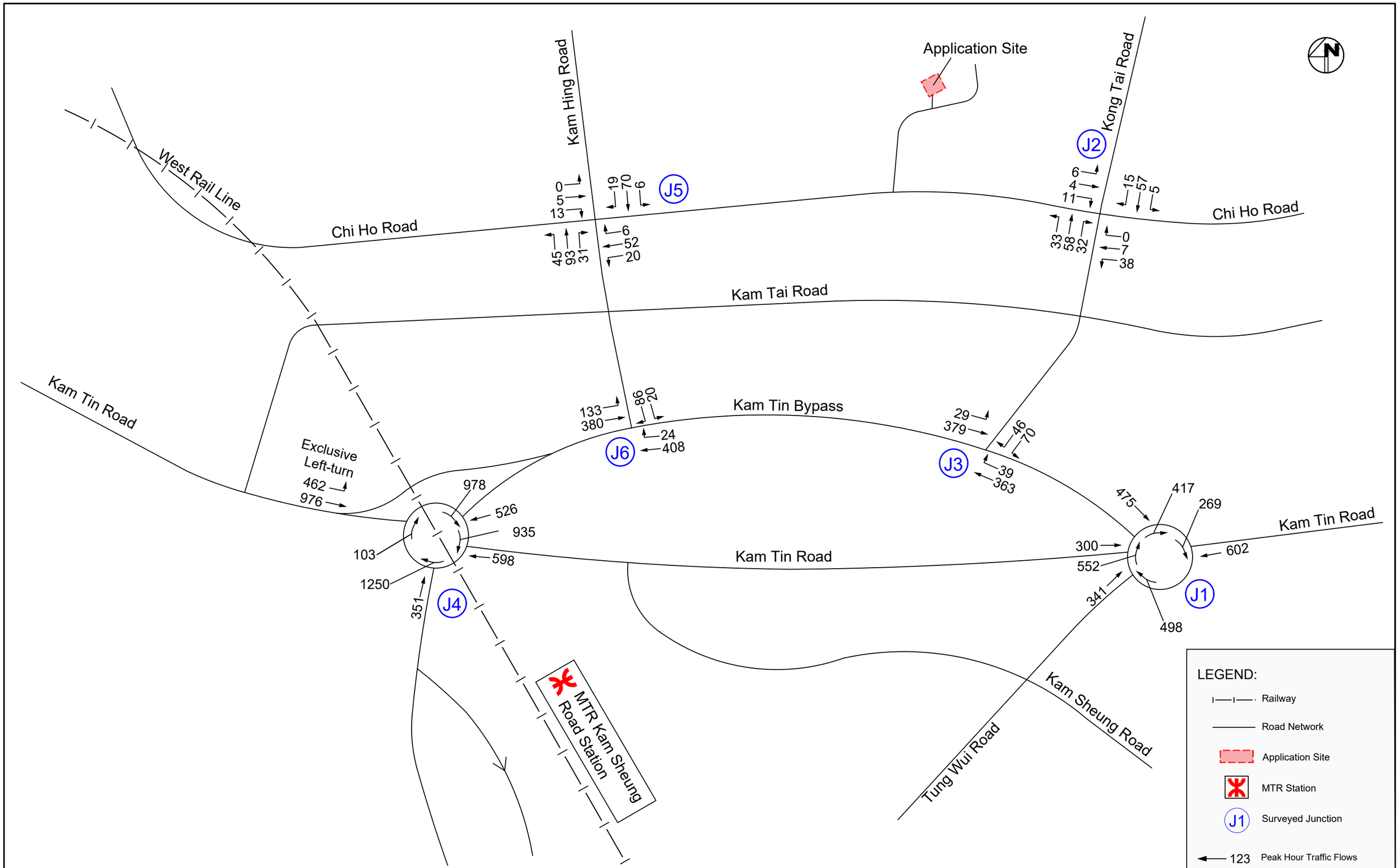

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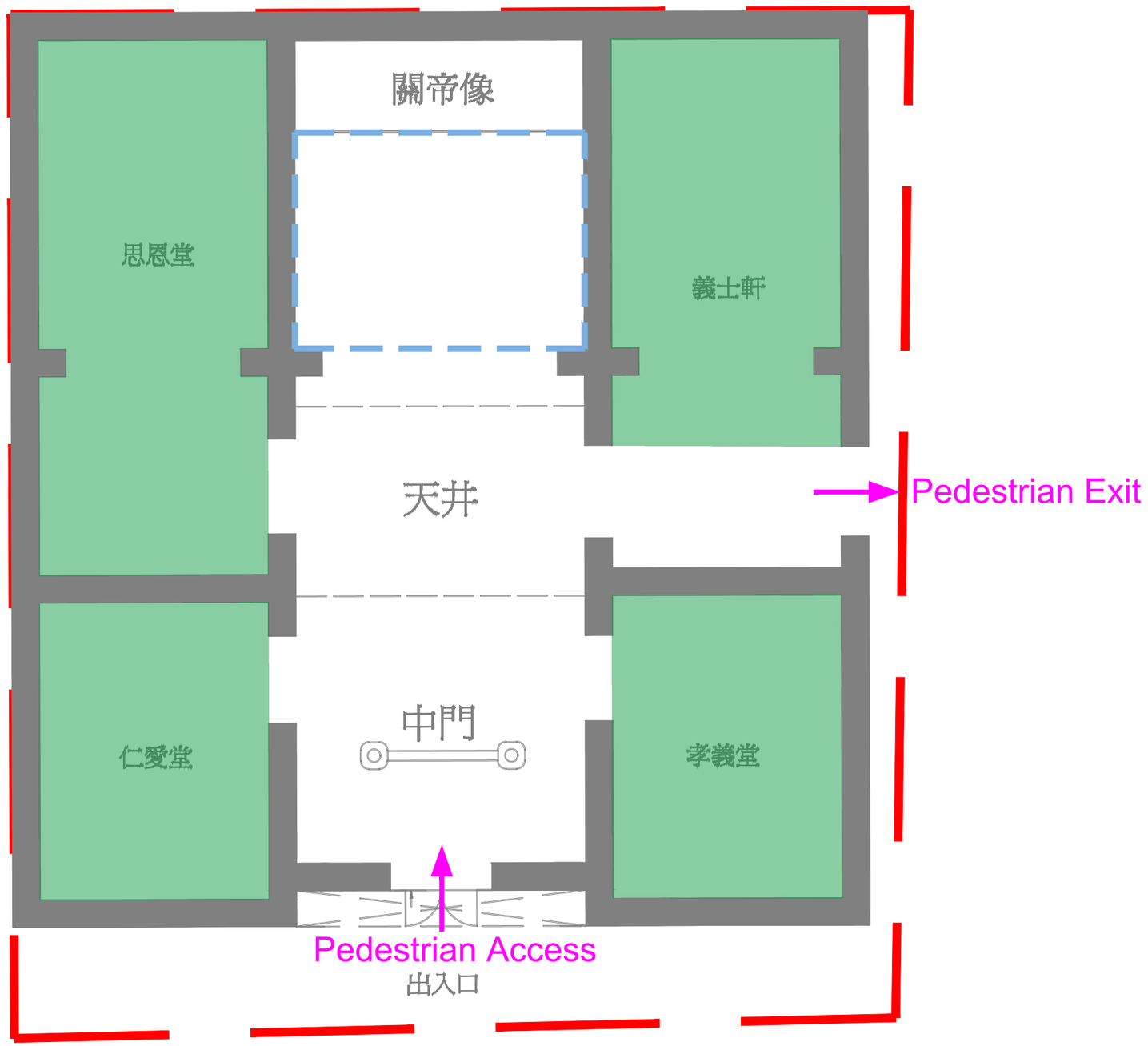
協天宮	Project Title: **S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA**	OZZO TECHNOLOGY
Date 12/08/2024 · Scale N.T.S	2024 Ching Ming Observed Peak Hour Traffic Flows	Project No. 82269 · Rev. A · Dwg No. Figure 2-4



LEGENDS :

- Application Site
- Waiting Area
- Columbarium Facilities

0 0.6 1.2 1.8 2.4

協天宮

Project Title

S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

Layout of Application Site

Date	Scale
26/07/2024	1:60

OZZO TECHNOLOGY

Project No. 82269	Rev.
Dwg No. Figure 3-1	-

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Application Site

Walking Distance ~ 440m

Chi Ho Road

Kam Tin Bypass

Kong Tai Road

Chi Ho Road

Kam Tin Road

Kam Tin Road

Kam Tin Road

Proposed Shuttle Bus
Pick-up/drop-off point at
Existing Loading / Unloading Bay
at Kam Tin Bypass

Kam Ho Road

Tsing Long Highway

MTR Kam Sheung Road Station

Tung Wui Road

Proposed Shuttle Bus Pick-up/drop-off
point near MTR Kam Sheung Road Station

TS116

TS831

TS855

TS119

Length over 7m 車長超過

Except buses 巴士例外

0 50 100 150 200

LEGEND:

- Application Site
- Shuttle Bus Pick-up/drop-off point
- Proposed Shuttle Bus Route to Site from Kam Sheung Road Station
- Proposed Shuttle Bus Route to Kam Sheung Road Station from Site

協天宮

Project Title

S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

Proposed Route of Shuttle Bus Services

Date 26/07/2024

Scale 1:5000

OZZO TECHNOLOGY

Project No. 82269

Rev. -

Dwg No. Figure 4-1

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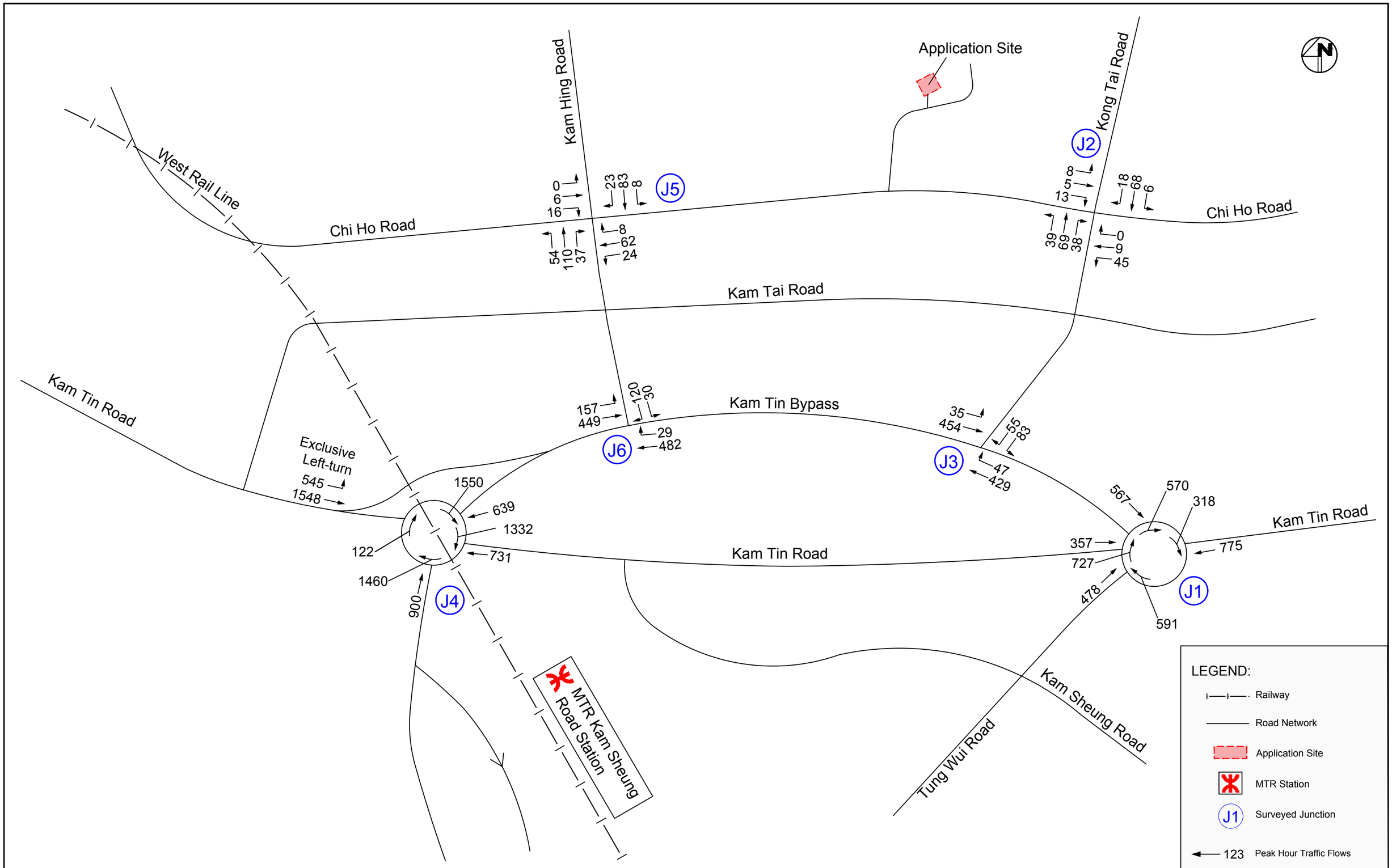

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协天宫

Project Title

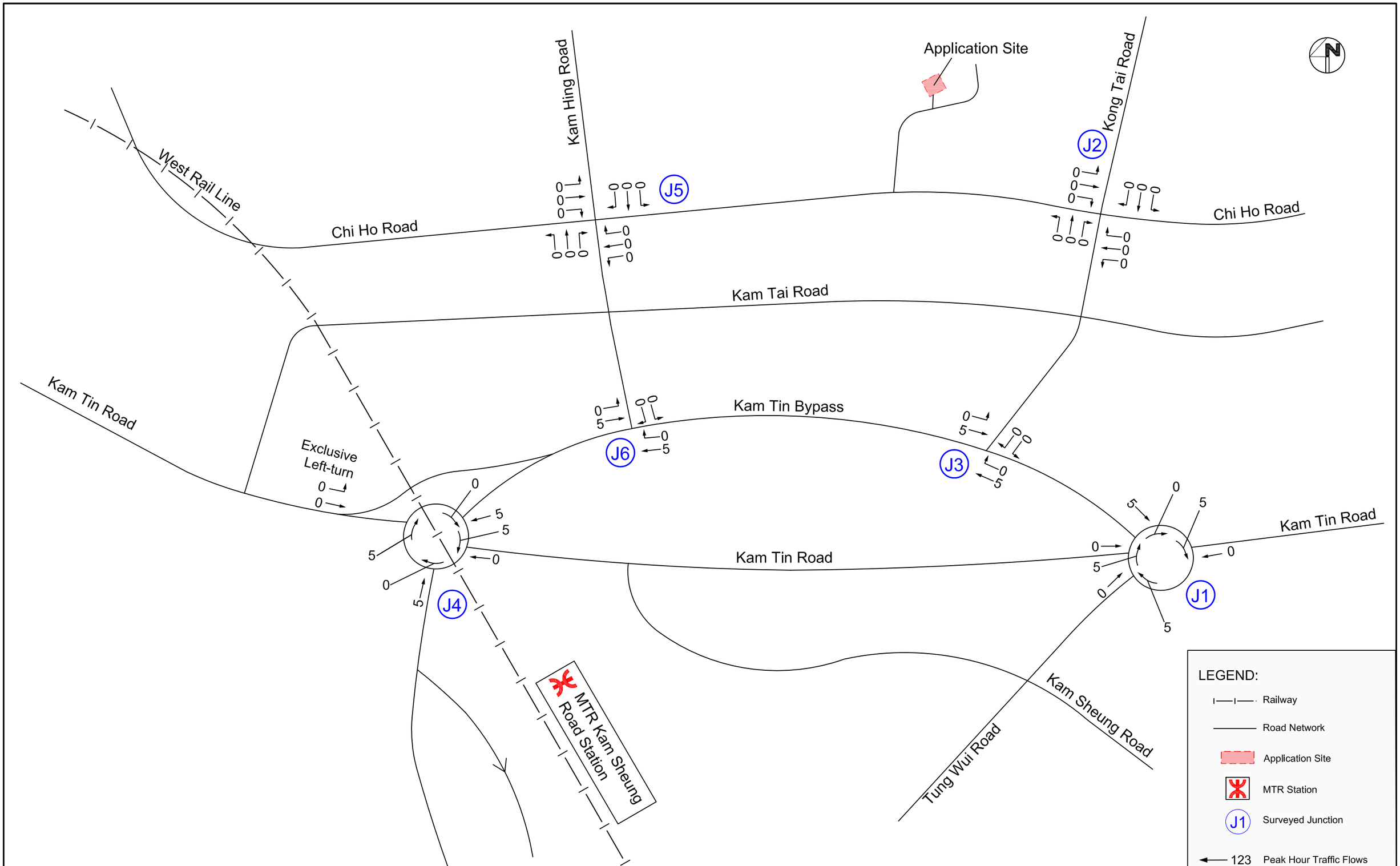
S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

2030 Reference Peak Hour Traffic Flows

Date	Scale
12/08/2024	N.T.S

OZZO TECHNOLOGY

Project No. 82269	Rev.
Dwg No. Figure 6-1	A



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協天宮

Project Title

S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

Development Peak Hour Traffic Flows

Date	Scale
13/08/2024	N.T.S

OZZO TECHNOLOGY

Project No. 82269	Rev.
Dwg No. Figure 6-2	A

Application Site

West Rail Line

Kam Hing Road

Kong Tai Road

Chi Ho Road

Chi Ho Road

Kam Tai Road

Kam Tin Road

Kam Tin Bypass

Exclusive Left-turn

Kam Tin Road

Kam Tin Road

Kam Sheung Road

Tung Wui Road

MTR Kam Sheung Road Station

J1

J2

J3

J4

J5

J6

0 6 16 23 83 8 54 110 37 8 62 24

8 5 13 18 68 6 39 69 38 0 9 45

157 453 120 30 29 486

35 458 55 83 47 433

1548 545 1550 643 1336 731 126 1460 904

571 570 322 357 731 775 478 595

LEGEND:

- Railway
- Road Network
- Application Site
- MTR Station
- J1 Surveyed Junction
- 123 Peak Hour Traffic Flows

Note: Traffic Flows at Junction in PCU values
Minor Road not shown for Clarity

协天宫

Project Title

S12A for Hip Tin Temple, Tai Kong Po, Pat Heung - TIA

2030 Design Peak Hour Traffic Flows

Date	Scale
12/08/2024	N.T.S

OZZO TECHNOLOGY

Project No. 82269	Rev.
Dwg No. Figure 6-3	A

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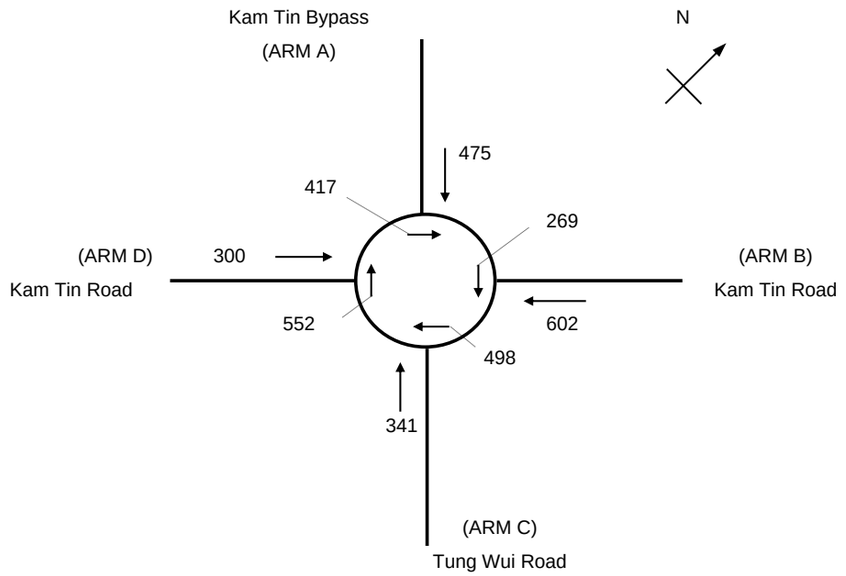
Appendix A

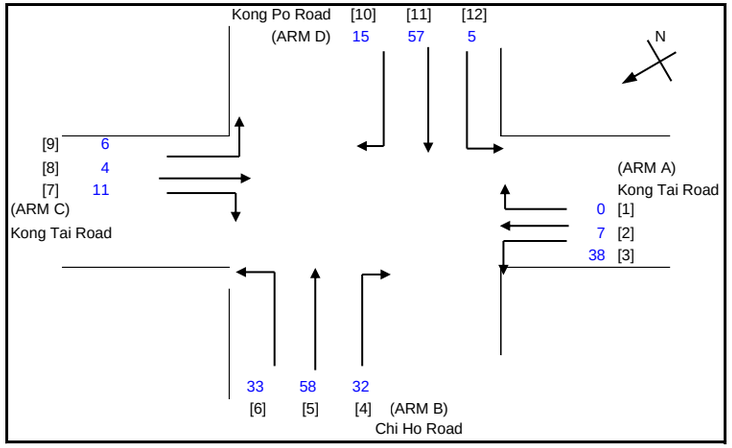
2024 Junction Calculation Sheets

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J1 : Kam Tin Bypass / Kam Tin Road / Tung Wui Road	**2024 CM**	FILENAME :	CHECKED BY:	MM	Aug-24
2024 Observed Peak Hour Traffic Flows		Bypass_Kam Tin Road_Tung Wui Road_R.xls	REVIEWED BY:	SC	Aug-24



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.3	7.3	7.3	3.8			
E	=	Entry width (m)	11.4	11.8	8.4	8.2			
L	=	Effective length of flare (m)	3.6	5.0	1.0	5.0			
R	=	Entry radius (m)	38.0	16.0	14.0	18.0			
D	=	Inscribed circle diameter (m)	63.0	63.0	63.0	63.0			
A	=	Entry angle (degree)	37.0	59.0	60.0	51.0			
Q	=	Entry flow (pcu/h)	475	602	341	300			
Qc	=	Circulating flow across entry (pcu/h)	417	269	498	552			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	1.85	1.44	1.76	1.41			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.89	0.87	0.92			
X2	=	V + ((E-V)/(1+2S))	8.17	8.46	7.54	4.95			
M	=	EXP((D-60)/10)	1	1	1	1			
F	=	303*X2	2476	2563	2286	1501			
Td	=	1+(0.5/(1+M))	1.21	1.21	1.21	1.21			
Fc	=	0.21*Td(1+0.2*X2)	0.67	0.69	0.64	0.51			
Qe	=	K(F-Fc*Qc)	2194	2110	1721	1125	Total In Sum =	1718	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.22	0.29	0.20	0.27	DFC of Critical Approach =	0.29	

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J2 : Chi Ho Road / Kong Tai Road / Kong Po Road	**2024 CM**	FILENAME :	CHECKED BY:	LL	Aug-24
2024 Observed Peak Hour Traffic Flows		J2_Chi Ho Road_Kong Tai Road_Cro.XLS	REVIEWED BY:	SC	Aug-24



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
X a	=	STREAM-SPECIFIC (RIGHT TURN FROM A)
X b	=	STREAM-SPECIFIC (RIGHT TURN FROM B)
Z b	=	STREAM-SPECIFIC (LEFT TURN FROM B)
M b	=	STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE)
Y	=	(1-0.0345W)
r b-a	=	RATIO OF FLOW TO CAPACITY IN STREAM b-a

GEOMETRIC DETAILS:

GENERAL

W	=	6.7	(metres)			
W cr	=	0	(metres)	Y	=	0.77

MAJOR ROAD (ARM A)				MAJOR ROAD (ARM C)			
W a-c	=	4.0	(metres)	W c-b	=	3.2	(metres)
Vl a-c	=	20.0	(metres)	Vr c-b	=	46	(metres)
q a-b	=	38	(pcu/hr)	q c-a	=	4	(pcu/hr)
q a-c	=	7	(pcu/hr)	q c-b	=	11	(pcu/hr)

MINOR ROAD (ARM B)				MINOR ROAD (ARM D)			
W b-a	=	2.9	(metres)	W d-c	=	1.8	(metres)
W b-c	=	2.9	(metres)	W d-a	=	1.8	(metres)
Vl b-a	=	46	(metres)	Vl d-c	=	45	(metres)
Vr b-a	=	60	(metres)	Vr d-c	=	53	(metres)
Vr b-c	=	60	(metres)	Vr d-a	=	53	(metres)
q b-a	=	32	(pcu/hr)	q d-c	=	15	(pcu/hr)
q b-c	=	33	(pcu/hr)	q d-a	=	5	(pcu/hr)
q b-d	=	58	(pcu/hr)	q d-b	=	57	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.828	Zb	=	1.154
E	=	0.894	X d	=	0.726
F	=	0.883	Z d	=	0.774
M b	=	0.828	M d	=	0.726

PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :

r b-a	=	0.0746		r d-c	=	0.035	
ql b-d	=	31.163	(pcu/hr)	ql d-b	=	29.497	(pcu/hr)
qr b-d	=	26.837	(pcu/hr)	qr d-b	=	27.503	(pcu/hr)

CAPACITY OF MOVEMENT :

Q b-a	=	510	(pcu/hr)	Q d-c	=	429	(pcu/hr)
Q b-c	=	818	(pcu/hr)	Q d-a	=	571	(pcu/hr)
Q c-b	=	646	(pcu/hr)	Q a-d	=	853	(pcu/hr)
Ql b-d	=	510	(pcu/hr)	Ql d-b	=	446	(pcu/hr)
Qr b-d	=	510	(pcu/hr)	Qr d-b	=	446	(pcu/hr)

TOTAL FLOW = 260 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

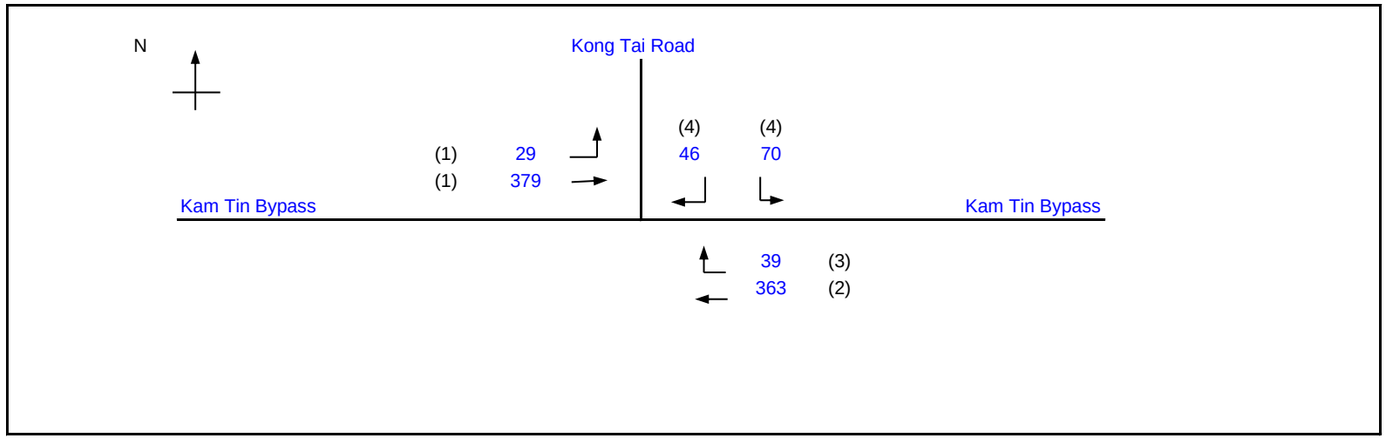
DFC b-a	=	0.0627
DFC b-c	=	0.0403
DFC c-b	=	0.0170
DFCl b-d	=	0.0611
DFCr b-d	=	0.0526
DFC d-c	=	0.0350
DFC d-a	=	0.0088
DFC a-d	=	0.0000
DFCl d-b	=	0.0661
DFCr d-b	=	0.0617

CRITICAL DFC = 0.07

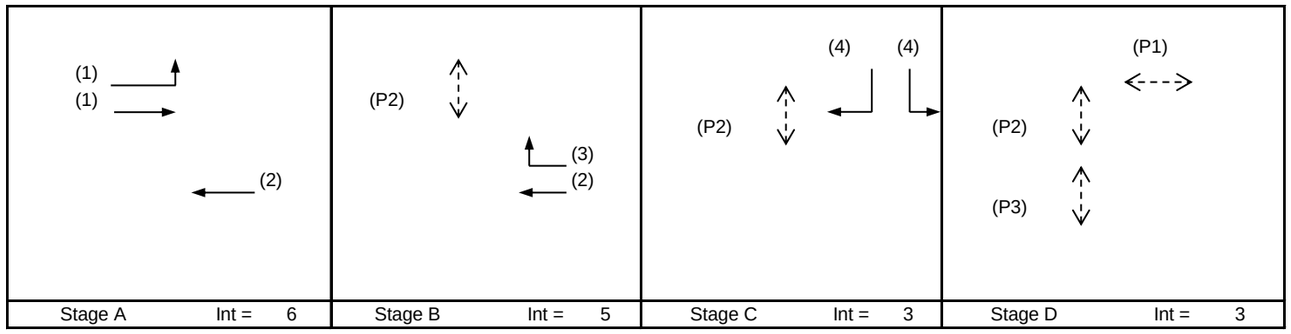
OZZO TECHNOLOGY (HK) LIMITED

TRAFFIC SIGNAL CALCULATION

			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung	PROJECT NO. 82269	Prepared By:	LL	Aug-24
J3: Kam Tin Bypass / Kong Tai Road	**2024 CM**	Checked By:	MM	Aug-24
2024 Observed Peak Hour Traffic Flows	FILENAME : J3_Kam Tin Bypass_Kong Tai Road_S.xls	Reviewed By:	SC	Aug-24



			Existing Cycle Time	
No. of stages per cycle	N	=	4	
Cycle time	C	=	80	sec
Sum(y)	Y	=	0.174	
Loss time	L	=	29	sec
Total Flow		=	926	pcu
Co = (1.5*L+5)/(1-Y)		=	58.7	sec
Cm = L/(1-Y)		=	35.1	sec
Yult		=	0.683	
R.C.ult = (Yult-Y)/Y*100%		=	291.6	%
Cp = 0.9*L/(0.9-Y)		=	36.0	sec
Ymax = 1-L/C		=	0.638	
R.C.(C) = (0.9*Ymax-Y)/Y*100%		=	229.2	%

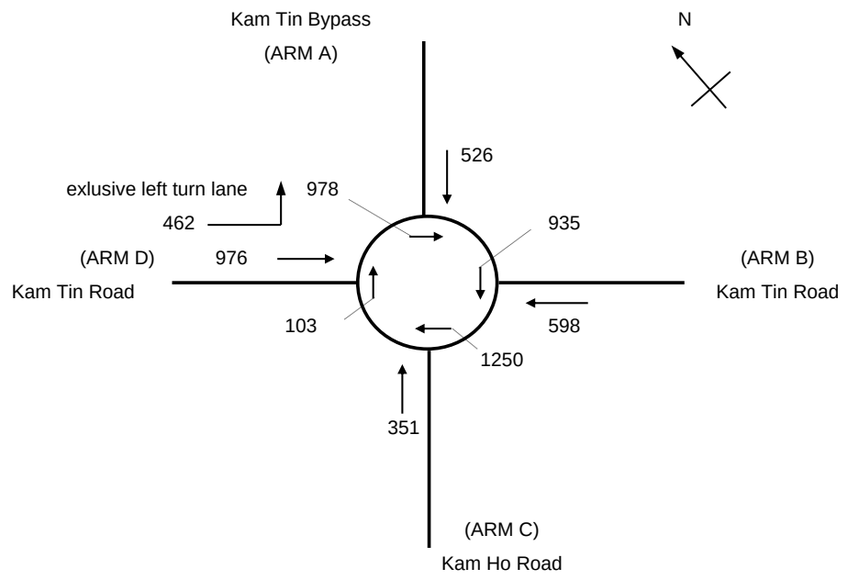


Pedestrian Phase	Stage	Width (m)	Green Time Required (s) SG	FG	Delay	Green Time Provided (s) SG	FG
P1	D	8.8	5	7	1	7	7
P2	B,C,D	7.1	5	6	1	37	6
P3	D	6.5	5	5	1	9	5

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Movement Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Flare lane Length m.	Share Effect pcu/hr	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queue Length (m / lane)	Average Delay (seconds)
																				14					
LT,SA	A	3.60	1	1	18			2115	29	174		203	0.14	2090			2090	0.097	0.097		28	30	0.259	12	16
SA	A	3.50	1	1				2105		205		205	0.00	2105			2105	0.097			28	30	0.259	12	16
SA	A,B	3.50	2	2				4210		363		363	0.00	4210			4210	0.086			25	42	0.164	9	9
RT	B	3.00	3	1	22			2055			39	39	1.00	1924			1924	0.020	0.020		6	9	0.180	0	31
LT,RT	C	4.80	4	1	16			2235	70		46	116	1.00	2043			2043	0.057	0.057		17	12	0.378	12	31
PED	D																			15					

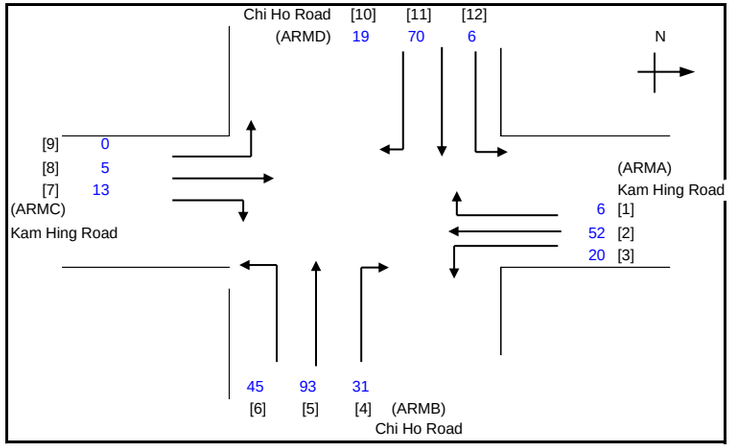
NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J4 : Kam Tin Bypass_Kam Tin Road_Kam Ho Road	**2024 CM**	FILENAME :	CHECKED BY:	MM	Aug-24
2024 Observed Peak Hour Traffic Flows		n Bypass_Kam Tin Road_Kam Ho Road_R.xls	REVIEWED BY:	SC	Aug-24



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.1	3.1	5.2	7.3			
E	=	Entry width (m)	11.2	12.5	10.4	11.5			
L	=	Effective length of flare (m)	16.1	11.0	11.9	15.9			
R	=	Entry radius (m)	41.0	97.9	21.2	41.3			
D	=	Inscribed circle diameter (m)	90.0	90.0	90.0	90.0			
A	=	Entry angle (degree)	31.0	40.0	49.0	43.0			
Q	=	Entry flow (pcu/h)	526	598	351	976			
Qc	=	Circulating flow across entry (pcu/h)	978	935	1250	103			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.41	1.37	0.70	0.42			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.00	0.94	0.98			
X2	=	V + ((E-V)/(1+2S))	9.36	5.62	7.37	9.58			
M	=	EXP((D-60)/10)	20	20	20	20			
F	=	303*X2	2836	1702	2233	2902			
Td	=	1+(0.5/(1+M))	1.02	1.02	1.02	1.02			
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.46	0.53	0.63			
Qe	=	K(F-Fc*Qc)	2280	1281	1469	2781	Total In Sum =	2451	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.23	0.47	0.24	0.35	DFC of Critical Approach =	0.47	

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J5 : Chi Ho Road_Kam Hing Road	**2024 CM**	FILENAME :	CHECKED BY:	LL	Aug-24
2024 Observed Peak Hour Traffic Flows		J5_Chi Ho Road_Kam Hing Road_Cro.XLS	REVIEWED BY:	SC	Aug-24



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
X a	=	STREAM-SPECIFIC (RIGHT TURN FROM A)
X b	=	STREAM-SPECIFIC (RIGHT TURN FROM B)
Z b	=	STREAM-SPECIFIC (LEFT TURN FROM B)
M b	=	STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE)
Y	=	(1-0.0345W)
r b-a	=	RATIO OF FLOW TO CAPACITY IN STREAM b-a

GEOMETRIC DETAILS:

GENERAL

W	=	6.6	(metres)		
W cr	=	0	(metres)	Y =	0.773

MAJOR ROAD (ARM A)				MAJOR ROAD (ARM C)			
W a-c	=	3.2	(metres)	W c-b =	3.1	(metres)	
Vl a-c	=	22.0	(metres)	Vr c-b =	21	(metres)	
q a-b	=	20	(pcu/hr)	q c-a =	5	(pcu/hr)	
q a-c	=	52	(pcu/hr)	q c-b =	13	(pcu/hr)	

MINOR ROAD (ARM B)				MINOR ROAD (ARM D)			
W b-a	=	2.4	(metres)	W d-c =	2.4	(metres)	
W b-c	=	2.4	(metres)	W d-a =	2.4	(metres)	
Vl b-a	=	20	(metres)	Vl d-c =	23	(metres)	
Vr b-a	=	86	(metres)	Vr d-c =	60	(metres)	
Vr b-c	=	86	(metres)	Vr d-a =	60	(metres)	
q b-a	=	31	(pcu/hr)	q d-c =	19	(pcu/hr)	
q b-c	=	45	(pcu/hr)	q d-a =	6	(pcu/hr)	
q b-d	=	93	(pcu/hr)	q d-b =	70	(pcu/hr)	

GEOMETRIC FACTORS :

D	=	0.785	Zb	=	1.154
E	=	0.864	X d	=	0.771
F	=	0.852	Z d	=	0.835
M b	=	0.785	M d	=	0.771

PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :

r b-a	=	0.0706		r d-c	=	0.043	
ql b-d	=	49.784	(pcu/hr)	ql d-b	=	36.515	(pcu/hr)
qr b-d	=	43.216	(pcu/hr)	qr d-b	=	33.485	(pcu/hr)

CAPACITY OF MOVEMENT :

Q b-a	=	474	(pcu/hr)	Q d-c	=	439	(pcu/hr)
Q b-c	=	806	(pcu/hr)	Q d-a	=	614	(pcu/hr)
Q c-b	=	617	(pcu/hr)	Q a-d	=	852	(pcu/hr)
Ql b-d	=	474	(pcu/hr)	Ql d-b	=	470	(pcu/hr)
Qr b-d	=	474	(pcu/hr)	Qr d-b	=	470	(pcu/hr)

TOTAL FLOW = 354 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

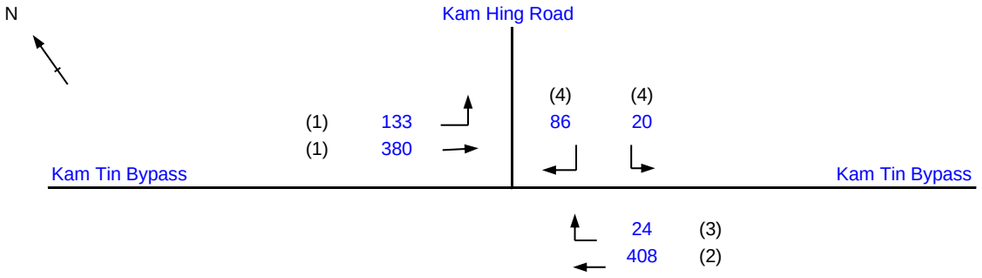
DFC b-a	=	0.0654
DFC b-c	=	0.0558
DFC c-b	=	0.0211
DFCl b-d	=	0.1050
DFCr b-d	=	0.0912
DFC d-c	=	0.0433
DFC d-a	=	0.0098
DFC a-d	=	0.0000
DFCl d-b	=	0.0777
DFCr d-b	=	0.0712

CRITICAL DFC = 0.11

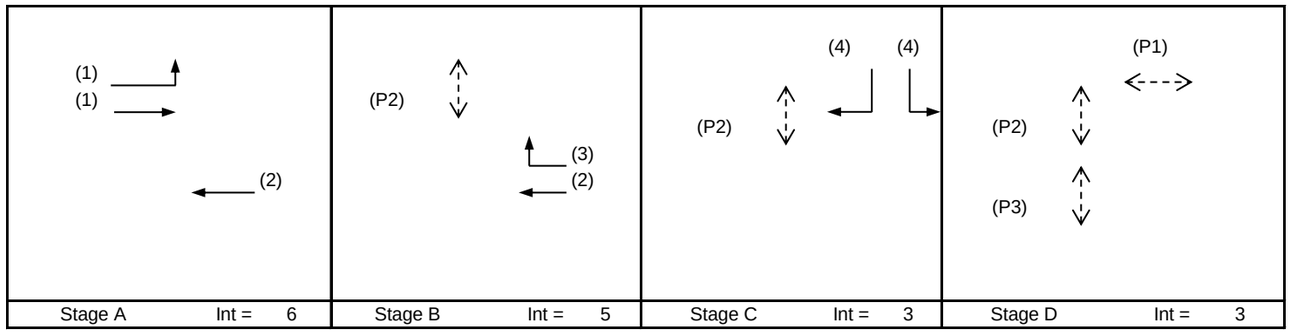
OZZO TECHNOLOGY (HK) LIMITED

TRAFFIC SIGNAL CALCULATION

			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung	PROJECT NO. 82269	Prepared By:	LL	Aug-24
J6: Kam Tin Bypass / Kam Hing Road	**2024 CM**	Checked By:	MM	Aug-24
2024 Observed Peak Hour Traffic Flows	FILENAME : J6_Kam Tin Bypass_Kam Hing Road_S.xls	Reviewed By:	SC	Aug-24



			Existing Cycle Time	
No. of stages per cycle	N	=	4	
Cycle time	C	=	80	sec
Sum(y)	Y	=	0.189	
Loss time	L	=	29	sec
Total Flow		=	1051	pcu
Co = (1.5*L+5)/(1-Y)		=	59.8	sec
Cm = L/(1-Y)		=	35.7	sec
Yult		=	0.683	
R.C.ult = (Yult-Y)/Y*100%		=	261.8	%
Cp = 0.9*L/(0.9-Y)		=	36.7	sec
Ymax = 1-L/C		=	0.638	
R.C.(C) = (0.9*Ymax-Y)/Y*100%		=	204.1	%



Stage A Int = 6 | Stage B Int = 5 | Stage C Int = 3 | Stage D Int = 3

Pedestrian Phase	Stage	Width (m)	Green Time Required (s) SG	FG	Delay	Green Time Provided (s) SG	FG
P1	D	8.8	5	7	1	7	7
P2	B,C,D	7.1	5	6	1	37	6
P3	D	6.5	5	5	1	9	5

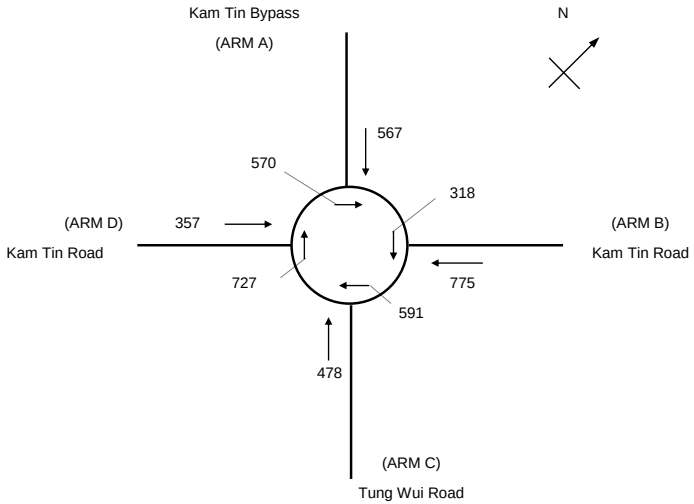
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Movement Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Flare lane Length m.	Share Effect pcu/hr	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queue Length (m / lane)	Average Delay (seconds)
																				14					
LT,SA	A	4.30	1	1	14			2185	133	119		252	0.53	2068			2068	0.122	0.122		33	30	0.325	18	17
SA	A	3.90	1	1				2145		261		261	0.00	2145			2145	0.122			33	30	0.325	18	17
SA	A,B	3.50	2	2				4210		408		408	0.00	4210			4210	0.097			26	42	0.185	12	9
RT	B	2.90	3	1	17			2045			24	24	1.00	1879			1879	0.013	0.013		3	9	0.114	0	30
LT,RT	C	4.30	4	1	13			2185	20		86	106	1.00	1959			1959	0.054	0.054		15	12	0.361	12	31
PED	D																			15					

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Appendix B

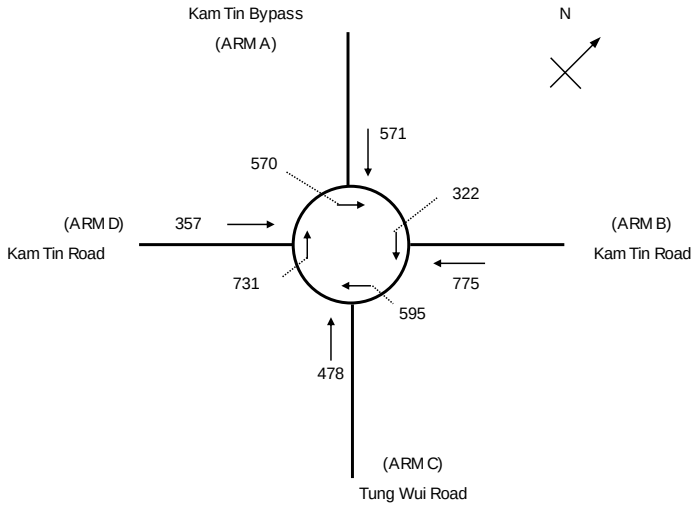
2030 Junction Calculation Sheets

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J1 : Kam Tin Bypass / Kam Tin Road / Tung Wui Road	**2030 Ref**	FILENAME :	CHECKED BY:	MM	Aug-24
2030 Reference Scenario Peak Hour Traffic Flows		Tin Bypass_Kam Tin Road_Tung Wui Road_R.xls	REVIEWED BY:	SC	Aug-24



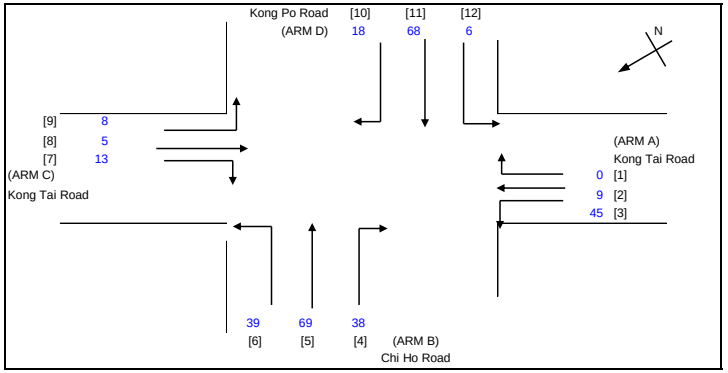
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.3	7.3	7.3	3.8			
E	=	Entry width (m)	11.4	11.8	8.4	8.2			
L	=	Effective length of flare (m)	3.6	5.0	1.0	5.0			
R	=	Entry radius (m)	38.0	16.0	14.0	18.0			
D	=	Inscribed circle diameter (m)	63.0	63.0	63.0	63.0			
A	=	Entry angle (degree)	37.0	59.0	60.0	51.0			
Q	=	Entry flow (pcu/h)	567	775	478	357			
Qc	=	Circulating flow across entry (pcu/h)	570	318	591	727			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	1.85	1.44	1.76	1.41			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.89	0.87	0.92			
X2	=	V + ((E-V)/(1+2S))	8.17	8.46	7.54	4.95			
M	=	EXP((D-60)/10)	1	1	1	1			
F	=	303*X2	2476	2563	2286	1501			
Td	=	1+(0.5/(1+M))	1.21	1.21	1.21	1.21			
Fc	=	0.21*Td(1+0.2*X2)	0.67	0.69	0.64	0.51			
Qe	=	K(F-Fc*Qc)	2091	2081	1669	1043	Total In Sum =	2177	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.27	0.37	0.29	0.34	DFC of Critical Approach =	0.37	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J1 : Kam Tin Bypass / Kam Tin Road / Tung Wui Road	**2030 Des**	FILENAME :	CHECKED BY:	MM	Aug-24
2030 Design Scenario Peak Hour Traffic Flows		Tin Bypass_Kam Tin Road_Tung Wui Road_R.xls	REVIEWED BY:	SC	Aug-24



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.3	7.3	7.3	3.8			
E	=	Entry width (m)	11.4	11.8	8.4	8.2			
L	=	Effective length of flare (m)	3.6	5.0	1.0	5.0			
R	=	Entry radius (m)	38.0	16.0	14.0	18.0			
D	=	Inscribed circle diameter (m)	63.0	63.0	63.0	63.0			
A	=	Entry angle (degree)	37.0	59.0	60.0	51.0			
Q	=	Entry flow (pcu/h)	571	775	478	357			
Qc	=	Circulating flow across entry (pcu/h)	570	322	595	731			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	1.85	1.44	1.76	1.41			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.00	0.89	0.87	0.92			
X2	=	V + ((E-V)/(1+2S))	8.17	8.46	7.54	4.95			
M	=	EXP((D-60)/10)	1	1	1	1			
F	=	303*X2	2476	2563	2286	1501			
Td	=	1+(0.5/(1+M))	1.21	1.21	1.21	1.21			
Fc	=	0.21*Td(1+0.2*X2)	0.67	0.69	0.64	0.51			
Qe	=	K(F-Fc*Qc)	2091	2078	1667	1041	Total In Sum =	2181	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.27	0.37	0.29	0.34	DFC of Critical Approach =	0.37	

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J2 : Chi Ho Road / Kong Tai Road / Kong Po Road	**2030 Ref**	FILENAME :	CHECKED BY:	LL	Aug-24
2030 Reference Scenario Peak Hour Traffic Flows		J2_Chi Ho Road_Kong Tai Road_Cro.XLS	REVIEWED BY:	SC	Aug-24



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
X a	=	STREAM-SPECIFIC (RIGHT TURN FROM A)
X b	=	STREAM-SPECIFIC (RIGHT TURN FROM B)
Z b	=	STREAM-SPECIFIC (LEFT TURN FROM B)
M b	=	STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE)
Y	=	(1-0.0345W)
r b-a	=	RATIO OF FLOW TO CAPACITY IN STREAM b-a

GEOMETRIC DETAILS:

GENERAL

W	=	6.7	(metres)		
W cr	=	0	(metres)	Y =	0.76954

MAJOR ROAD (ARM A)				MAJOR ROAD (ARM C)			
W a-c	=	4.0	(metres)	W c-b =	3.2	(metres)	
Vl a-c	=	20.0	(metres)	Vr c-b =	46	(metres)	
q a-b	=	45	(pcu/hr)	q c-a =	5	(pcu/hr)	
q a-c	=	9	(pcu/hr)	q c-b =	13	(pcu/hr)	

MINOR ROAD (ARM B)				MINOR ROAD (ARM D)			
W b-a	=	2.9	(metres)	W d-c =	1.8	(metres)	
W b-c	=	2.9	(metres)	W d-a =	1.8	(metres)	
Vl b-a	=	46	(metres)	Vl d-c =	45	(metres)	
Vr b-a	=	60	(metres)	Vr d-c =	53	(metres)	
Vr b-c	=	60	(metres)	Vr d-a =	53	(metres)	
q b-a	=	38	(pcu/hr)	q d-c =	18	(pcu/hr)	
q b-c	=	39	(pcu/hr)	q d-a =	6	(pcu/hr)	
q b-d	=	69	(pcu/hr)	q d-b =	68	(pcu/hr)	

GEOMETRIC FACTORS :

D	=	0.828	Zb	=	1.154
E	=	0.894	X d	=	0.726
F	=	0.883	Z d	=	0.774
M b	=	0.828	M d	=	0.726

PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :

r b-a	=	0.089623		r d-c	=	0.042	
ql b-d	=	37.59198	(pcu/hr)	ql d-b	=	35.4434	(pcu/hr)
qr b-d	=	31.40802	(pcu/hr)	qr d-b	=	32.5566	(pcu/hr)

CAPACITY OF MOVEMENT :

Q b-a	=	508	(pcu/hr)	Q d-c	=	424	(pcu/hr)
Q b-c	=	817	(pcu/hr)	Q d-a	=	570	(pcu/hr)
Q c-b	=	644	(pcu/hr)	Q a-d	=	852	(pcu/hr)
Ql b-d	=	508	(pcu/hr)	Ql d-b	=	444	(pcu/hr)
Qr b-d	=	508	(pcu/hr)	Qr d-b	=	444	(pcu/hr)

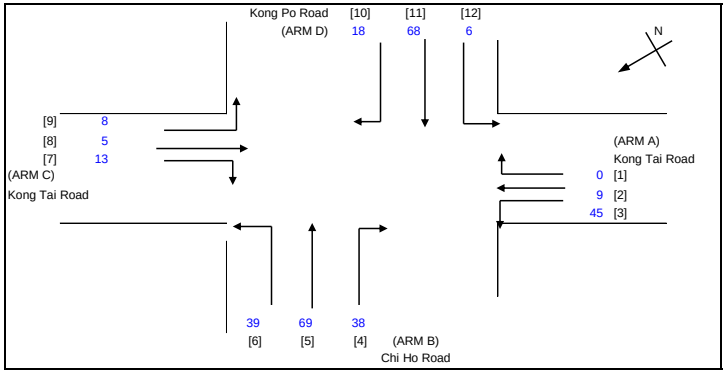
TOTAL FLOW = 310 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0748
DFC b-c	=	0.0477
DFC c-b	=	0.0202
DFCl b-d	=	0.0740
DFCr b-d	=	0.0618
DFC d-c	=	0.0425
DFC d-a	=	0.0105
DFC a-d	=	0.0000
DFCl d-b	=	0.0798
DFCr d-b	=	0.0733

CRITICAL DFC = 0.08

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J2 : Chi Ho Road / Kong Tai Road / Kong Po Road	**2030 Des**	FILENAME :	CHECKED BY:	LL	Aug-24
2030 Reference Scenario Peak Hour Traffic Flows		J2_Chi Ho Road_Kong Tai Road_Cro.XLS	REVIEWED BY:	SC	Aug-24



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
X a	=	STREAM-SPECIFIC (RIGHT TURN FROM A)
X b	=	STREAM-SPECIFIC (RIGHT TURN FROM B)
Z b	=	STREAM-SPECIFIC (LEFT TURN FROM B)
M b	=	STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE)
Y	=	(1-0.0345W)
r b-a	=	RATIO OF FLOW TO CAPACITY IN STREAM b-a

GEOMETRIC DETAILS:

GENERAL

W	=	6.7	(metres)			
W cr	=	0	(metres)	Y	=	0.76954

MAJOR ROAD (ARM A)

W a-c	=	4.0	(metres)			
Vl a-c	=	20.0	(metres)			
q a-b	=	45	(pcu/hr)			
q a-c	=	9	(pcu/hr)			

MAJOR ROAD (ARM C)

W c-b	=	3.2	(metres)			
Vr c-b	=	46	(metres)			
q c-a	=	5	(pcu/hr)			
q c-b	=	13	(pcu/hr)			

MINOR ROAD (ARM B)

W b-a	=	2.9	(metres)			
W b-c	=	2.9	(metres)			
Vl b-a	=	46	(metres)			
Vr b-a	=	60	(metres)			
Vr b-c	=	60	(metres)			
q b-a	=	38	(pcu/hr)			
q b-c	=	39	(pcu/hr)			
q b-d	=	69	(pcu/hr)			

MINOR ROAD (ARM D)

W d-c	=	1.8	(metres)			
W d-a	=	1.8	(metres)			
Vl d-c	=	45	(metres)			
Vr d-c	=	53	(metres)			
Vr d-a	=	53	(metres)			
q d-c	=	18	(pcu/hr)			
q d-a	=	6	(pcu/hr)			
q d-b	=	68	(pcu/hr)			

GEOMETRIC FACTORS :

D	=	0.828	Zb	=	1.154
E	=	0.894	X d	=	0.726
F	=	0.883	Z d	=	0.774
M b	=	0.828	M d	=	0.726

PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :

r b-a	=	0.089623		r d-c	=	0.042	
ql b-d	=	37.59198	(pcu/hr)	ql d-b	=	35.4434	(pcu/hr)
qr b-d	=	31.40802	(pcu/hr)	qr d-b	=	32.5566	(pcu/hr)

CAPACITY OF MOVEMENT :

Q b-a	=	508	(pcu/hr)	Q d-c	=	424	(pcu/hr)
Q b-c	=	817	(pcu/hr)	Q d-a	=	570	(pcu/hr)
Q c-b	=	644	(pcu/hr)	Q a-d	=	852	(pcu/hr)
Ql b-d	=	508	(pcu/hr)	Ql d-b	=	444	(pcu/hr)
Qr b-d	=	508	(pcu/hr)	Qr d-b	=	444	(pcu/hr)

TOTAL FLOW = 310 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

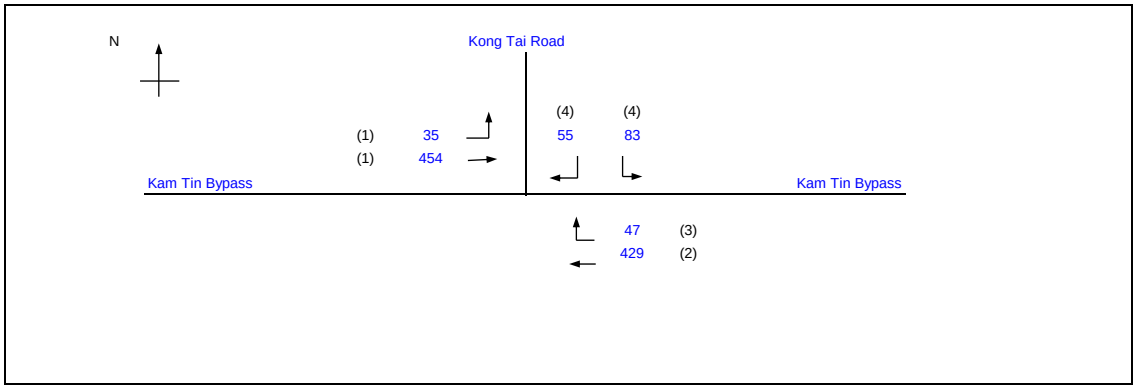
DFC b-a	=	0.0748
DFC b-c	=	0.0477
DFC c-b	=	0.0202
DFCl b-d	=	0.0740
DFCr b-d	=	0.0618
DFC d-c	=	0.0425
DFC d-a	=	0.0105
DFC a-d	=	0.0000
DFCl d-b	=	0.0798
DFCr d-b	=	0.0733

CRITICAL DFC = 0.08

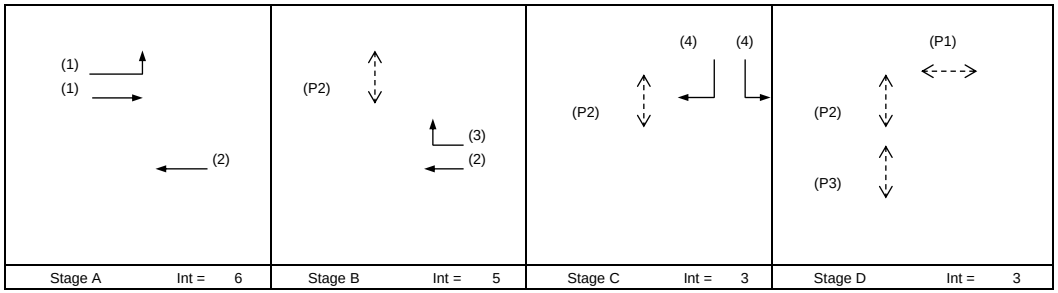
OZZO TECHNOLOGY (HK) LIMITED

TRAFFIC SIGNAL CALCULATION

Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung	PROJECT NO. 82269	Prepared By:	LL	Aug-24
J3: Kam Tin Bypass / Kong Tai Road	**2030 Ref**	Checked By:	MM	Aug-24
2030 Reference Scenario Peak Hour Traffic Flows	FILENAME : J3_Kam Tin Bypass_Kong Tai Road_S.xls	Reviewed By:	SC	Aug-24



			Existing Cycle Time	
No. of stages per cycle		N =	4	
Cycle time		C =	80	sec
Sum(y)		Y =	0.209	
Loss time		L =	29	sec
Total Flow		=	1103	pcu
Co	= (1.5*L+5)/(1-Y)	=	61.3	sec
Cm	= L/(1-Y)	=	36.6	sec
Yult		=	0.683	
R.C.ult	= (Yult-Y)/Y*100%	=	227.3	%
Cp	= 0.9*L/(0.9-Y)	=	37.7	sec
Ymax	= 1-L/C	=	0.638	
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	175.1	%



Stage A	Int = 6	Stage B	Int = 5	Stage C	Int = 3	Stage D	Int = 3

Pedestrian Phase	Stage	Width (m)	Green Time Required (s) SG	FG	Delay	Green Time Provided (s) SG	FG
P1	D	8.8	5	7	1	7	7
P2	B,C,D	7.1	5	6	1	37	6
P3	D	6.5	5	5	1	9	5

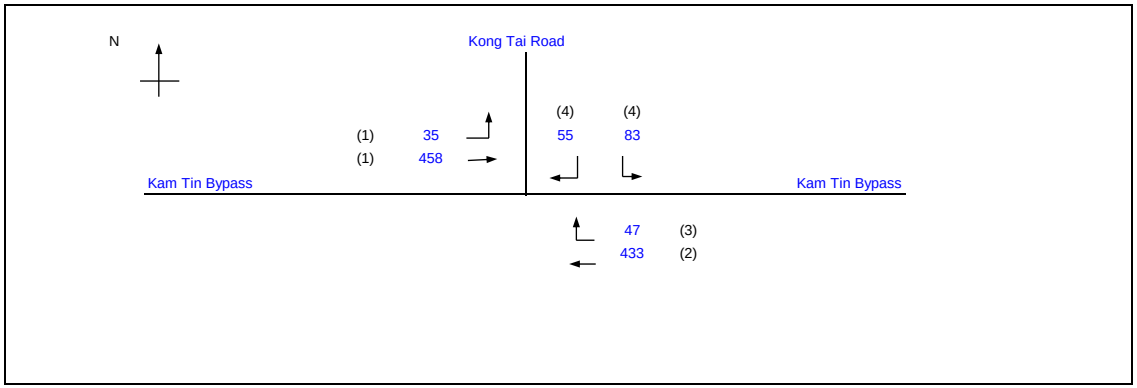
Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Movement Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Flare lane Length m.	Share Effect pcu/hr	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queue Length (m / lane)	Average Delay (seconds)
																				14					
LT,SA	A	3.60	1	1	18			2115	35	209		244	0.14	2090			2090	0.117	0.117		29	30	0.311	18	17
SA	A	3.50	1	1				2105		245		245	0.00	2105			2105	0.117			29	30	0.311	18	17
SA	A,B	3.50	2	2				4210		429		429	0.00	4210			4210	0.102			25	42	0.194	12	9
RT	B	3.00	3	1	22			2055			47	47	1.00	1924			1924	0.024	0.024		6	9	0.217	0	31
LT,RT	C	4.80	4	1	16			2235	83		55	138	1.00	2043			2043	0.068	0.068		17	12	0.450	12	32
PED	D																			15					

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

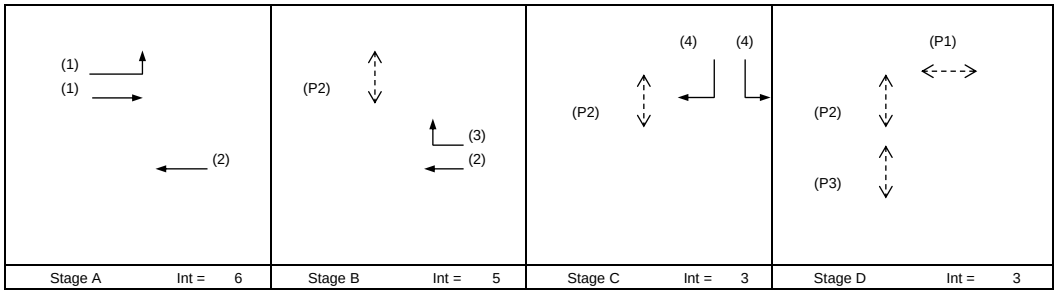
OZZO TECHNOLOGY (HK) LIMITED

TRAFFIC SIGNAL CALCULATION

			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung	PROJECT NO. 82269	Prepared By:	LL	Aug-24
J3: Kam Tin Bypass / Kong Tai Road	**2030 Des**	Checked By:	MM	Aug-24
2030 Design Scenario Peak Hour Traffic Flows	FILENAME : J3_Kam Tin Bypass_Kong Tai Road_S.xls	Reviewed By:	SC	Aug-24



			Existing Cycle Time	
No. of stages per cycle		N =	4	
Cycle time		C =	80	sec
Sum(y)		Y =	0.209	
Loss time		L =	29	sec
Total Flow		=	1111	pcu
Co	= (1.5*L+5)/(1-Y)	=	61.4	sec
Cm	= L/(1-Y)	=	36.7	sec
Yult		=	0.683	
R.C.ult	= (Yult-Y)/Y*100%	=	225.8	%
Cp	= 0.9*L/(0.9-Y)	=	37.8	sec
Ymax	= 1-L/C	=	0.638	
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	173.9	%



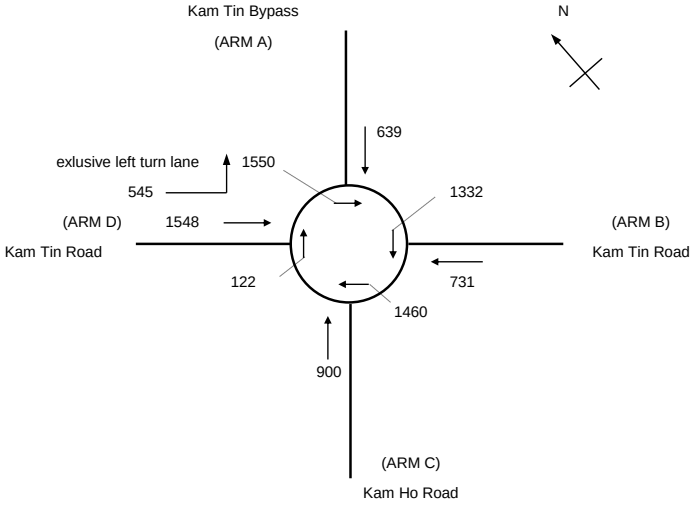
Stage A	Int = 6	Stage B	Int = 5	Stage C	Int = 3	Stage D	Int = 3

Pedestrian Phase	Stage	Width (m)	Green Time Required (s) SG	FG	Delay	Green Time Provided (s) SG	FG
P1	D	8.8	5	7	1	7	7
P2	B,C,D	7.1	5	6	1	37	6
P3	D	6.5	5	5	1	9	5

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Movement Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Flare lane Length m.	Share Effect pcu/hr	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queue Length (m / lane)	Average Delay (seconds)
																				14					
LT,SA	A	3.60	1	1	18			2115	35	211		246	0.14	2090			2090	0.118	0.118		29	30	0.313	18	17
SA	A	3.50	1	1				2105		247		247	0.00	2105			2105	0.118			29	30	0.313	18	17
SA	A,B	3.50	2	2				4210		433		433	0.00	4210			4210	0.103			25	42	0.196	12	9
RT	B	3.00	3	1	22			2055			47	47	1.00	1924			1924	0.024	0.024		6	9	0.217	0	31
LT,RT	C	4.80	4	1	16			2235	83		55	138	1.00	2043			2043	0.068	0.068		16	12	0.450	12	32
PED	D																			15					

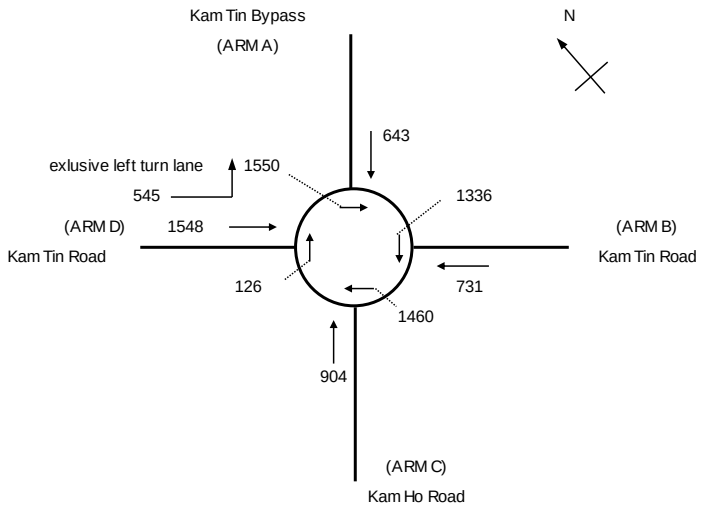
NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J4 : Kam Tin Bypass_Kam Tin Road_Kam Ho Road	**2030 Ref**	FILENAME :	CHECKED BY:	MM	Aug-24
2030 Reference Scenario Peak Hour Traffic Flows		n Tin Bypass_Kam Tin Road_Kam Ho Road_R.xls	REVIEWED BY:	SC	Aug-24



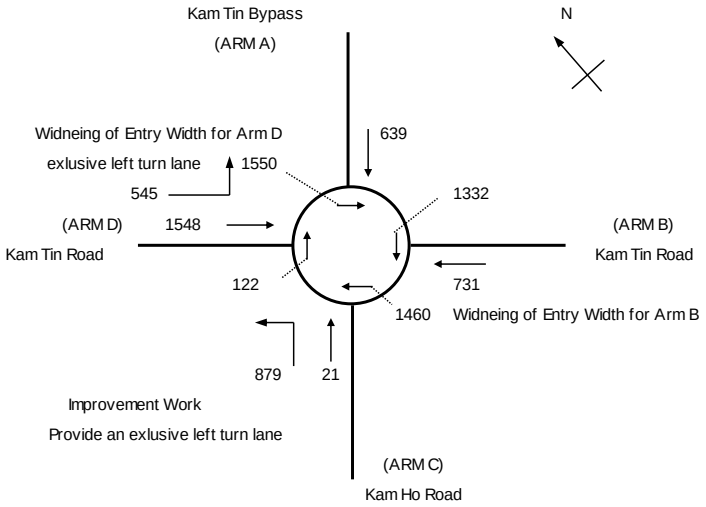
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.1	3.1	5.2	7.3			
E	=	Entry width (m)	11.2	12.5	10.4	11.5			
L	=	Effective length of flare (m)	16.1	11.0	11.9	15.9			
R	=	Entry radius (m)	41.0	97.9	21.2	41.3			
D	=	Inscribed circle diameter (m)	90.0	90.0	90.0	90.0			
A	=	Entry angle (degree)	31.0	40.0	49.0	43.0			
Q	=	Entry flow (pcu/h)	639	731	900	1548			
Qc	=	Circulating flow across entry (pcu/h)	1550	1332	1460	122			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.41	1.37	0.70	0.42			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.00	0.94	0.98			
X2	=	V + ((E-V)/(1+2S))	9.36	5.62	7.37	9.58			
M	=	EXP((D-60)/10)	20	20	20	20			
F	=	303*X2	2836	1702	2233	2902			
Td	=	1+(0.5/(1+M))	1.02	1.02	1.02	1.02			
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.46	0.53	0.63			
Qe	=	K(F-Fc*Qc)	1919	1099	1364	2769	Total In Sum =	3818	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.67	0.66	0.56	DFC of Critical Approach =	0.67	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J4 : Kam Tin Bypass_Kam Tin Road_Kam Ho Road	**2030 Des**	FILENAME :	CHECKED BY:	MM	Aug-24
2030 Design Scenario Peak Hour Traffic Flows		n Tin Bypass_Kam Tin Road_Kam Ho Road_R.xls	REVIEWED BY:	SC	Aug-24



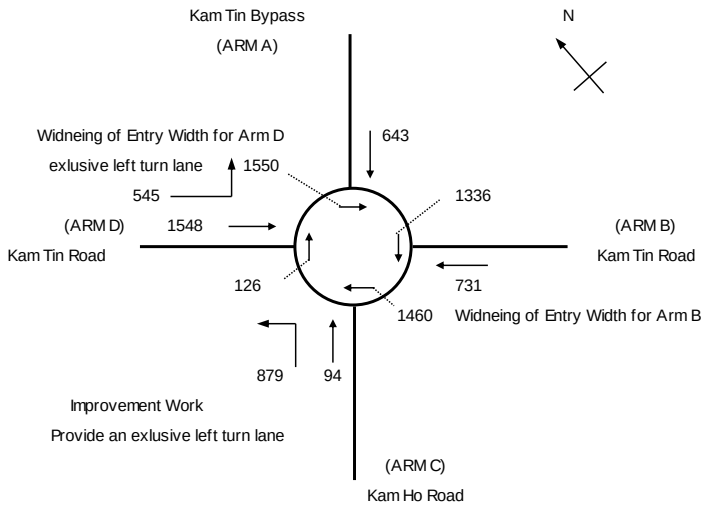
ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.1	3.1	5.2	7.3			
E	=	Entry width (m)	11.2	12.5	10.4	11.5			
L	=	Effective length of flare (m)	16.1	11.0	11.9	15.9			
R	=	Entry radius (m)	41.0	97.9	21.2	41.3			
D	=	Inscribed circle diameter (m)	90.0	90.0	90.0	90.0			
A	=	Entry angle (degree)	31.0	40.0	49.0	43.0			
Q	=	Entry flow (pcu/h)	643	731	904	1548			
Qc	=	Circulating flow across entry (pcu/h)	1550	1336	1460	126			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.41	1.37	0.70	0.42			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.00	0.94	0.98			
X2	=	V + ((E-V)/(1+2S))	9.36	5.62	7.37	9.58			
M	=	EXP((D-60)/10)	20	20	20	20			
F	=	303*X2	2836	1702	2233	2902			
Td	=	1+(0.5/(1+M))	1.02	1.02	1.02	1.02			
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.46	0.53	0.63			
Qe	=	K(F-Fc*Qc)	1919	1097	1364	2766	Total In Sum =	3826	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.34	0.67	0.66	0.56	DFC of Critical Approach =	0.67	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J4 : Kam Tin Bypass_Kam Tin Road_Kam Ho Road	**2030 Ref (Imp)**	FILENAME :	CHECKED BY:	MM	Aug-24
2030 Reference Scenario Peak Hour Traffic Flows (With Improvement Works)		n Tin Bypass_Kam Tin Road_Kam Ho Road_R.xls	REVIEWED BY:	SC	Aug-24



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.1	5.0	5.2	8.0			
E	=	Entry width (m)	11.2	13.0	10.4	12.5			
L	=	Effective length of flare (m)	16.1	11.0	11.9	15.9			
R	=	Entry radius (m)	41.0	100.0	21.2	41.3			
D	=	Inscribed circle diameter (m)	90.0	90.0	90.0	90.0			
A	=	Entry angle (degree)	31.0	40.0	49.0	43.0			
Q	=	Entry flow (pcu/h)	639	731	21	1548			
Qc	=	Circulating flow across entry (pcu/h)	1550	1332	1460	122			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.41	1.16	0.70	0.45			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.00	0.94	0.98			
X2	=	V + ((E-V)/(1+2S))	9.36	7.40	7.37	10.36			
M	=	EXP((D-60)/10)	20	20	20	20			
F	=	303*X2	2836	2244	2233	3140			
Td	=	1+(0.5/(1+M))	1.02	1.02	1.02	1.02			
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.53	0.53	0.66			
Qe	=	K(F-Fc*Qc)	1919	1540	1364	2998	Total In Sum =	2940	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.33	0.47	0.02	0.52	DFC of Critical Approach =	0.52	

OZZO TECHNOLOGY (HK) LIMITED	TRAFFIC SIGNAL CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
J4 : Kam Tin Bypass_Kam Tin Road_Kam Ho Road	**2030 Des (Imp)**	FILENAME :	CHECKED BY:	MM	Aug-24
2030 Design Scenario Peak Hour Traffic Flows (With Improvement Works)		n Tin Bypass_Kam Tin Road_Kam Ho Road_R.xls	REVIEWED BY:	SC	Aug-24



ARM			A	B	C	D			
INPUT PARAMETERS:									
V	=	Approach half width (m)	7.1	5.0	5.2	8.0			
E	=	Entry width (m)	11.2	13.0	10.4	12.5			
L	=	Effective length of flare (m)	16.1	11.0	11.9	15.9			
R	=	Entry radius (m)	41.0	100.0	21.2	41.3			
D	=	Inscribed circle diameter (m)	90.0	90.0	90.0	90.0			
A	=	Entry angle (degree)	31.0	40.0	49.0	43.0			
Q	=	Entry flow (pcu/h)	643	731	94	1548			
Qc	=	Circulating flow across entry (pcu/h)	1550	1336	1460	126			
OUTPUT PARAMETERS:									
S	=	Sharpness of flare = 1.6(E-V)/L	0.41	1.16	0.70	0.45			
K	=	1-0.00347(A-30)-0.978(1/R-0.05)	1.02	1.00	0.94	0.98			
X2	=	V + ((E-V)/(1+2S))	9.36	7.40	7.37	10.36			
M	=	EXP((D-60)/10)	20	20	20	20			
F	=	303*X2	2836	2244	2233	3140			
Td	=	1+(0.5/(1+M))	1.02	1.02	1.02	1.02			
Fc	=	0.21*Td(1+0.2*X2)	0.62	0.53	0.53	0.66			
Qe	=	K(F-Fc*Qc)	1919	1538	1364	2995	Total In Sum =	3017	PCU
DFC	=	Design flow/Capacity = Q/Qe	0.34	0.48	0.07	0.52	DFC of Critical Approach =	0.52	

OZZO TECHNOLOGY (HK) LIMITED	PRIORITY JUNCTION CALCULATION			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung		PROJECT NO.: 82269	PREPARED BY:	SYC	Aug-24
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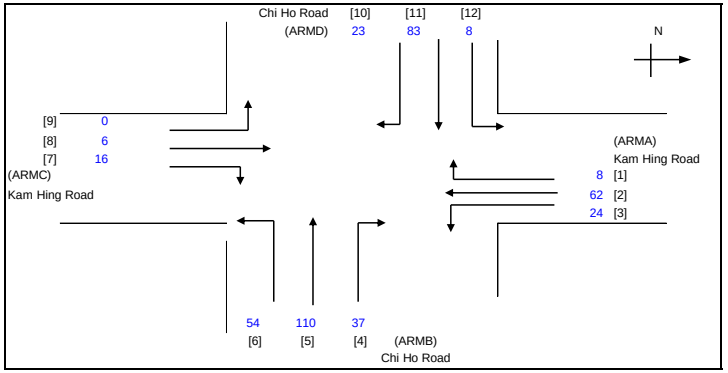
2030 Reference Scenario Peak Hour Traffic Flows		J5_Chi Ho Road_Kam Hing Road_Cro.XLS	REVIEWED BY:	SC	Aug-24



NOTES : (GEOMETRIC INPUT DATA)

W	=	MAJOR ROAD WIDTH
W cr	=	CENTRAL RESERVE WIDTH
W b-a	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-a
W b-c	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM b-c
W c-b	=	LANE WIDTH AVAILABLE TO VEHICLE WAITING IN STREAM c-b
Vl b-a	=	VISIBILITY TO THE LEFT FOR VEHICLES WAITING IN STREAM b-a
Vr b-a	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-a
Vr b-c	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM b-c
Vr c-b	=	VISIBILITY TO THE RIGHT FOR VEHICLES WAITING IN STREAM c-b
X a	=	STREAM-SPECIFIC (RIGHT TURN FROM A)
X b	=	STREAM-SPECIFIC (RIGHT TURN FROM B)
Z b	=	STREAM-SPECIFIC (LEFT TURN FROM B)
M b	=	STREAM-SPECIFIC (STRAIGHT AHEAD FROM B - LEFT LANE)
Y	=	(1-0.0345W)
r b-a	=	RATIO OF FLOW TO CAPACITY IN STREAM b-a

GEOMETRIC DETAILS:

GENERAL

W	=	6.6	(metres)			
W cr	=	0	(metres)	Y	=	0.77299

MAJOR ROAD (ARM A)

W a-c	=	3.2	(metres)
Vl a-c	=	22.0	(metres)
q a-b	=	24	(pcu/hr)
q a-c	=	62	(pcu/hr)

MAJOR ROAD (ARM C)

W c-b	=	3.1	(metres)
Vr c-b	=	21	(metres)
q c-a	=	6	(pcu/hr)
q c-b	=	16	(pcu/hr)

MINOR ROAD (ARM B)

W b-a	=	2.4	(metres)
W b-c	=	2.4	(metres)
Vl b-a	=	20	(metres)
Vr b-a	=	86	(metres)
Vr b-c	=	86	(metres)
q b-a	=	37	(pcu/hr)
q b-c	=	54	(pcu/hr)
q b-d	=	110	(pcu/hr)

MINOR ROAD (ARM D)

W d-c	=	2.4	(metres)
W d-a	=	2.4	(metres)
Vl d-c	=	23	(metres)
Vr d-c	=	60	(metres)
Vr d-a	=	60	(metres)
q d-c	=	23	(pcu/hr)
q d-a	=	8	(pcu/hr)
q d-b	=	83	(pcu/hr)

GEOMETRIC FACTORS :

D	=	0.785	Zb	=	1.154
E	=	0.864	X d	=	0.771
F	=	0.852	Z d	=	0.835
M b	=	0.785	M d	=	0.771

PROPORTION OF MINOR STRAIGHT AHEAD TRAFFIC :

r b-a	=	0.085847		r d-c	=	0.053	
ql b-d	=	59.72158	(pcu/hr)	ql d-b	=	43.7146	(pcu/hr)
qr b-d	=	50.27842	(pcu/hr)	qr d-b	=	39.2854	(pcu/hr)

CAPACITY OF MOVEMENT :

Q b-a	=	471	(pcu/hr)	Q d-c	=	431	(pcu/hr)
Q b-c	=	803	(pcu/hr)	Q d-a	=	612	(pcu/hr)
Q c-b	=	614	(pcu/hr)	Q a-d	=	850	(pcu/hr)
Ql b-d	=	471	(pcu/hr)	Ql d-b	=	467	(pcu/hr)
Qr b-d	=	471	(pcu/hr)	Qr d-b	=	467	(pcu/hr)

TOTAL FLOW = 423 (PCU/HR)

COMPARISION OF DESIGN FLOW TO CAPACITY:

DFC b-a	=	0.0786
DFC b-c	=	0.0672
DFC c-b	=	0.0261
DFCl b-d	=	0.1268
DFCr b-d	=	0.1067
DFC d-c	=	0.0534
DFC d-a	=	0.0131
DFC a-d	=	0.0000
DFCl d-b	=	0.0936
DFCr d-b	=	0.0841

CRITICAL DFC = 0.13

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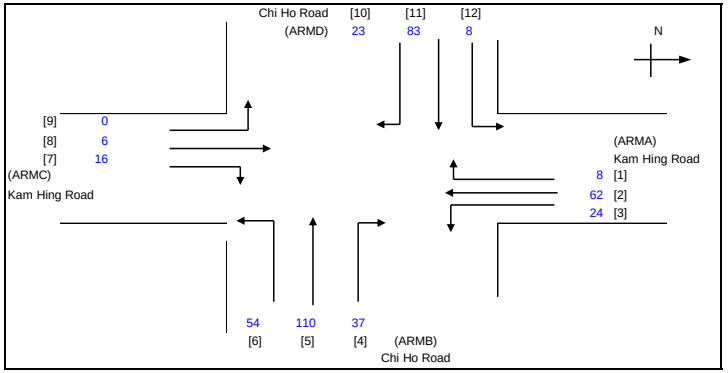

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W c-b	=	3.1	(metres)
Vr c-b	=	21	(metres)
q c-a	=	6	(pcu/hr)
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W b-a	=	2.4	(metres)
W b-c	=	2.4	(metres)
Vl b-a	=	20	(metres)
Vr b-a	=	86	(metres)
Vr b-c	=	86	(metres)
q b-a	=	37	(pcu/hr)
q b-c	=	54	(pcu/hr)
q b-d	=	110	(pcu/hr)

MINOR ROAD (ARM D)

W d-c	=	2.4	(metres)
W d-a	=	2.4	(metres)
Vl d-c	=	23	(metres)
Vr d-c	=	60	(metres)
Vr d-a	=	60	(metres)
q d-c	=	23	(pcu/hr)
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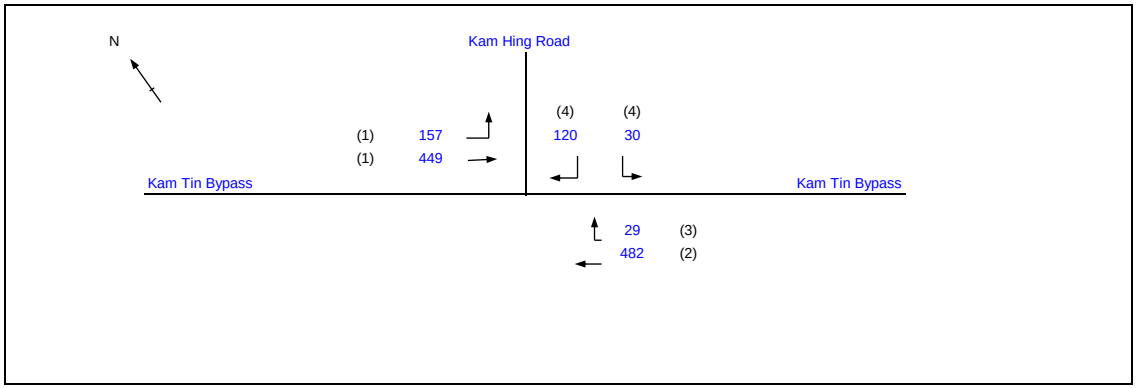
CRITICAL DFC = 0.13

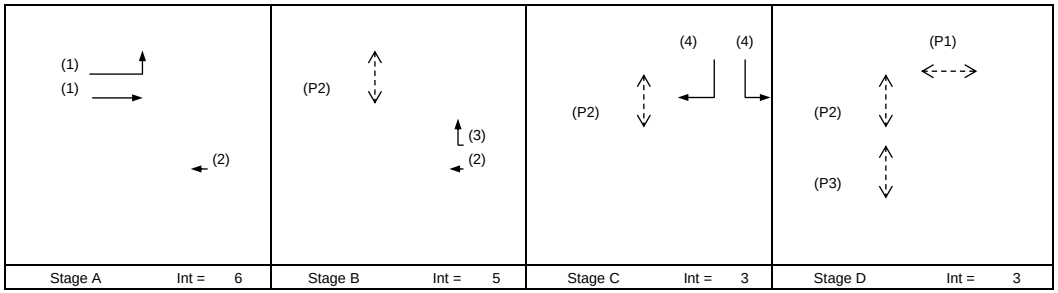
OZZO TECHNOLOGY (HK) LIMITED

TRAFFIC SIGNAL CALCULATION

			INITIALS	DATE
Planning Application S12A for Hip Tin Temple, Tai Kong Po, Pat Heung	PROJECT NO. 82269	Prepared By:	LL	Aug-24
J6: Kam Tin Bypass / Kam Hing Road	**2030 Ref**	Checked By:	MM	Aug-24
2030 Reference Scenario Peak Hour Traffic Flows	FILENAME : J6_Kam Tin Bypass_Kam Hing Road_S.xls	Reviewed By:	SC	Aug-24



			Existing Cycle Time	
No. of stages per cycle		N =	4	
Cycle time		C =	80	sec
Sum(y)		Y =	0.236	
Loss time		L =	29	sec
Total Flow		=	1267	pcu
Co	= (1.5*L+5)/(1-Y)	=	63.5	sec
Cm	= L/(1-Y)	=	38.0	sec
Yult		=	0.683	
R.C.ult	= (Yult-Y)/Y*100%	=	189.4	%
Cp	= 0.9*L/(0.9-Y)	=	39.3	sec
Ymax	= 1-L/C	=	0.638	
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	143.3	%



Stage A	Int = 6	Stage B	Int = 5	Stage C	Int = 3	Stage D	Int = 3

Pedestrian Phase	Stage	Width (m)	Green Time Required (s) SG	FG	Delay	Green Time Provided (s) SG	FG
P1	D	8.8	5	7	1	7	7
P2	B,C,D	7.1	5	6	1	37	6
P3	D	6.5	5	5	1	9	5

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Movement Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Flare lane Length m.	Share Effect pcu/hr	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queue Length (m / lane)	Average Delay (seconds)
																				14					
LT,SA	A	4.30	1	1	14			2185	157	140		297	0.53	2068			2068	0.144	0.144		31	30	0.384	24	18
SA	A	3.90	1	1				2145		309		309	0.00	2145			2145	0.144			31	30	0.384	24	18
SA	A,B	3.50	2	2				4210		482		482	0.00	4210			4210	0.114			25	42	0.218	15	9
RT	B	2.90	3	1	17			2045			29	29	1.00	1879			1879	0.015	0.015		3	9	0.137	0	30
LT,RT	C	4.30	4	1	13			2185	30		120	150	1.00	1959			1959	0.077	0.077		17	12	0.510	12	34
PED	D																			15					

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

OZZO TECHNOLOGY (HK) LIMITED

TRAFFIC SIGNAL CALCULATION

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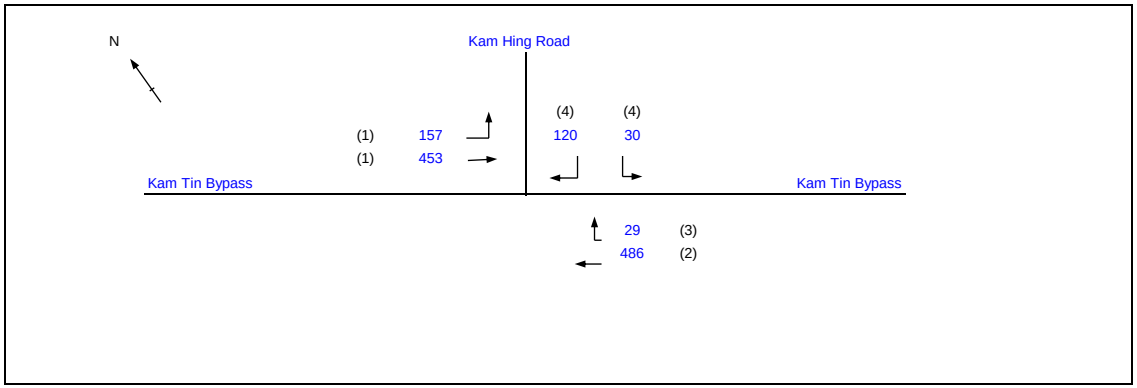
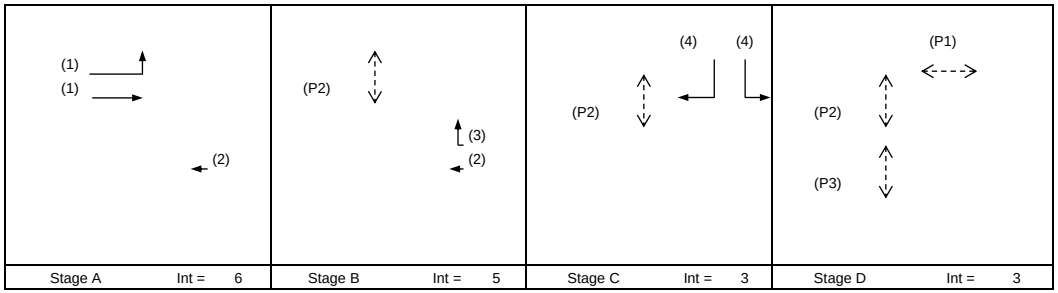


			Existing Cycle Time	
No. of stages per cycle		N =	4	
Cycle time		C =	80	sec
Sum(y)		Y =	0.237	
Loss time		L =	29	sec
Total Flow		=	1275	pcu
Co	= (1.5*L+5)/(1-Y)	=	63.5	sec
Cm	= L/(1-Y)	=	38.0	sec
Yult		=	0.683	
R.C.ult	= (Yult-Y)/Y*100%	=	188.3	%
Cp	= 0.9*L/(0.9-Y)	=	39.4	sec
Ymax	= 1-L/C	=	0.638	
R.C.(C)	= (0.9*Ymax-Y)/Y*100%	=	142.3	%



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P1	D	8.8	5	7	1	7	7
P2	B,C,D	7.1	5	6	1	37	6
P3	D	6.5	5	5	1	9	5

Move-ment	Stage	Lane Width m.	Phase	No. of lane	Radius m.	O	N	Straight-Ahead Sat. Flow	Movement Left pcu/h	Straight pcu/h	Right pcu/h	Total FLow pcu/h	Proportion of Turning Vehicles	Sat. Flow pcu/h	Flare lane Length m.	Share Effect pcu/hr	Revised Sat. Flow pcu/h	y	Greater y	L sec	g (required) sec	g (input) sec	Degree of Saturation X	Queue Length (m / lane)	Average Delay (seconds)
																				14					
LT,SA	A	4.30	1	1	14			2185	157	142		299	0.52	2069			2069	0.145	0.145		31	30	0.386	24	18
SA	A	3.90	1	1				2145		311		311	0.00	2145			2145	0.145			31	30	0.386	24	18
SA	A,B	3.50	2	2				4210		486		486	0.00	4210			4210	0.115			25	42	0.220	15	9
RT	B	2.90	3	1	17			2045			29	29	1.00	1879			1879	0.015	0.015		3	9	0.137	0	30
LT,RT	C	4.30	4	1	13			2185	30		120	150	1.00	1959			1959	0.077	0.077		16	12	0.510	12	34
PED	D																			15					

NOTE : O - OPPOSING TRAFFIC N - NEAR SIDE LANE SG - STEADY GREEN FG - FLASHING GREEN PEDESTRAIN WALKING SPEED = 1.2m/s QUEUING LENGTH = AVERAGE QUEUE * 6m

Appendix C

Junction Improvement Works

Proposed by CEDD

擬議重置濕地
PROPOSED RE-PROVISIONED WETLAND

水頭路
SHUI TAU ROAD

治河路
CHI HO ROAD

錦泰路
KAM TAI ROAD

錦田繞道
KAM TIN BYPASS

KAM TIN

插圖 "E" INSET 'E'

高埔村
KO PO TSUEN

擬議交界處改善工程
PROPOSED JUNCTION IMPROVEMENT WORKS

錦田公路
KAM TIN ROAD

錦田
KAM TIN

錦田污水泵房
KAM TIN SEWAGE PUMPING STATION

錦泰路
KAM TAI ROAD

現有橋樑
EXISTING BRIDGE

擬議橫跨錦田河的橋樑
PROPOSED BRIDGE ACROSS KAM TIN RIVER

錦上路
KAM SHEUNG ROAD

錦河路
KAM HO ROAD

青朗公路
TSING LONG HIGHWAY

港鐵(西鐵線)
MTR (WEST RAIL LINE)

擬議交界處改善工程
PROPOSED JUNCTION IMPROVEMENT WORKS

錦上路站
KAM SHEUNG ROAD STATION

東匯路
TUNG WUI ROAD

錦青路
KAM PO ROAD

臨時污水儲存設施
ON-SITE MAKESHIFT SEWAGE STORAGE FACILITY

插圖 "A"
INSET 'A'

八鄉路
PAT HEUNG ROAD

擬議交界處改善工程
PROPOSED JUNCTION IMPROVEMENT WORKS

831250 N

824750 E

插圖 "B"
INSET 'B'

擬議巴士停車灣
PROPOSED BUS LAYBY

831750 N

825150 E

插圖 "C"
INSET 'C'

832450 N

825400 E

插圖 "D"
INSET 'D'

831900 N

825700 E

插圖 "E"
INSET 'E'

錦田公路 KAM TIN ROAD

833400 N

824100 E

824300 E

剖面圖 SECTION A-A

2.5m	2m	7.3m	2.5m	7.3m	2m	4m
路旁帶						
行人路 FOOT PATH		行車道 CARRIAGEWAY	中央分隔帶 CENTRAL DIVIDER	行車道 CARRIAGEWAY	路旁帶 PLANTER	行人路 FOOTPATH
	PLANTER					

索引圖 KEY PLAN

圖例 LEGEND:

- 工地界線 SITE BOUNDARY
- 擬議道路工程 PROPOSED ROAD WORKS
- 擬議污水收集系統工程 PROPOSED SEWERAGE WORKS
- 擬議橋樑 PROPOSED BRIDGE
- 擬議重置濕地 PROPOSED RE-PROVISIONED WETLAND
- 後移現有隔音屏障 SET BACK OF EXISTING NOISE BARRIERS
- 擬議隔音屏障 PROPOSED NOISE BARRIERS
- 公營房屋發展計劃 PUBLIC HOUSING DEVELOPMENT
- 私營房屋發展計劃 PRIVATE HOUSING DEVELOPMENT

工務計劃項目第7804CL號
元朗錦田南發展計劃工地平整和基礎建設工程 - 前期工程
PWP ITEM NO. 7804CL
SITE FORMATION AND INFRASTRUCTURE WORKS FOR DEVELOPMENT AT KAM TIN SOUTH, YUEN LONG - ADVANCE WORKS

工程平面圖
LAYOUT PLAN

R:\Drawing-NTWST-Z\NTWST-Z0267\NTWST-Z0267.dgn

21/11/2017

A3 420MM X 297MM