Appendix C

Traffic Impact Assessment

1.0 INTRODUCTION

1.1 Background

1.1.1 On 18 September 2020, a Section 16 Planning Application No. A/YL-KTN/698 was approved by the Town Planning Board (TPB) for a Proposed Residential Development at Lot No. 1071 in D.D. 103 (previously known as Various Lots in D.D. 103 and Adjoining Government Land), Ha Ko Po Tsuen, Kam Tin, Yuen Long (hereafter referred to as the "Site").

1.1.2 For fulfilment of approval condition (b) imposed under Application No. A/YL-KTN/698, a Consolidated Traffic Impact Assessment Report (TIA) with 563 flats and 2027 completion year was submitted and approved on 23 August 2023, hereinafter this is referred to as the Approved Scheme.

1.1.3 Under the current Section 16 Planning Application, the Applicant proposes to adopt Modular Integrated Construction (MiC) and adjust the average flat size for the Proposed Residential Development, which would result in a change in the total number of flats to 615 units whilst keeping to the development completion year of 2027. This Section 16 Planning Application is for proposed amendments to an approved residential development with minor relaxation of maximum plot ratio and building height restrictions.

1.1.4 RL Consultancy Ltd. has been commissioned to prepare a Traffic Impact Assessment in support of this Application.

1.2 Scope of Study

1.2.1 The key scope of study includes:

- Review previous submissions.
- Examine the information on this new application including the background, latest development schedule, design parameters and architectural drawings.
- Conduct site surveys to establish the latest local traffic characteristics.
- Evaluate the internal transport provisions due to the change in flat numbers and mix.
- Establish the Site trip generation and assess the impact on the road network.
- Prepare this TIA Report.

2.0 PROPOSED DEVELOPMENT

2.1 Development Location & Programme

2.1.1 The Site is located at Lot No. 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin as graphically presented on **Figure 2.1**. This Proposed Scheme is scheduled for completion in year 2027.

2.2 Schedule of Accommodation

2.2.1 A comparison of the key parameters of the Approved Scheme under Application No. A/YL-KTN/698 and the new Proposed Scheme using MiC is presented in **Table 2.1**.

Table 2.1 Comparison of Approved Scheme and Proposed Scheme

	Approved Scheme (A/YL-KTN/698) August 2023	**Proposed Scheme (This report) October 2023**
Application Site Area	About 16,293 m^2	
Maximum Plot Ratio (PR)	Not more than 1.43	
	Domestic Accommodation	
Maximum Domestic GFA	Not more than 23,299 m^2 (3)	
No. of Residential Blocks	3	
No. of Units with breakdown (1): *FS ≤ 40* *40 < FS ≤ 70* *70 < FS ≤ 100*	**563:** *207* *352* *4*	**615:** *471* *144* *0*
	Residents' Clubhouse	
Maximum non-domestic GFA	Not more than 1,165 m^2	
	Car Parking Provision (2)	
P/C for Residents **P/C for Visitors** **Motorcycle** **Bicycle** **MGV/HGV Loading / Unloading Bay**	149 15 6 38 4	113 15 7 41 4

Notes: 1. Flat size (FS) is in m^2 GFA.
2. Please refer to Section 2.3 for detailed calculations.
3. For the Proposed Scheme in this report, the GFA figure excludes 10% of MiC floor area which could be disregarded from calculation of GFA and plot ratio as per Joint Practice Note No. 8. Detailed GFA calculations are attached as **Annex B**.

2.3 Internal Transport Provisions

2.3.1 The overall intention of the parking provisions is to ensure that the proposed residential development would have sufficient parking provision to cater for the future residents.

Existing HKPSG

2.3.2 Calculated using the high end of the Hong Kong Planning Standards and Guidelines (HKPSG), the car parking provisions for the proposed development are given in **Table 2.2**.

Table 2.2 Proposed Car Parking Provision under the HKPSG

Type	HKPSG	Proposed Scheme	
		Adopted Standard (GPS = 1 car space per 4 flats)	**Proposed Provision**
Car Parking Spaces	Residents Parking Requirement = GPS x R1 x R2 x R3 • GPS = 1 car space per 4–7 flats • R1[(1)] = 0.5 for FS ≤40 and 1.2 for 40< FS ≤70 • R2 = 1.00 for outside a 500m-radius of rail station • R3 = 1.10 for 1< PR ≤2	0.55 (0.5 x 1 x 1.1) spaces per 4 flats for 471 flats with FS≤40 + 1.32 (1.2 x 1 x 1.1) spaces per 4 flats for 144 flats with 40<FS≤70	113 (65+48)
	Visitor car parking for private residential developments with more than 75 units per block should include 1-5 visitor spaces per block	5 spaces per block with more than 75 residential units	15 (5 x 3 blocks)
	Total Number of Car Parking Spaces =		**128 [(2)]**
Motor-cycle Parking Spaces	1 space per 100-150 flats	1 space per 100 flats	7
Bicycle Parking Spaces	Within a 0.5-2 km radius of a rail station, 1 bicycle parking space for every 15 flats with flat size smaller than 70m^2	1 space for every 15 flats	41 (615 ÷ 15 with roundup)
Loading/ Unloading Bay	Minimum of 1 loading / unloading bay for goods vehicles within the site for every 800 flats or part thereof, subject to a minimum of 1 bay per block	1 bay per block	4 (3 blocks plus 1 for clubhouse)

Notes: 1. Flat size (FS) in m^2 GFA. Breakdown of the total 615 units: 471 units have FS ≤40 and 144 units are 40 < FS ≤70.
2. Three numbers of accessible car parking spaces will be reserved for persons with disabilities in accordance with the HKPSG, all will be reserved for visitor parking.

Summary of Internal Transport Provisions

2.3.3 The recommended number and dimensions for internal transport facilities is summarised in **Table 2.3**.

Table 2.3 Summary of Internal Transport Provisions

Type	Number Proposed	Size	Minimum Headroom
Private Car Parking Space	125	5m x 2.5m	2.4m
Disabled Car Parking Space	3	5m x 3.5m	2.4m
Motorcycle Parking Space	7	1m x 2.4m	2.4m
Bicycle Parking Space	41	(see Note)	-
Medium/Heavy Goods Vehicle Bay	4	11m x 3.5m	4.7m

Note: Detailed design will comply with Transport Planning and Design Manual (TPDM), including Volume 3 Chapter 6.5 on Cycle Parking.

2.3.4 All parking and loading/unloading bays will be laid out in such a way to avoid the need for vehicles to reverse onto roads abutting the Site. The manoeuvring of goods vehicles will be within the curtilages of the site and no reversing movement into/from a public road such as Kam Tin Road will be conducted.

2.4 Site Accesses

2.4.1 The two Site accesses of the Proposed Scheme will be the same as that detailed in the approved "Site Vehicular Accesses Report" under approval condition (c) of the Approved Scheme and reproduced in **Figure 2.2**. The key features are summarised in the following paragraphs.

2.4.2 The Site will have two vehicular accesses: an egress only at Kam Tin Road and a combined run-in and run-out at Ying Ho Road. The proposed site egress at Kam Tin Road will be 7.3m wide and will include a pedestrian crossing facility. The proposed Site run-in/out at Ying Ho Road will be 8m wide.

2.4.3 With a Site run-in/out on Ying Ho Road, incoming Site traffic from the east such as Tsing Long Highway will not have to make a U-turn at the Au Tau Interchange to enter at the Kam Tin Road access when compared to only having a single access on Kam Tin Road. As such, Site traffic via Au Tau Interchange will be reduced thereby improving the overall road traffic conditions in the locality. Capacity assessment has been conducted on the priority junction of Kam Tin Road/Ying Ho Road and it will still operate satisfactorily as detailed in Section 5.

2.4.4 An existing run-in/out on Kam Tin Road located west of Ying Ho Road will be closed off and become part of the proposed bus lay-by which is further described in Section 2.6. Besides improving the traffic operation along Kam Tin Road, reducing the number of existing vehicular run-in/outs on Kam Tin Road eastbound will allow a more continuous cycle track along its northern kerbside.

2.5 Internal Roads

2.5.1 The proposed residential blocks, basement car park and other transport facilities within the Proposed Scheme will be linked up by internal roads. Hammerhead and/or cul-de-sac facilities will be provided at the road ends for turnaround movements.

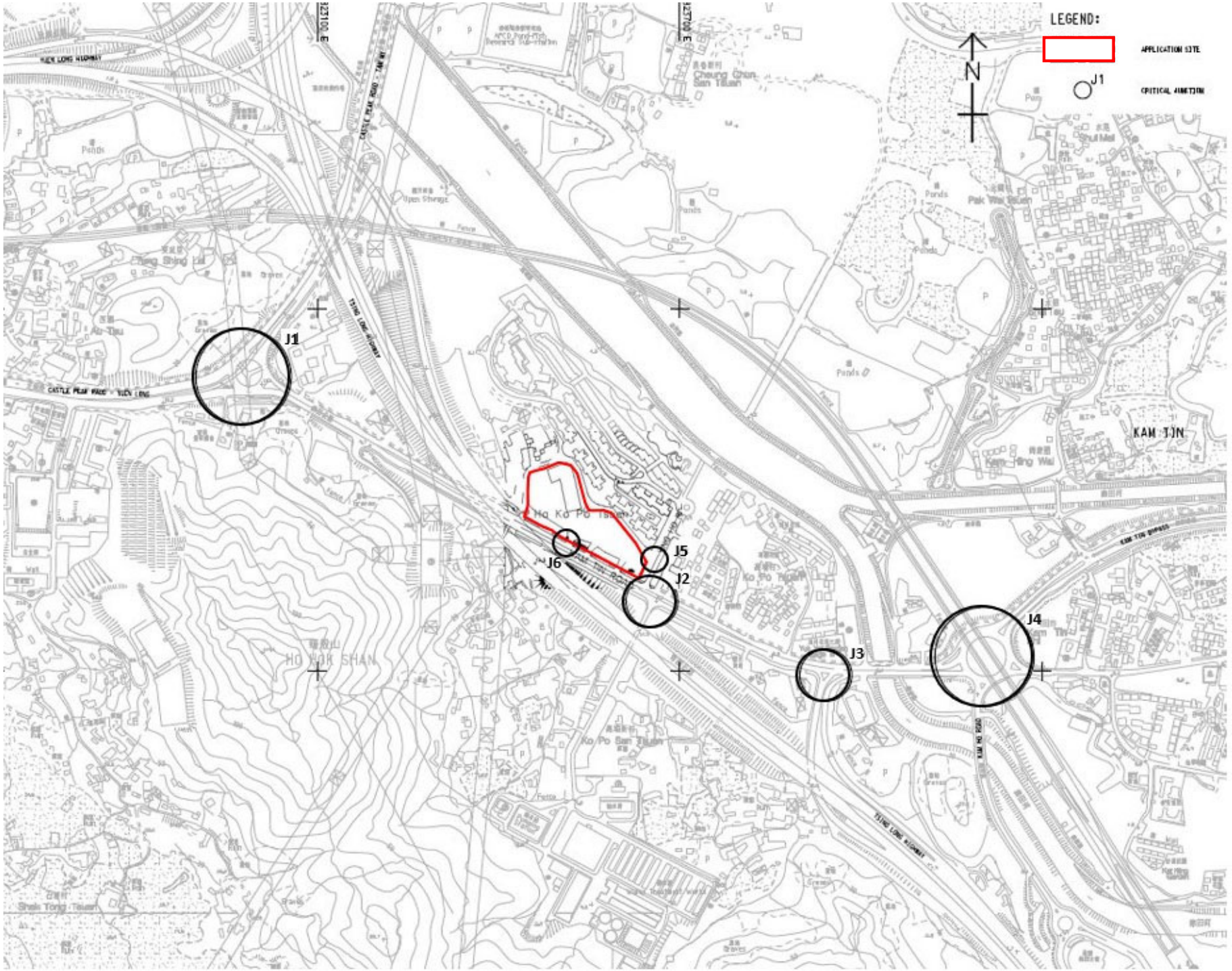
2.5.2 The Applicant undertakes to provide a right-of-way (ROW) for Lot 265 B RP. Relevant terms and conditions have been incorporated in the land lease to ensure the provision of ROW to the concerned lot.

2.6 Bus Lay-by and Pedestrian Crossing at Kam Tin Road

2.6.1 The bus lay-by of the Proposed Scheme will be the same as that detailed in the approved "Report on the Design and Provision of Public Transport Facilities" under approval condition (e) of the Approved Scheme. Reproduced in **Figure 2.2**, the key features are summarised in the following paragraphs.

2.6.2 An existing run-in/out on Kam Tin Road about 50m west of Ying Ho Road would be abandoned and a bus lay-by would be constructed to serve the future residents of the proposed development as well as other members of the public residing in the area in response to Transport Department's request on previous applications of this location.

2.6.3 Transport Department has installed a signalled pedestrian crossing at Kam Tin Road just west of Ying Ho Road. The scheme is reproduced on **Figure 2.3**.



NOTES & LEGEND:

NO.	DATE	DESCRIPTION	INITIAL

PROJECT

S16 Application for Proposed Amendments to an Approved Residential Development and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in D.D. 103 and Adjoining Government Land, Ha Ko Po Tsuen, Kam Tin, Yuen Long

FIGURE TITLE

Site Location and Critical Junctions

FIGURE NO. 2.1

SCALE: Schematic	DESIGNED: BC
DRAWN: NL	CHECKED: DW
DATE: Sep 2023	APPROVED: RL

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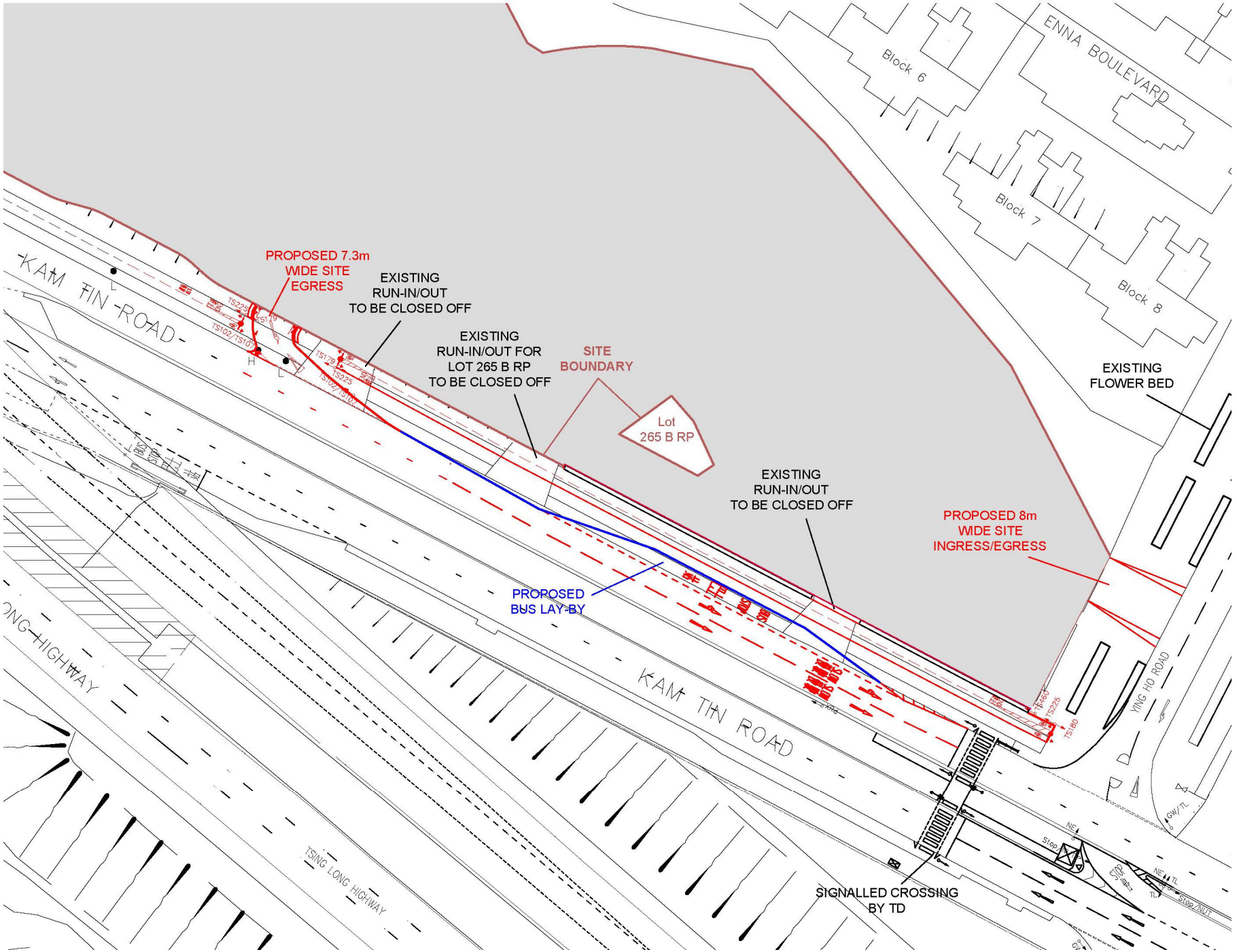

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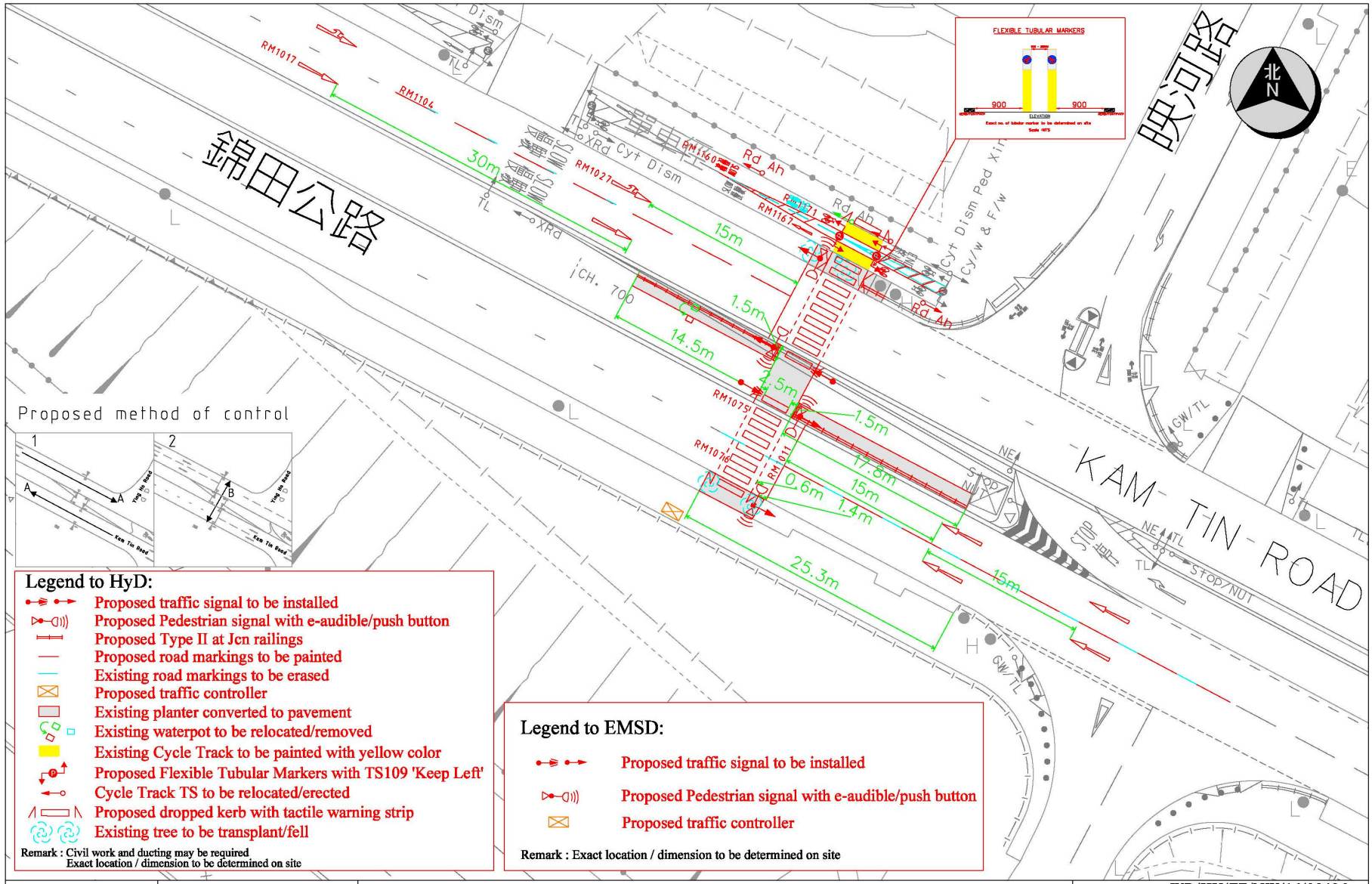
FIGURE TITLE

Proposed Site Accesses and Bus Lay-by Arrangement

FIGURE NO. 2.2

SCALE: Schematic	DESIGNED: BC
DRAWN: NL	CHECKED: DW
DATE: Sep 2023	APPROVED: RL

RL CONSULTANCY LTD.



Legend to HyD:

- Proposed traffic signal to be installed
- Proposed Pedestrian signal with e-audible/push button
- Proposed Type II at Jcn railings
- Proposed road markings to be painted
- Existing road markings to be erased
- Proposed traffic controller
- Existing planter converted to pavement
- Existing waterpot to be relocated/removed
- Existing Cycle Track to be painted with yellow color
- Proposed Flexible Tubular Markers with TS109 'Keep Left'
- Cycle Track TS to be relocated/erected
- Proposed dropped kerb with tactile warning strip
- Existing tree to be transplant/fell

Remark : Civil work and ducting may be required
Exact location / dimension to be determined on site

Legend to EMSD:

- Proposed traffic signal to be installed
- Proposed Pedestrian signal with e-audible/push button
- Proposed traffic controller

Remark : Exact location / dimension to be determined on site

運輸署 Transport Department	TRAFFIC ENGINEERING (NTW) DIV.	Location: Kam Tin Road near Ying Ho Road, YLE		WRF No.: WR/HY/TE/NW/16/00436 WR/EM/TE/NW/16/00025
		Survey Sheet No.: W06Q11B	Scale: 1 : 300 (A3) Drawing No.: W150822.00D	Date: 17 Jan 2019

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FIGURE TITLE

Pedestrian Crossing by Transport Department

FIGURE NO. 2.3

SCALE Schematic	DESIGNED BC
DRAWN NL	CHECKED DW
DATE Sep 2023	APPROVED RL

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3.0 EXISTING ROAD NETWORK

3.1 Existing Traffic Conditions

3.1.1 The Site is bounded by Kam Tin Road to the south and Ying Ho Road to the east. Kam Tin Road is a rural road connecting Au Tau Interchange and the Lam Kam Road/Route Twisk Roundabout. It is of dual 2-lane carriageway standard between Au Tau Interchange and the Kam Tin Bypass/Kam Ho Road Roundabout. Ying Ho Road is a single 2-lane rural road serving the residential development of Riva and adjacent villages. With these road links, the Site has easy vehicular access to the external strategic roads and further connection to all parts of Hong Kong.

3.1.2 Classified traffic surveys were undertaken on typical weekdays on 25, 28 and 29 March 2022 to establish the traffic conditions in the vicinity.

3.1.3 The junction types and capacities for year 2022 at these key locations adjacent to the Site are shown in **Table 3.1** and graphically illustrated on **Figure 2.1** while the observed 2022 traffic flows are shown on **Figure 3.1**. Detailed calculations, carried out in accordance with the TPDM, are attached in **Annex A**.

Table 3.1 Intersection Types and Capacities for 2022

Location		Junction Type	Peak Hour	2022 (1) Reference (2)
J1	Au Tau Interchange	Roundabout	AM PM	0.57 0.47
J2	Kam Tin Road / Ying Ho Road	Priority T-junction	AM PM	0.13 0.09
J3	Kam Tin Road / Tsing Long Highway Slip Road	Signalled T-junction	AM PM	16% 17%
J4	Kam Tin Road / Kam Tin Bypass / Kam Ho Road	Roundabout	AM PM	0.61 0.55

Notes: 1. Capacity figures show the reserve capacity of a signalled junction or the ratio of flow to capacity of the critical approach of the priority junction and roundabout.
2. Reference – without the proposed development.

3.1.4 It can be seen from **Table 3.1** that all the junctions are operating satisfactorily.

3.2 Existing Public Transport Provisions

3.2.1 In addition to taxis, there are also a number of existing public transport facilities running in the area along Kam Tin Road; these include 8 GMB routes and 7 bus routes. These public transport services provide convenient linkage to the MTR station and other major public transport interchanges for onward connection to numerous destinations throughout Hong Kong.

3.2.2 Details of the GMB and bus routes are summarised in **Table 3.2**.

Table 3.2 Public Transport Facilities

Route Number		Terminal Points	Headway (Minutes)
GMB			
1	71	Shek Wu Tong (Ho Pui) ↔ Yuen Long (Tai Hang Street)	15
2	72	Lui Kung Tin ↔ Yuen Long (Tai Hang Street)	10
3	601	Pak Wai Tsuen ↔ Yuen Long (Fung Cheung Road)	10-20
4	601C	Yuen Long (Fau Tsoi Street) ↔ Ying Ho Road (Riva)	20
5	602	Tai Kong Po ↔ Yuen Long (Fung Cheung Road)	15-20
6	602C	Yuen Long (Fung Cheung Road) ↻ Kam Sheung Road Station	20
7	608	Wang Toi Shan (Pat Heung) ↻ Yuen Long (Fung Cheung Road)	10-13
8	620	Kam Sheung Road Station PTI ↔ Park Yoho Transport Terminus	10-15
Bus			
1	54	Yuen Long (West) ↻ Sheung Tsuen (Shek Kong)	20-30
2	64K	Tai Po Market Station ↔ Yuen Long (West)	6-15
3	68E	Tsing Yi Station ↔ Yuen Long Park	20-30
4	77K	Sheung Shui ↔ Yuen Long (Fung Cheung Road)	20-30
5	268M	Tsuen Wan West Station ↔ Park Yoho	20-30
6	N269	Tin Tsz ↔ Mei Foo	12-20
7	N368	Yuen Long (West) ↔ Central (Macau Ferry)	20-25

3.2.3 It can be seen from **Table 3.2** that there are sufficient existing public transport routes serving the Site area.

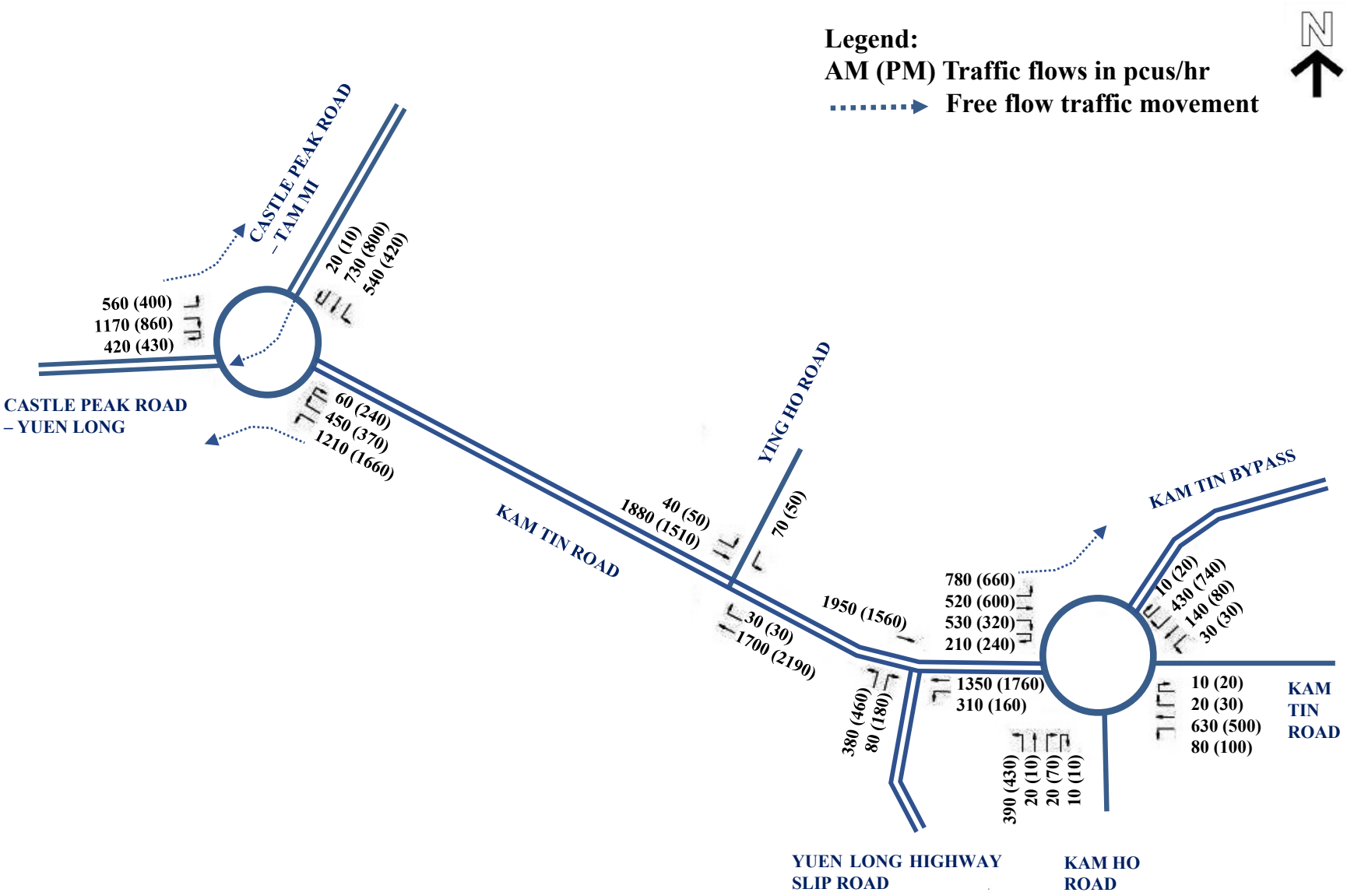

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FIGURE TITLE

2022 Observed Traffic Flows

FIGURE NO. 3.1

SCALE: Schematic	DESIGNED: BC
DRAWN: NL	CHECKED: DW
DATE: Sep 2023	APPROVED: RL

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4.0 TRAFFIC FORECASTING

4.1 Background Traffic Forecast

4.1.1 According to the latest programme, the development is scheduled for completion in 2027, and year 2030 is taken as the design horizon year for assessment of traffic impact. The Reference traffic flows for 2030 is calculated using the following equation:

2030 Reference Flows = 2022 Observed Flows x Growth Factor (from para. 4.1.4) + traffic from major planned/approved developments (from Table 4.2) + traffic from the Approved Scheme in A/YL-KTN/698 (from Table 4.3)

Growth Factor

4.1.2 Information from TD's Annual Traffic Census (ATC) reports was used to calculate the growth factor. **Table 4.1** shows the Annual Average Daily Traffic (AADT) figures from 2017 to 2021.

Table 4.1 AADT from 2017 to 2021

Road Name	From	To	Station No.	AADT				
				2017	2018	2019	2020	2021
San Tin Highway, Castle Peak Rd & San Tam Rd	Kam Tin Rd	Fairview Park Boulevard	5016	90,650	86,230	90,860	81,870	86,620
Castle Peak Rd - Yuen Long	Yuen Long On Lok Rd	Kam Tin Rd	5019	30,040	29,300	30,160	27,640	29,600
Tsing Long Highway – Tai Lam Tunnel	Au Tau INT	Tuen Mun Rd	5029	60,280	61,100	57,450	45,880	44,500
Kam Tin Rd	Castle Peak Rd - Yuen Long	Kam Sheung Rd western junction	6051	34,880	41,960	41,820	41,410	43,020
Kam Ho Rd	Kam Tin Rd	Tung Wui Rd	6109	9,780	10,400	10,360	10,260	10,660
Kam Tin Bypass	Kam Tin Rd	Kam Tin Rd	6110	14,120	15,470	14,990	12,810	12,450

Note: Traffic flows are shown in vehicles/day.

4.1.3 Linear regression analysis was applied to the AADT volumes for each of the count stations to obtain an annual growth factor for the Study Area. The average annual growth rate, weighted by traffic volume, for the study area was calculated to be about -1.8%.

4.1.4 For a conservative estimate, a growth rate of +1% per annum was applied to the observed 2022 traffic demand to yield the 2030 reference traffic forecasts to account for any uncertainties in the construction programme, land use and transport infrastructure changes.

Major Planned/Approved Developments

4.1.5 There are major newly completed and planned or approved developments in the vicinity of the proposed development. These developments that have also been taken into account in the background traffic forecast are listed in **Table 4.2**.

Table 4.2 Major Planned/Approved Developments

	Location	Details	Peak Hour	2-way Traffic Generation (pcus/hr)
1	Tung Shing Lei Development (A/YL-NSW/274)	1,518 private residential units (average flat size about 46m^2)	AM PM	174 101
2	Development in DD107, Sha Po, Kam Tin Phases 1 & 2 (A/YL-KTN/118-2)	3,657 private residential units (average flat size about 70m^2)	AM PM	419 242
3	Sha Po North Phase 2 Residential Development (A/YL-KTN/663)	1,154 private residential units (average flat size about 42.57m^2)	AM PM	58 (5) 32 (5)
4	Yuen Long Station Property Development (A/YL/209)	1,876 private residential units (average flat size about 100m^2) & 10,000m^2 retail GFA	AM PM	263 191
5	Nam Sang Wai Commercial Development (Y/YL-NSW/3)	38,300m^2 retail GFA & 700 hotel rooms	AM PM	378 456
6	Kam Tin North Residential Development (A/YL-KTN/567)	200 flats (average flat size about 65m^2)	AM PM	28 17
7	Kam Tin South Priority Sites Development	9,000 units of public housing (average flat size about 50m^2) & 8,752 units of private housing (average flat size about 70m^2) & 43.000m^2 retail GFA	AM PM	3,575 2,646
8	Au Tau Residential Development (Lot 1066 in DD 103)	333 private residential units (average flat size about 100m^2)	AM PM	115 91
9	Kam Tin West Outlet Mall (A/YL-NSW/241)	37,171 m^2 retail GFA	AM PM	177 249
10	Sha Po North Phase 3 (A/YL-KTN/604)	3,891 private residential units (average flat size about 49m^2)	AM PM	558 334
11	Au Tau Development (Lot 1928 in DD107)	International School	AM PM	250 10

Notes:
1. Source includes http://www.tpb.gov.hk
2. For the same location with multiple applications, only the latest application is shown.
3. Completed and occupied developments are not included. Our surveys will have accounted for these traffic flows.
4. Approved Scheme (A/YL-KTN/698) traffic has been included separately (see para. 4.1.1).
5. Additional traffic in addition to the development under application no. A/YL-KTN/118-2.

Design Year Traffic Flows

4.1.6 In summary, the 2030 reference traffic flows were produced by adoption of 1% per annum traffic growth rate applied to the 2022 observed traffic flows and addition of trips generated by the major planned developments as listed in **Table 4.2**. With the inclusion of the Approved Scheme TIA total traffic generation from **Table 4.3** and assigned to the road network based on the approved Site access on Kam Tin Road. The 2030 Reference traffic flows are shown on **Figure 4.1**.

4.1.7 The Development traffic flows of the Proposed Scheme from **Table 4.3** were assigned to the road network as shown on **Figure 4.2**.

4.1.8 These Development traffic flows were then added to the 2030 Reference traffic flows to produce 2030 Design traffic flows and presented on **Figure 4.3**. The Design traffic flows for 2030 is calculated using the following equation:

2030 Design Flows = 2030 Reference Flows + Site traffic from the Proposed Scheme (from Table 4.3).

4.2 Site Trip Generation

4.2.1 Trip generation of the Proposed Scheme was estimated from the trip generation and attraction rates stipulated in Annex C of TPDM Volume 1 Chapter 3. **Table 4.3** summarises the adopted trip rates and the resulting Site traffic generation of the Approved Scheme and Proposed Scheme.

Table 4.3 Approved and Proposed Schemes Traffic Generation Comparison

Component	AM		PM	
	Gen	**Att**	**Gen**	**Att**
Adopted Trip Rates (pcus/hr/flat)	*0.1021*	*0.0709*	*0.0415*	*0.0464*
Proposed Scheme Traffic Generation with 615 Flats (pcus/hr)	63	44	26	29
Approved Scheme Traffic Generation with 563 Flats (pcus/hr)	58	40	24	27
Net Difference (pcus/hr)	**5**	**4**	**2**	**2**

Note: Upper limit trip rates of 60m^2 average flat size private housing of high-density / R(A) with car park ratio of 4 flats per car parking space were adopted for assessment.

4.2.2 It can be seen from **Table 4.3** that the Proposed Scheme with 615 flats would only produce a total 2-way traffic generation and attraction of 107 pcus/hr and 55 pcus/hr for the AM and PM peak hours respectively. With these vehicles distributed onto various parts of the road network, the traffic impact is negligible.

4.2.3 When compared to the latest Approved Scheme, the small increase of 52 (615 - 563) flats under the Proposed Scheme would only increase the 2-way traffic generation by 9 pcus/hr and 4 pcus/hr for the AM and PM peak hours respectively. Therefore, this Proposed Scheme would have negligible additional impact on traffic conditions.

4.2.4 The Approved Scheme TIA has assessed and concluded that all the assessed junctions would be able to cater for the Site traffic demand even after taking into account the potential future developments. Given the negligible additional traffic from this Proposed Scheme, the same finding can be maintained and the Proposed Scheme is considered acceptable from a traffic point of view.

4.2.5 For a comprehensive assessment, however, the traffic impact of the Proposed Scheme has been assessed and the results are presented in Section 5.

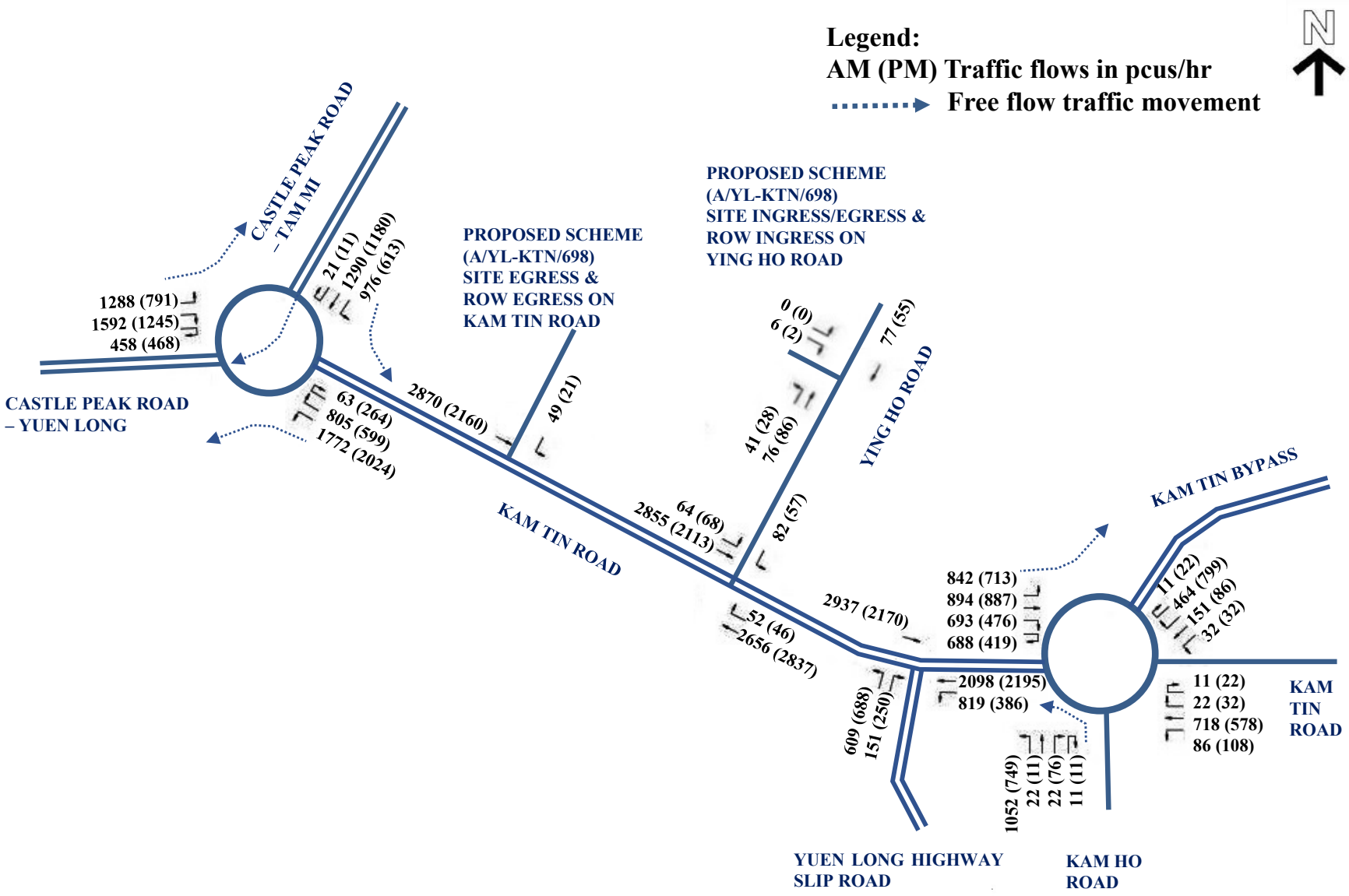

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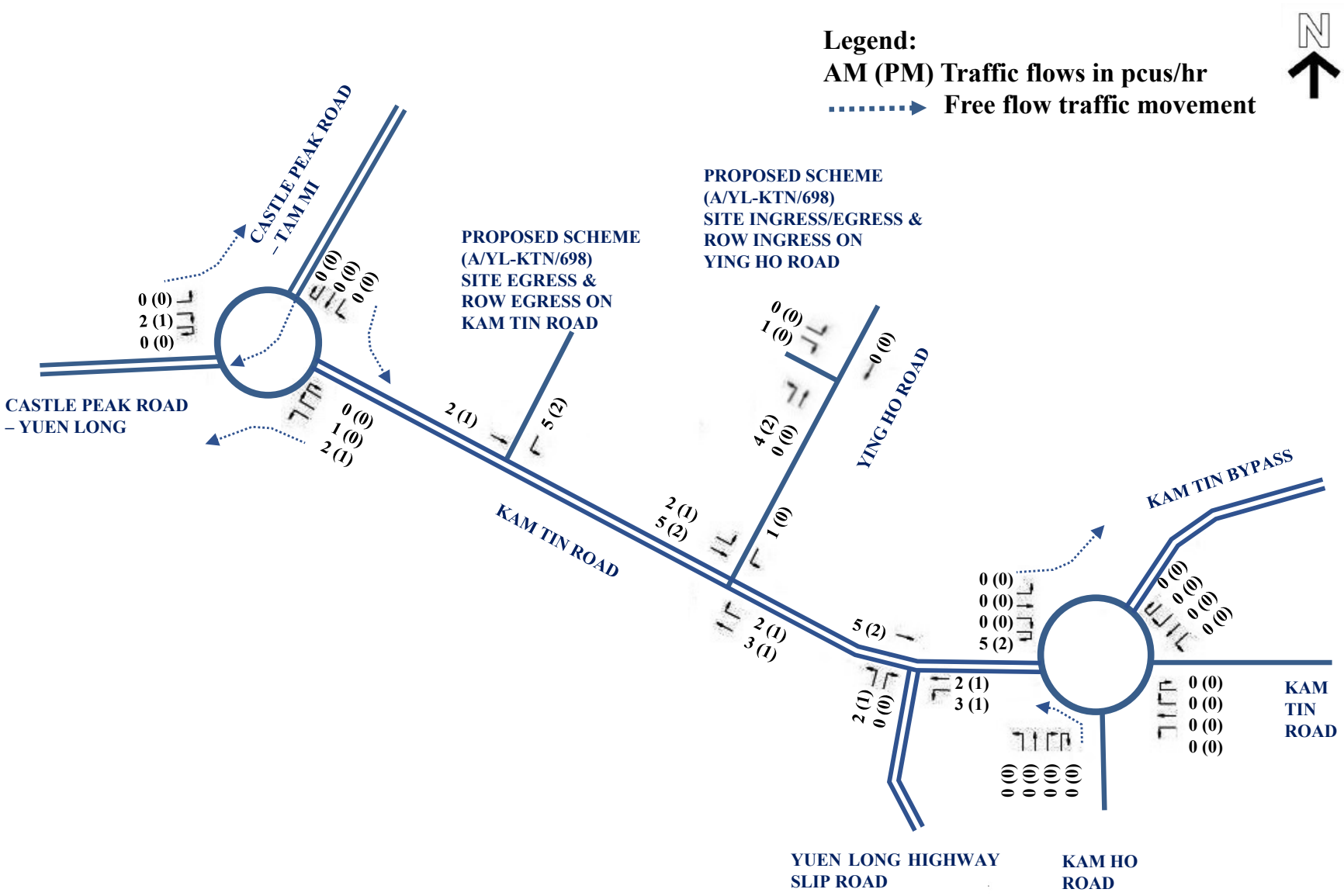
FIGURE TITLE

2030 Reference Traffic Flows

FIGURE NO. 4.1

SCALE	Schematic	DESIGNED	BC
DRAWN	NL	CHECKED	DW
DATE	Sep 2023	APPROVED	RL

RL CONSULTANCY LTD.



NOTES & LEGEND:

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FIGURE TITLE

Development Traffic Flows

FIGURE NO. 4.2

SCALE	Schematic	DESIGNED	BC
DRAWN	NL	CHECKED	DW
DATE	Sep 2023	APPROVED	RL

RL CONSULTANCY LTD.

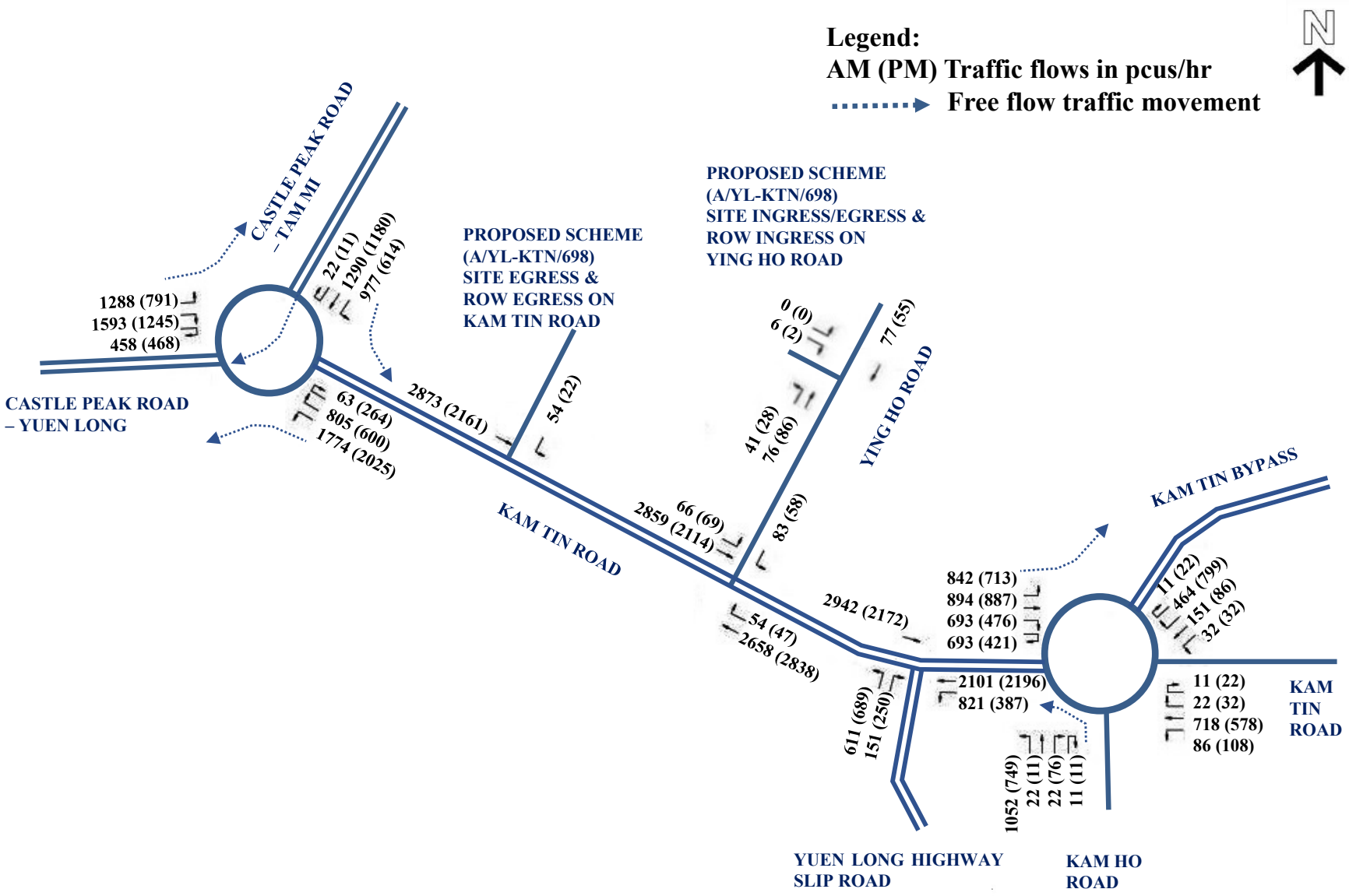

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FIGURE TITLE

2030 Design Traffic Flows

FIGURE NO. **4.3**

SCALE: Schematic	DESIGNED: BC
DRAWN: NL	CHECKED: DW
DATE: Sep 2023	APPROVED: RL

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5.0 IMPACT ASSESSMENT

5.1 Improvement Works

5.1.1 A number of traffic improvement schemes have been identified or completed by others to enhance traffic operations in the area. It is worth emphasising that the Applicant is not initiating these improvements, nor such improvements are required by the Proposed Scheme. These improvements are described as follows:

Au Tau Interchange

5.1.2 An improvement measure for the Au Tau Interchange was proposed under Planning Application No. A/YL-KTN/604. It is proposed to widen Castle Peak Road southbound direction so as to provide an exclusive left turn lane from Castle Peak Road southbound into Kam Tin Road eastbound as shown on **Figure 5.1**.

Kam Tin Road/Tsing Long Highway Slip Road Signalled T-junction

5.1.3 Based on the layout of the improvement works to be carried out at the junction of Kam Tin Road/Tsing Long Highway by CEDD Contract No. YL/2017/01 and Kam Sheung Road Property Development, local road widenings have been identified at 3 approaching arms namely Kam Tin Road eastbound, Kam Tin Road westbound and slip road from Tsing Long Highway.

Kam Tin Road/Kam Tin Bypass/Kam Ho Road Roundabout

5.1.4 A new segregated left turning lane from Kam Ho Road northbound to Kam Tin Road westbound and local widening of Kam Tin Road westbound were gazetted by the Government in March 2016.

Signalled Pedestrian Crossing at Kam Tin Road west of Ying Ho Road

5.1.5 Transport Department has installed a signalled pedestrian crossing at Kam Tin Road just west of Ying Ho Road under Term Contract No. 01/HY/2014 and Work Request No. WR/HY/TE/NW/16/00436 - Improvement works for Pedestrian Crossing with Traffic Signal at Kam Tin Road near Ying Ho Road. The scheme is reproduced on **Figure 2.3**.

5.2 Road Junctions

5.2.1 Capacity analyses were carried out for the junctions that would be affected by the Site for the design year of 2030 in both the AM and PM peak hours.

5.2.2 Reference Flows refer to the background traffic demand without the Site development. Design Flows, i.e., the traffic flows in the future road network with inclusion of Site traffic from the Proposed Scheme (from Table 4.3).

With Improvement Works

5.2.3 Taking into account the junction improvement schemes mentioned in Section 5.1, results of the junction capacity analyses for 2030 are summarised in **Table 5.1**. Detailed calculations, carried out in accordance with the TPDM, are attached in **Annex A**.

Table 5.1 Intersection Capacities for 2030

Location		Peak Hour	2030 (1)	
			Reference (2)	Design (3)
J1	Au Tau Interchange (4) (with existing flyover & with improvement)	AM	0.82	0.82
		PM	0.68	0.68
	Au Tau Interchange (4) (without existing flyover & with improvement)	AM	0.84	0.84
		PM	0.74	0.74
J2	Kam Tin Road / Ying Ho Road	AM	0.20	0.21
		PM	0.11	0.12
J3	Kam Tin Road / Tsing Long Highway Slip Road (4)	AM	29%	29%
		PM	21%	21%
J4	Kam Tin Road / Kam Tin Bypass / Kam Ho Road (4)	AM	0.81	0.81
		PM	0.64	0.64
J5	Ying Ho Road / ROW / Site Access	AM	0.01	0.01
		PM	< 0.01	< 0.01
J6	Kam Tin Road / Site Access / ROW Egress	AM	0.12	0.13
		PM	0.04	0.05

Notes: 1. Capacity figures show the reserve capacity of a signalled junction or the ratio of flow to capacity of the critical approach of the priority junction and roundabout.
2. Reference – with traffic from major planned/approved developments in Table 4.2 and Approved Scheme.
3. Design – with traffic from full occupation of the Proposed Scheme.
4. With junction improvements as detailed in Section 5.1.

5.2.4 It can be seen from **Table 5.1** that the junction capacities, including the traffic generated from Proposed Scheme, will operate satisfactorily. In fact, the impact of the proposed development is negligible.

5.2.5 In light of the above findings, it can be concluded that the traffic impact imposed onto the adjacent road network due to the Proposed Scheme would be minimal. The proposed development is therefore considered feasible from a traffic engineering point of view.

Without Left-turn Lane Improvement at Au Tau Interchange

5.2.6 Under the approved planning application no. A/YLKTN/604, it was proposed to widen Castle Peak Road southbound direction so as to provide an exclusive left turn lane from Castle Peak Road southbound into Kam Tin Road eastbound at the Au Tau Interchange as shown on **Figure 5.1**. An assessment has been carried out for the scenario that this exclusive left-turn lane would not be provided, i.e., without the approved development under planning application No. A/YL-KTN/604.

5.2.7 The capacities of Au Tau Interchange, including traffic generation from the approved planning application no. A/YL-KTN/663, were found to operate satisfactorily in 2030. Results of the junction capacity analysis for 2030 are summarised in **Table 5.2**.

Table 5.2 Au Tau Interchange Capacities for 2030 – Without Improvement

Location		Peak Hour	2030 (1)	
			Reference (2)	Design (3)
J1	Au Tau Interchange (4) (with existing flyover but without improvement)	AM	0.79	0.79
		PM	0.66	0.66

Notes: 1. Capacity figures show the flow to capacity ratio of the critical approach of the roundabout.
2. Reference – with traffic from major planned/approved developments in Table 4.2 and Approved Scheme.
3. Design – with traffic from full occupation of the Proposed Scheme.
4. With existing flyover but without junction improvements shown on Figure 5.1; without traffic from A/YL-KTN/604 but with traffic from A/YL-KTN/663.

5.3 Road Sections

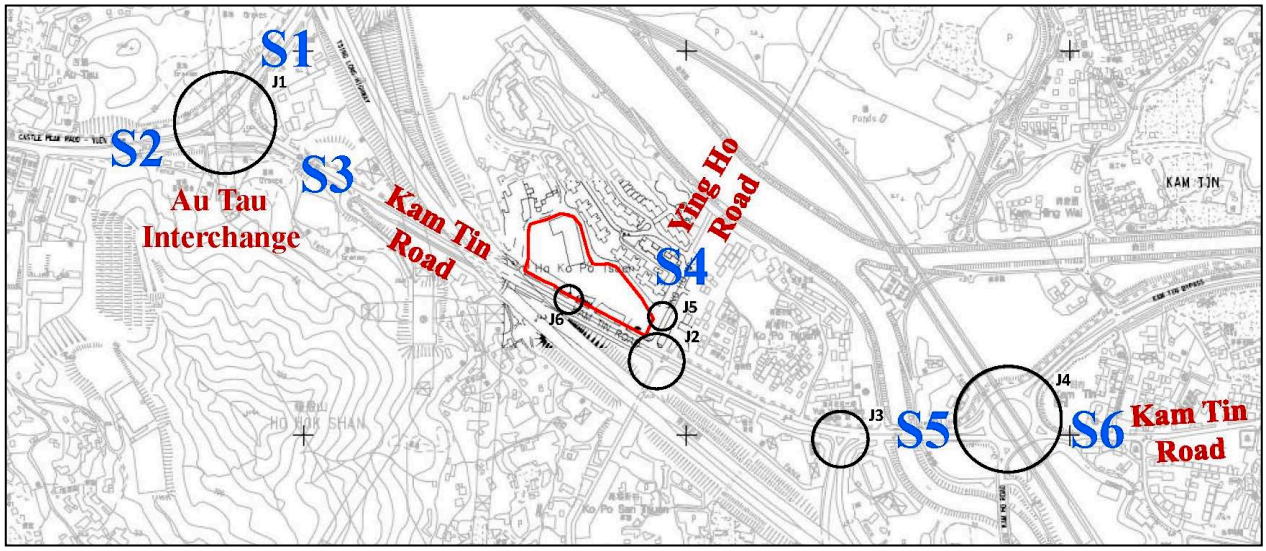
5.3.1 The volume to capacity ratio (V/C) for the road sections that would be affected by the Site traffic were assessed for years 2022 and 2030.

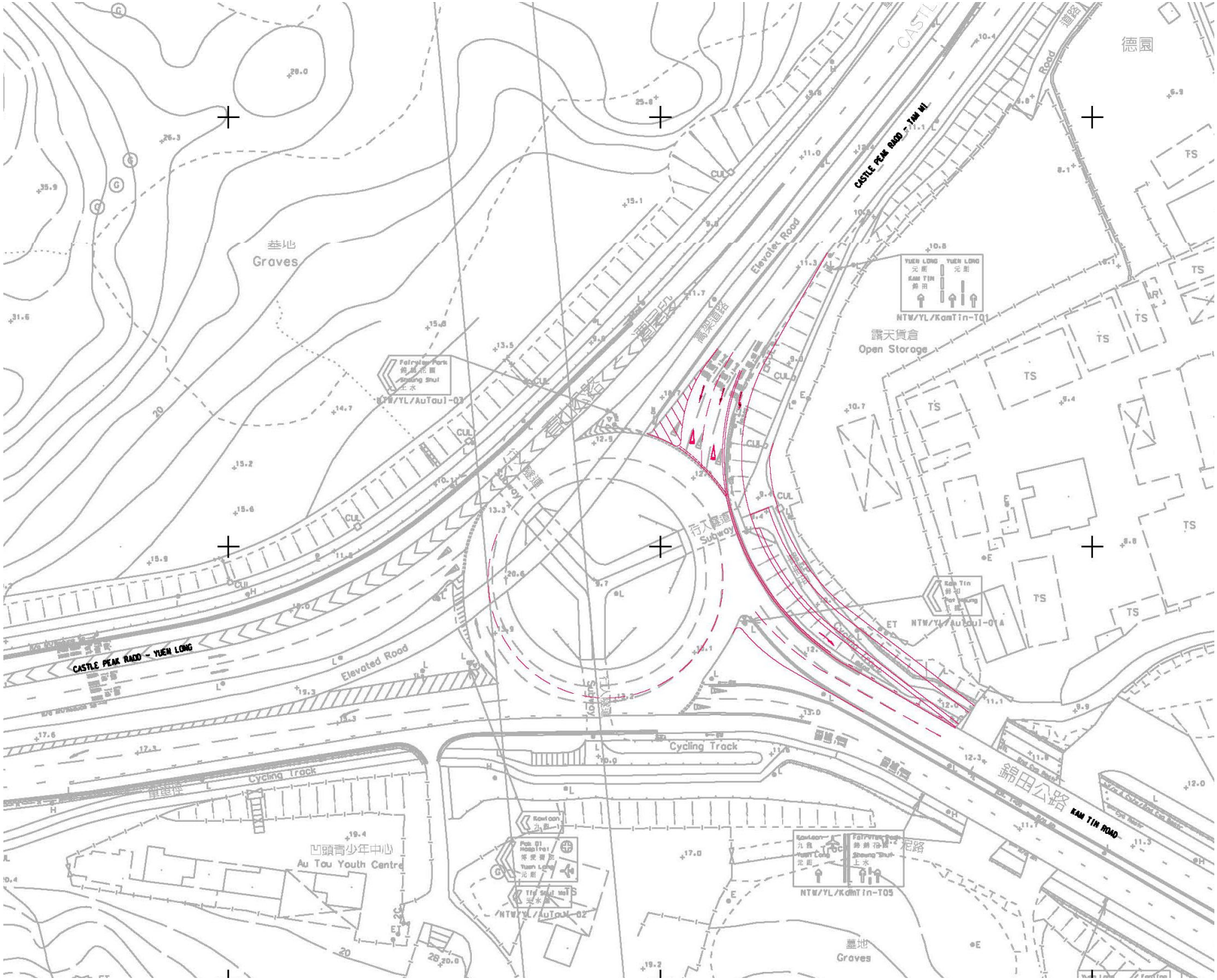
5.3.2 All the V/C ratios were found to be satisfactorily in 2022 and 2030 for both the AM and PM peak hours. Results of the V/C analyses are summarised in **Table 5.3**.

Table 5.3 Road Section Volume to Capacity Ratios for 2022 and 2030

Road Name (Section)		Direction	Capacity (C) (pcus/hr)	Flow (V) (pcus/hr)	2022		2030			
					Survey		Reference		Design	
					AM	PM	AM	PM	AM	PM
S1	Castle Peak Road-Tam Mi (North of Au Tau Interchange)	NB	3,600(1)	V	1,030	780	2,114	1,401	2,115	1,402
				V/C	***0.29***	***0.22***	***0.59***	***0.39***	***0.59***	***0.39***
		SB	3,600(1)	V	1,290	1,230	2,287	1,804	2,288	1,805
				V/C	***0.36***	***0.34***	***0.64***	***0.50***	***0.64***	***0.50***
S2	Castle Peak Road-Yuen Long (West of Au Tau Interchange)	EB	5,400(2)	V	2,150	1,690	3,337	2,504	3,339	2,505
				V/C	***0.40***	***0.31***	***0.62***	***0.46***	***0.62***	***0.46***
		WB	5,400(2)	V	2,360	2,890	3,519	3,673	3,521	3,674
				V/C	***0.44***	***0.54***	***0.65***	***0.68***	***0.65***	***0.68***
S3	Kam Tin Road (East of Au Tau Interchange)	EB	3,600(1)	V	1,770	1,520	2,631	2,122	2,634	2,123
				V/C	***0.49***	***0.42***	***0.73***	***0.59***	***0.73***	***0.59***
		WB	3,600(1)	V	1,720	2,270	2,640	2,888	2,643	2,889
				V/C	***0.48***	***0.63***	***0.73***	***0.80***	***0.73***	***0.80***
S4	Ying Ho Road (North of Kam Tin Road)	2-way	2,200(3)	V	140	130	198	171	203	173
				V/C	***0.06***	***0.06***	***0.09***	***0.08***	***0.09***	***0.08***
S5	Kam Tin Road (West of Kam Ho Road)	EB	5,400(2)	V	2,040	1,820	3,117	2,494	3,122	2,496
				V/C	***0.38***	***0.34***	***0.58***	***0.46***	***0.58***	***0.46***
		WB	3,600(1)	V	1,660	1,910	2,922	2,545	2,927	2,547
				V/C	***0.46***	***0.53***	***0.81***	***0.71***	***0.81***	***0.71***
S6	Kam Tin Road (East of Kam Ho Road)	2-way	2,200(3)	V	1,320	1,370	1,795	1,756	1,795	1,756
				V/C	***0.60***	***0.62***	***0.82***	***0.80***	***0.82***	***0.80***

Notes: 1. Road capacity for dual 2-lane carriageway in pcus/hr.
2. Road capacity for dual 3-lane carriageway in pcus/hr.
3. Road capacity for single 2-lane carriageway in pcus/hr.





NOTES & LEGEND:

NO.	DATE	DESCRIPTION	INITIAL

PROJECT

S16 Application for Proposed Amendments to an Approved Residential Development and Minor Relaxation of Maximum Plot Ratio and Building Height Restrictions in D.D. 103 and Adjoining Government Land, Ha Ko Po Tsuen, Kam Tin, Yuen Long

FIGURE TITLE

Proposed Au Tau Interchange Improvement

FIGURE NO. **5.1**

SCALE Schematic	DESIGNED BC
DRAWN NL	CHECKED DW
DATE Sep 2023	APPROVED RL

RL CONSULTANCY LTD.

6.0 SUMMARY AND CONCLUSION

6.1 Summary

6.1.1 The Application Site is bounded by Kam Tin Road to the south and Ying Ho Road to the east. It is currently zoned "Residential (Group E)" with a Site area of about 16,293m^2.

6.1.2 To adopt Modular Integrated Construction (MiC), the Applicant proposes a residential development in the Application Site with a plot ratio of not more than 1.43 comprising a total of 615 residential units.

6.1.3 The provision of internal transport facilities including car parking and loading/unloading provisions were proposed at the higher end of the range under the HKPSG. The proposed development will provide 128 resident and visitor car parking spaces including 3 for the disabled, 7 motorcycle parking spaces, 41 bicycle parking spaces and 4 loading/unloading bays for goods vehicles.

6.1.4 Same as the Approved Scheme, the Site will have two vehicular accesses: an egress only at Kam Tin Road and a combined run-in and run-out at Ying Ho Road. With this arrangement, incoming Site traffic from the east such as Tsing Long Highway will not have to make a U-turn at the Au Tau Interchange to enter at the Kam Tin Road access. As such, the traffic via Au Tau Interchange will be reduced thereby improving the overall road traffic conditions in the locality. Besides improving the traffic operation along Kam Tin Road, reducing the number of existing vehicular run-in/outs on Kam Tin Road eastbound will allow a more continuous cycle track along the northern kerbside.

6.1.5 The Proposed Scheme of 615 flats would only produce a total 2-way traffic generation and attraction of 107 pcus/hr and 55 pcus/hr for the AM and PM peak hours respectively. With these traffic flows distributed onto various parts of the road network, the impact of this small amount of traffic is negligible.

6.1.6 When compared to the Approved Scheme, the small increase of 52 flats under the Proposed Scheme would only increase the 2-way traffic generation by 9 pcus/hr and 4 pcus/hr for the AM and PM peak hours respectively. Therefore, this Proposed Scheme would have negligible additional impact on traffic conditions in the area.

6.1.7 This TIA has assessed and concluded that all the assessed junctions would be able to cater for the Site traffic demand even after taking into account the potential future developments under planning.

6.2 Conclusion

6.2.1 In light of the findings of this Traffic Impact Assessment, the traffic impact imposed onto the adjacent road network due to the Proposed Scheme would be minimal and the proposed development is feasible from a traffic engineering point of view.

Annex A

Junction Capacity Calculations

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Au Tau Interchange (with Flyover)
Description: Ref (existing layout) Date: Aug 2023 Designed by: EF
Design Year: 2022 File: Checked by: RL

				Description:	CPR-Tam Mi SB	Kam Tin Rd WB	CPR-YL EB
Input:							
V	=	Approach half width (m)			7.0	7.0	7.3
E	=	Entry width (m)			10.0	7.0	10.5
L	=	Effective length of flare (m)			13.0	1.0	45.0
R	=	Entry radius (m)			50.0	100.0	100.0
D	=	Inscribed circle diameter (m)			65.0	65.0	65.0
A	=	Entry angle (degree)			45	30	20
Q	=	Entry flow (pcus/hr)	AM		560	510	1,590
			PM		430	610	1,290
Qc	=	Circulating flow across entry (pcus/hr)	AM		1,650	440	530
			PM		1,530	440	620
Output:							
S	=	Sharpness of flare = 1.6(E-V)/L			0.37	0.00	0.11
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.98	1.04	1.07
X2	=	V + ((E-V)/(1+2S))			8.73	7.00	9.91
M	=	EXP((D-60)/10)			1.65	1.65	1.65
F	=	303*X2			2644	2121	3002
Td	=	1+(0.5/(1+M))			1.19	1.19	1.19
Fc	=	0.21*Td(1+0.2*X2)			0.69	0.60	0.74
Qe	=	K(F-Fc*Qc)	AM		1479	1930	2800
			PM		1559	1930	2728
DFC	=	Design flow/Capacity = Q/Qe	AM		0.38	0.26	0.57
			PM		0.28	0.32	0.47

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Au Tau Interchange (with existing Flyover & with Improvement)
Description: Reference Date: Aug 2023 Designed by: EF
Design Year: 2030 File: Checked by: RL

				Description:	CPR-Tam Mi SB	Kam Tin Rd WB	CPR-YL EB
Input:							
V	=	Approach half width (m)			7.0	7.0	7.3
E	=	Entry width (m)			10.0	7.0	10.5
L	=	Effective length of flare (m)			13.0	1.0	45.0
R	=	Entry radius (m)			50.0	100.0	100.0
D	=	Inscribed circle diameter (m)			65.0	65.0	65.0
A	=	Entry angle (degree)			45	30	20
Q	=	Entry flow (pcus/hr)	AM		22	868	2,049
			PM		11	864	1,713
Qc	=	Circulating flow across entry (pcus/hr)	AM		2,113	479	890
			PM		1,977	479	874
Output:							
S	=	Sharpness of flare = 1.6(E-V)/L			0.37	0.00	0.11
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.98	1.04	1.07
X2	=	V + ((E-V)/(1+2S))			8.73	7.00	9.91
M	=	EXP((D-60)/10)			1.65	1.65	1.65
F	=	303*X2			2644	2121	3002
Td	=	1+(0.5/(1+M))			1.19	1.19	1.19
Fc	=	0.21*Td(1+0.2*X2)			0.69	0.60	0.74
Qe	=	K(F-Fc*Qc)	AM		1169	1906	2512
			PM		1260	1906	2525
DFC	=	Design flow/Capacity = Q/Qe	AM		0.02	0.46	0.82
			PM		0.01	0.45	0.68

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Au Tau Interchange (with existing Flyover & with Improvement)
Description: Design Date: Aug 2023 Designed by: EF
Design Year: 2030 File: Checked by: RL

				Description:	CPR-Tam Mi SB	Kam Tin Rd WB	CPR-YL EB
Input:							
V	=	Approach half width (m)			7.0	7.0	7.3
E	=	Entry width (m)			10.0	7.0	10.5
L	=	Effective length of flare (m)			13.0	1.0	45.0
R	=	Entry radius (m)			50.0	100.0	100.0
D	=	Inscribed circle diameter (m)			65.0	65.0	65.0
A	=	Entry angle (degree)			45	30	20
Q	=	Entry flow (pcus/hr)	AM		22	869	2,051
			PM		11	864	1,714
Qc	=	Circulating flow across entry (pcus/hr)	AM		2,114	479	890
			PM		1,978	479	875
Output:							
S	=	Sharpness of flare = 1.6(E-V)/L			0.37	0.00	0.11
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.98	1.04	1.07
X2	=	V + ((E-V)/(1+2S))			8.73	7.00	9.91
M	=	EXP((D-60)/10)			1.65	1.65	1.65
F	=	303*X2			2644	2121	3002
Td	=	1+(0.5/(1+M))			1.19	1.19	1.19
Fc	=	0.21*Td(1+0.2*X2)			0.69	0.60	0.74
Qe	=	K(F-Fc*Qc)	AM		1168	1906	2512
			PM		1259	1906	2524
DFC	=	Design flow/Capacity = Q/Qe	AM		0.02	0.46	0.82
			PM		0.01	0.45	0.68

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction:	Au Tau Interchange (without existing Flyover)			
Description:	Ref (with improvement)	Date:	Aug 2023	Designed by: EF
Design Year:	2030	File:		Checked by: RL

				Description:	CPR-Tam Mi SB	Kam Tin Rd WB	CPR-YL EB
Input:							
V	=	Approach half width (m)			7.3	7.0	7.3
E	=	Entry width (m)			12.0	7.0	10.5
L	=	Effective length of flare (m)			25.0	1.0	45.0
R	=	Entry radius (m)			50.0	100.0	100.0
D	=	Inscribed circle diameter (m)			65.0	65.0	65.0
A	=	Entry angle (degree)			25	30	20
Q	=	Entry flow (pcus/hr)	AM		1,311	868	2,049
			PM		1,191	864	1,713
Qc	=	Circulating flow across entry (pcus/hr)	AM		2,113	1,769	890
			PM		1,977	1,659	874
Output:							
S	=	Sharpness of flare = 1.6(E-V)/L			0.30	0.00	0.11
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			1.05	1.04	1.07
X2	=	V + ((E-V)/(1+2S))			10.23	7.00	9.91
M	=	EXP((D-60)/10)			1.65	1.65	1.65
F	=	303*X2			3101	2121	3002
Td	=	1+(0.5/(1+M))			1.19	1.19	1.19
Fc	=	0.21*Td(1+0.2*X2)			0.76	0.60	0.74
Qe	=	K(F-Fc*Qc)	AM		1564	1103	2512
			PM		1672	1171	2525
DFC	=	Design flow/Capacity = Q/Qe	AM		0.84	0.79	0.82
			PM		0.71	0.74	0.68

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction:	Au Tau Interchange (without existing Flyover)			
Description:	Design (with improveme	Date:	Aug 2023	Designed by: EF
Design Year:	2030	File:		Checked by: RL

				Description:	CPR-Tam Mi SB	Kam Tin Rd WB	CPR-YL EB
Input:							
V	=	Approach half width (m)			7.3	7.0	7.3
E	=	Entry width (m)			12.0	7.0	10.5
L	=	Effective length of flare (m)			25.0	1.0	45.0
R	=	Entry radius (m)			50.0	100.0	100.0
D	=	Inscribed circle diameter (m)			65.0	65.0	65.0
A	=	Entry angle (degree)			25	30	20
Q	=	Entry flow (pcus/hr)	AM		1,311	869	2,051
			PM		1,191	864	1,714
Qc	=	Circulating flow across entry (pcus/hr)	AM		2,114	1,769	890
			PM		1,978	1,659	875
Output:							
S	=	Sharpness of flare = 1.6(E-V)/L			0.30	0.00	0.11
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			1.05	1.04	1.07
X2	=	V + ((E-V)/(1+2S))			10.23	7.00	9.91
M	=	EXP((D-60)/10)			1.65	1.65	1.65
F	=	303*X2			3101	2121	3002
Td	=	1+(0.5/(1+M))			1.19	1.19	1.19
Fc	=	0.21*Td(1+0.2*X2)			0.76	0.60	0.74
Qe	=	K(F-Fc*Qc)	AM		1563	1103	2512
			PM		1671	1171	2524
DFC	=	Design flow/Capacity = Q/Qe	AM		0.84	0.79	0.82
			PM		0.71	0.74	0.68

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Au Tau Interchange (with existing Flyover but without Imp & A/YL-KTN/604)
Description: Ref (existing layout) Date: Aug 2023 Designed by: EF
Design Year: 2030 File: Checked by: RL

				Description:	CPR-Tam Mi SB	Kam Tin Rd WB	CPR-YL EB	
Input:								
V	=	Approach half width (m)			7.0	7.0	7.3	
E	=	Entry width (m)			10.0	7.0	10.5	
L	=	Effective length of flare (m)			13.0	1.0	45.0	
R	=	Entry radius (m)			50.0	100.0	100.0	
D	=	Inscribed circle diameter (m)			65.0	65.0	65.0	
A	=	Entry angle (degree)			45	30	20	
Q	=	Entry flow (pcus/hr)		AM	830	757	2,049	
				PM	550	771	1,713	
Qc	=	Circulating flow across entry (pcus/hr)		AM	2,113	479	778	
				PM	1,977	479	782	
Output:								
S	=	Sharpness of flare = 1.6(E-V)/L			0.37	0.00	0.11	
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.98	1.04	1.07	
X2	=	V + ((E-V)/(1+2S))			8.73	7.00	9.91	
M	=	EXP((D-60)/10)			1.65	1.65	1.65	
F	=	303*X2			2644	2121	3002	
Td	=	1+(0.5/(1+M))			1.19	1.19	1.19	
Fc	=	0.21*Td(1+0.2*X2)			0.69	0.60	0.74	
Qe	=	K(F-Fc*Qc)		AM	1169	1906	2601	
				PM	1260	1906	2598	
DFC	=	Design flow/Capacity = Q/Qe		AM	0.71	0.40	0.79	
				PM	0.44	0.40	0.66	

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Au Tau Interchange (with existing Flyover but without Imp & A/YL-KTN/604)
Description: Design (existing layout) Date: Aug 2023 Designed by: EF
Design Year: 2030 File: Checked by: RL

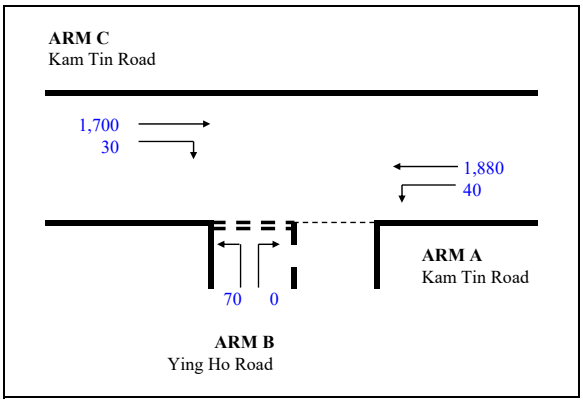
				Description:	CPR-Tam Mi SB	Kam Tin Rd WB	CPR-YL EB	
Input:								
V	=	Approach half width (m)			7.0	7.0	7.3	
E	=	Entry width (m)			10.0	7.0	10.5	
L	=	Effective length of flare (m)			13.0	1.0	45.0	
R	=	Entry radius (m)			50.0	100.0	100.0	
D	=	Inscribed circle diameter (m)			65.0	65.0	65.0	
A	=	Entry angle (degree)			45	30	20	
Q	=	Entry flow (pcus/hr)		AM	830	757	2,051	
				PM	550	771	1,714	
Qc	=	Circulating flow across entry (pcus/hr)		AM	2,114	479	779	
				PM	1,978	479	782	
Output:								
S	=	Sharpness of flare = 1.6(E-V)/L			0.37	0.00	0.11	
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.98	1.04	1.07	
X2	=	V + ((E-V)/(1+2S))			8.73	7.00	9.91	
M	=	EXP((D-60)/10)			1.65	1.65	1.65	
F	=	303*X2			2644	2121	3002	
Td	=	1+(0.5/(1+M))			1.19	1.19	1.19	
Fc	=	0.21*Td(1+0.2*X2)			0.69	0.60	0.74	
Qe	=	K(F-Fc*Qc)		AM	1168	1906	2601	
				PM	1259	1906	2598	
DFC	=	Design flow/Capacity = Q/Qe		AM	0.71	0.40	0.79	
				PM	0.44	0.40	0.66	

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Ying Ho Road
Description: Existing Layout
Design Year: 2022 AM Reference

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	20.5 m
W cr	=	5.5 m
W b-a	=	0.0 m
W b-c	=	4.0 m
W c-b	=	3.5 m

Visibility

Vl b-a	=	0 m
Vr b-a	=	0 m
Vr b-c	=	50 m
Vr c-b	=	70 m

GEOMETRIC FACTORS :

D	=	0.5332
E	=	0.9678
F	=	0.9415
Y	=	0.2928

TRAFFIC FLOWS:

ARM A		
q a-b	=	40 pcus/hr
q a-c	=	1,880 pcus/hr
ARM B		
q b-a	=	0 pcus/hr
q b-c	=	70 pcus/hr
F for (Qb-ac)	=	1
ARM C		
q c-a	=	1,700 pcus/hr
q c-b	=	30 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	204
Q b-c	=	526
Q c-b	=	509
Q b-ac	=	526
Q b-c (O)	=	526

DESIGN FLOW/CAPACITY:

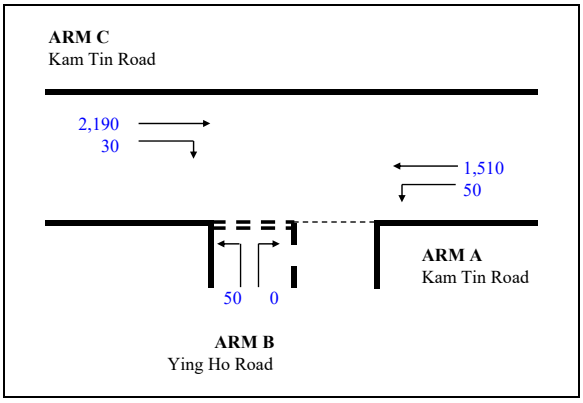
DFC b-a	=	0.0000
DFC b-c	=	0.1331
DFC c-b	=	0.0589
DFC b-c (share lane)	=	0.1331
CRITICAL DFC	=	**0.13**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Ying Ho Road
Description: Existing Layout
Design Year: 2022 PM Reference

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	20.5 m
W cr	=	5.5 m
W b-a	=	0.0 m
W b-c	=	4.0 m
W c-b	=	3.5 m

Visibility

Vl b-a	=	0 m
Vr b-a	=	0 m
Vr b-c	=	50 m
Vr c-b	=	70 m

GEOMETRIC FACTORS :

D	=	0.5332
E	=	0.9678
F	=	0.9415
Y	=	0.2928

TRAFFIC FLOWS:

ARM A		
q a-b	=	50 pcus/hr
q a-c	=	1,510 pcus/hr
ARM B		
q b-a	=	0 pcus/hr
q b-c	=	50 pcus/hr
F for (Qb-ac)	=	1
ARM C		
q c-a	=	2,190 pcus/hr
q c-b	=	30 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	208
Q b-c	=	563
Q c-b	=	545
Q b-ac	=	563
Q b-c (O)	=	563

DESIGN FLOW/CAPACITY:

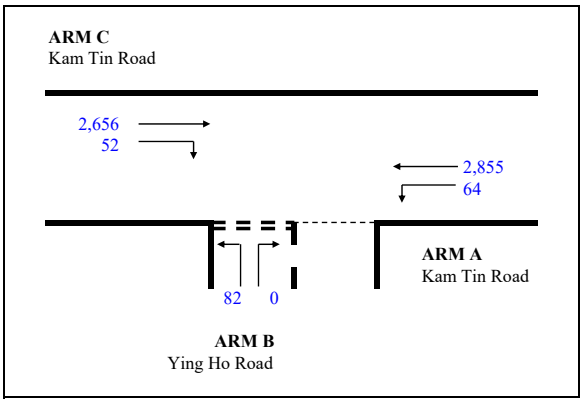
DFC b-a	=	0.0000
DFC b-c	=	0.0888
DFC c-b	=	0.0550
DFC b-c (share lane)	=	0.0888
CRITICAL DFC	=	**0.09**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Ying Ho Road
Description: Existing Layout
Design Year: #REF! AM Reference

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	20.5 m
W cr	=	5.5 m
W b-a	=	0.0 m
W b-c	=	4.0 m
W c-b	=	3.5 m

Visibility

r:B-A	=	0 m
r:B-C	=	0 m
l:B-C	=	50 m
s:C-B	=	70 m

GEOMETRIC FACTORS :

Y	=	0.2928
D	=	0.5508
E	=	0.9213
F	=	0.9415

TRAFFIC FLOWS:

ARM A		
q a-b	=	64 pcus/hr
q a-c	=	2,855 pcus/hr
ARM B		
q b-a	=	0 pcus/hr
q b-c	=	82 pcus/hr
F for (Qb-ac)	=	1
ARM C		
q c-a	=	2,656 pcus/hr
q c-b	=	52 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	116
Q b-c	=	404
Q c-b	=	409
Q b-ac	=	404
Q b-c (O)	=	404

DESIGN FLOW/CAPACITY:

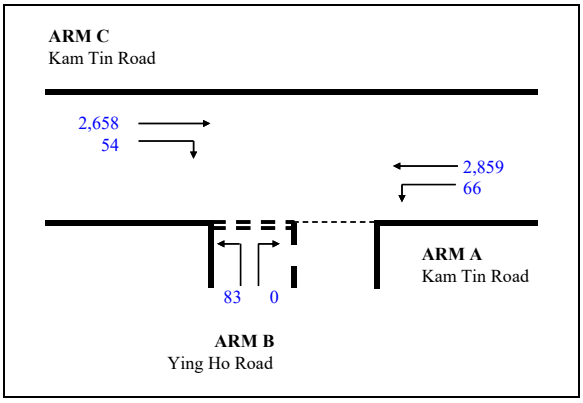
DFC b-a	=	0.0000
DFC b-c	=	0.2040
DFC c-b	=	0.1263
DFC b-c (share lane)	=	0.2040
CRITICAL DFC	=	**0.20**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Ying Ho Road
Description: Existing Layout
Design Year: #REF! AM Design

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	20.5 m
W cr	=	5.5 m
W b-a	=	0.0 m
W b-c	=	4.0 m
W c-b	=	3.5 m

Visibility

r:B-A	=	0 m
r:B-C	=	0 m
l:B-C	=	50 m
s:C-B	=	70 m

GEOMETRIC FACTORS :

Y	=	0.2928
D	=	0.5508
E	=	0.9213
F	=	0.9415

TRAFFIC FLOWS:

ARM A		
q a-b	=	66 pcus/hr
q a-c	=	2,859 pcus/hr
ARM B		
q b-a	=	0 pcus/hr
q b-c	=	83 pcus/hr
F for (Qb-ac)	=	1
ARM C		
q c-a	=	2,658 pcus/hr
q c-b	=	54 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	116
Q b-c	=	403
Q c-b	=	408
Q b-ac	=	403
Q b-c (O)	=	403

DESIGN FLOW/CAPACITY:

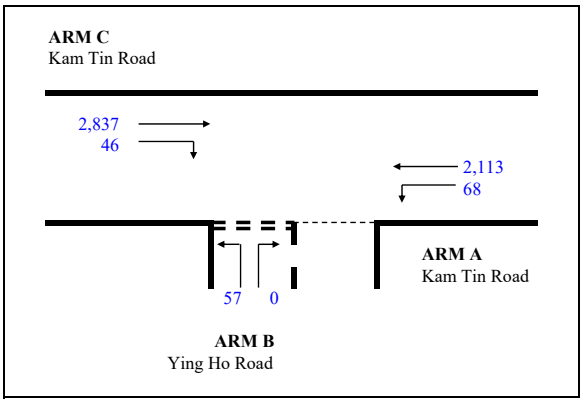
DFC b-a	=	0.0000
DFC b-c	=	0.2057
DFC c-b	=	0.1313
DFC b-c (share lane)	=	0.2057
CRITICAL DFC	=	**0.21**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Ying Ho Road
Description: Existing Layout
Design Year: #REF! PM Reference

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	20.5 m
W cr	=	5.5 m
W b-a	=	0.0 m
W b-c	=	4.0 m
W c-b	=	3.5 m

Visibility

Vl b-a	=	0 m
Vr b-a	=	0 m
Vr b-c	=	50 m
Vr c-b	=	70 m

GEOMETRIC FACTORS :

D	=	0.5332
E	=	0.9678
F	=	0.9415
Y	=	0.2928

TRAFFIC FLOWS:

ARM A		
q a-b	=	68 pcus/hr
q a-c	=	2,113 pcus/hr
ARM B		
q b-a	=	0 pcus/hr
q b-c	=	57 pcus/hr
F for (Qb-ac)	=	1
ARM C		
q c-a	=	2,837 pcus/hr
q c-b	=	46 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	149
Q b-c	=	500
Q c-b	=	483
Q b-ac	=	500
Q b-c (O)	=	500

DESIGN FLOW/CAPACITY:

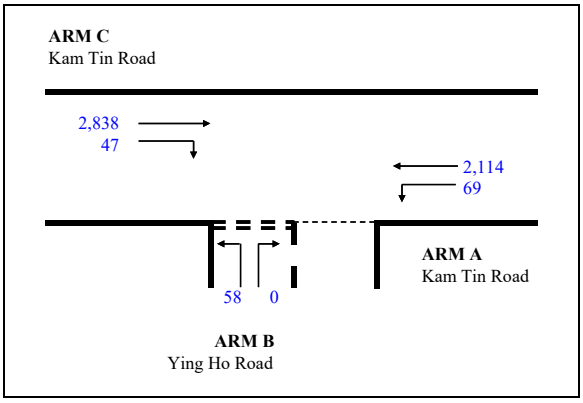
DFC b-a	=	0.0000
DFC b-c	=	0.1148
DFC c-b	=	0.0950
DFC b-c (share lane)	=	0.1148
CRITICAL DFC	=	**0.11**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Ying Ho Road
Description: Existing Layout
Design Year: #REF! PM Design

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	20.5 m
W cr	=	5.5 m
W b-a	=	0.0 m
W b-c	=	4.0 m
W c-b	=	3.5 m

Visibility

Vl b-a	=	0 m
Vr b-a	=	0 m
Vr b-c	=	50 m
Vr c-b	=	70 m

GEOMETRIC FACTORS :

D	=	0.5332
E	=	0.9678
F	=	0.9415
Y	=	0.2928

TRAFFIC FLOWS:

ARM A		
q a-b	=	69 pcus/hr
q a-c	=	2,114 pcus/hr
ARM B		
q b-a	=	0 pcus/hr
q b-c	=	58 pcus/hr
F for (Qb-ac)	=	1
ARM C		
q c-a	=	2,838 pcus/hr
q c-b	=	47 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	148
Q b-c	=	500
Q c-b	=	482
Q b-ac	=	500
Q b-c (O)	=	500

DESIGN FLOW/CAPACITY:

DFC b-a	=	0.0000
DFC b-c	=	0.1152
DFC c-b	=	0.0973
DFC b-c (share lane)	=	0.1152
CRITICAL DFC	=	**0.12**

TRAFFIC SIGNAL CALCULATION

RL CONSULTANCY LTD.

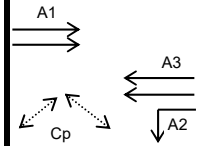
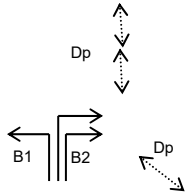
Junction: Kam Tin Road / Tsing Long Highway Slip Road

Description: Without Improvement Date: Aug 2023 Designed by: NL

Design Year: 2022 Reference File: Checked by: RL

	Approach	Phase	Stage	Width (m)	Radius (m)	No. of Lanes	Site Factor	AM Peak Hour Sat Flow (pcu/hr)	AM Peak Hour Design Flow (pcu/hr)	AM Peak Hour y value	AM Peak Hour Critical Y	PM Peak Hour Sat Flow (pcu/hr)	PM Peak Hour Design Flow (pcu/hr)	PM Peak Hour y value	PM Peak Hour Critical Y
1	Kam Tin Road EB sa	A1	1	7.30		2		4100	1950	0.476	0.476	4100	1560	0.380	
2	Kam Tin Road WB lt	A2	1	3.00	35.0	1		1836	310	0.169		1836	160	0.087	
3	Kam Tin Road WB sa	A3	1	7.30		2		4100	1350	0.329		4100	1760	0.429	0.429
4	Tsing Long Highway Slip Road NB lt	B1	2	4.00	20.0	1		1874	380	0.203	0.203	1874	460	0.245	0.245
5	Tsing Long Highway Slip Road NB rt	B2	2	6.50	35.0	2		3989	80	0.020		3989	180	0.045	
6	Pedestrains	Cp	1	GM=7, FGM=7											
7	Pedestrains	Dp	2	GM=7, FGM=7											
8															
9															
10															
11															
12															
13															
14															
15															

Stage / Phase Diagrams

1	2	3	4	5
				
I=7	I=10	I=	I=	I=

		AM Stages 1+2 Critical		PM Stages 1+2 Critical
Total Y		0.678	Total Y	0.675
L (sec)		15	L (sec)	15
C (sec)		120	C (sec)	120
Y max		0.875	Y max	0.875
R.C. (%)		16%	R.C. (%)	17%

A)Unopposed streams in individual lanes

S1 = (S0 - 140n) / (1 + 1.5 f/r)

2025

B)Opposed streams in individual lanes

S1 = (S0 - 230 - 140n) / (1 + 1.5 f/r)

where:

S0 = 2080 - 42gG + 100 (w - 3.25)

g =1 for uphill, 0 otherwise

G = gradient

w = lane width in m

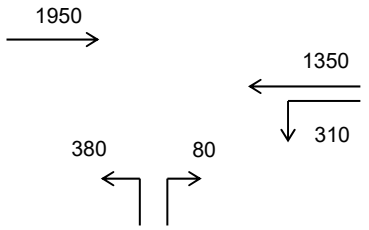
n =1 for n/s lane, 0 otherwise

f = proportion of turning traffic

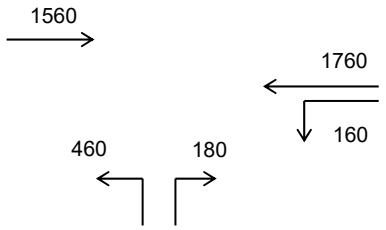
r = radius of turn

Note: *=manually assigned flow

AM Traffic Flow (pcu's/hr)



PM Traffic Flow (pcu's/hr)



TRAFFIC SIGNAL CALCULATION

RL CONSULTANCY LTD.

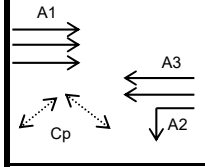
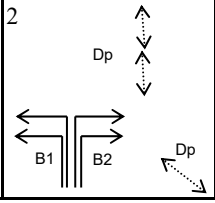
Junction: Kam Tin Road / Tsing Long Highway Slip Road

Description: With Improvement Date: Aug 2023 Designed by: NL

Design Year: 2030 Reference File: Checked by: RL

	Approach	Phase	Stage	Width (m)	Radius (m)	No. of Lanes	Site Factor	AM Peak Hour Sat Flow (pcu/hr)	AM Peak Hour Design Flow (pcu/hr)	AM Peak Hour y value	AM Peak Hour Critical Y	PM Peak Hour Sat Flow (pcu/hr)	PM Peak Hour Design Flow (pcu/hr)	PM Peak Hour y value	PM Peak Hour Critical Y
1	Kam Tin Road EB sa	A1	1	11.0		3		6220	2937	0.472		6220	2170	0.349	
2	Kam Tin Road WB lt	A2	1	3.65	50.0	1		1922	819	0.426		1922	386	0.201	
3	Kam Tin Road WB sa	A3	1	7.30		2	-2.14	4420	2098	0.475	0.475	4420	2195	0.497	0.497
4	Tsing Long Highway Slip Road NB lt	B1	2	7.30	25.0	2		3868	609	0.157	0.157	3868	688	0.178	0.178
5	Tsing Long Highway Slip Road NB rt	B2	2	7.30	40.0	2		4087	151	0.037		4087	250	0.061	
6	Pedestrains	Cp	1	GM=5, FGM=7											
7	Pedestrains	Dp	2	GM=7, FGM=10											
8															
9															
10															
11															
12															
13															
14															
15															

Stage / Phase Diagrams

1	2	3	4	5
				
I=5	I=8	I=	I=	I=

		Stages 1+2 Critical			Stages 1+2 Critical
Total Y		0.632	Total Y		0.675
L (sec)		11	L (sec)		11
C (sec)		120	C (sec)		120
Y max		0.908	Y max		0.908
R.C. (%)		29%	R.C. (%)		21%

A)Unopposed streams in individual lanes

S1 = (S0 - 140n) / (1 + 1.5 f/r)

B)Opposed streams in individual lanes

S1 = (S0 - 230 - 140n) / (1 + 1.5 f/r)

where:

S0 = 2080 - 42gG + 100 (w - 3.25)

g =1 for uphill, 0 otherwise

G = gradient

w = lane width in m

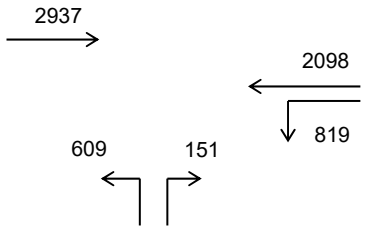
n =1 for n/s lane, 0 otherwise

f = proportion of turning traffic

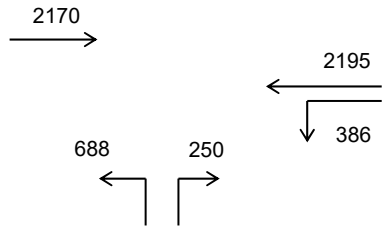
r = radius of turn

Note: *=manually assigned flow

AM Traffic Flow (pcu's/hr)



PM Traffic Flow (pcu's/hr)



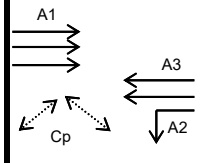
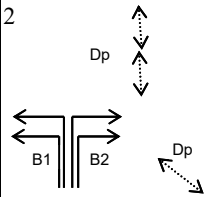
TRAFFIC SIGNAL CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Tsing Long Highway Slip Road
Description: With Improvement Date: Aug 2023 Designed by: NL
Design Year: 2030 Design File: Checked by: RL

	Approach	Phase	Stage	Width (m)	Radius (m)	No. of Lanes	Site Factor	AM Peak Hour Sat Flow (pcu/hr)	AM Design Flow (pcu/hr)	AM y value	AM Critical Y	PM Peak Hour Sat Flow (pcu/hr)	PM Design Flow (pcu/hr)	PM y value	PM Critical Y
1	Kam Tin Road EB sa	A1	1	11.0		3		6220	2942	0.473		6220	2172	0.349	
2	Kam Tin Road WB lt	A2	1	3.65	50.0	1		1922	821	0.427		1922	387	0.201	
3	Kam Tin Road WB sa	A3	1	7.30		2	-2.14	4420	2101	0.475	0.475	4420	2196	0.497	0.497
4	Tsing Long Highway Slip Road NB lt	B1	2	7.30	25.0	2		3868	611	0.158	0.158	3868	689	0.178	0.178
5	Tsing Long Highway Slip Road NB rt	B2	2	7.30	40.0	2		4087	151	0.037		4087	250	0.061	
6	Pedestrains	Cp	1	GM=5, FGM=7											
7	Pedestrains	Dp	2	GM=7, FGM=10											
8															
9															
10															
11															
12															
13															
14															
15															

Stage / Phase Diagrams

1	2	3	4	5
				
I=5	I=8	I=	I=	I=

		AM Stages 1+2 Critical		PM Stages 1+2 Critical
Total Y		0.633	Total Y	0.675
L (sec)		11	L (sec)	11
C (sec)		120	C (sec)	120
Y max		0.908	Y max	0.908
R.C. (%)		29%	R.C. (%)	21%

A)Unopposed streams in individual lanes

S1 = (S0 - 140n) / (1 + 1.5 f/r)

B)Opposed streams in individual lanes

S1 = (S0 - 230 - 140n) / (1 + 1.5 f/r)

where:

S0 = 2080 - 42gG + 100 (w - 3.25)

g =1 for uphill, 0 otherwise

G = gradient

w = lane width in m

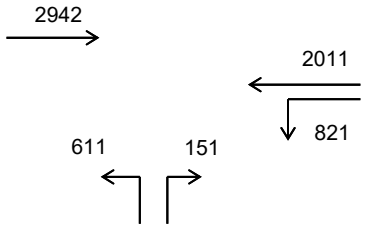
n =1 for n/s lane, 0 otherwise

f = proportion of turning traffic

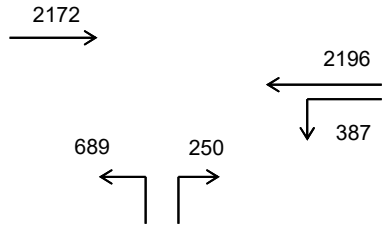
r = radius of turn

Note: *=manually assigned flow

AM Traffic Flow (pcu's/hr)



PM Traffic Flow (pcu's/hr)



ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Kam Tin Bypass / Kam Ho Road
Description: Ref (existing layout) Date: Aug 2023 Designed by: EF
Design Year: 2022 File: Checked by: RL

				Description:	Kam Tin Bypass SB	Kam Tin Rd WB	Kam Ho Rd NB	Kam Tin Rd EB
Input:								
V	=	Approach half width (m)			6.5	3.5	5.0	7.3
E	=	Entry width (m)			11.0	11.5	10.0	11.0
L	=	Effective length of flare (m)			15.0	10.5	9.5	13.0
R	=	Entry radius (m)			42.5	100.0	20.0	42.5
D	=	Inscribed circle diameter (m)			88.0	88.0	88.0	88.0
A	=	Entry angle (degree)			39	23	38	29
Q	=	Entry flow (pcus/hr)		AM	610	740	440	1,280
				PM	870	650	520	1,160
Qc	=	Circulating flow across entry (pcus/hr)		AM	1,300	1,330	1,310	90
				PM	1,260	1,410	1,550	160
Output:								
S	=	Sharpness of flare = 1.6(E-V)/L			0.48	1.22	0.84	0.46
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.99	1.06	0.97	1.03
X2	=	V + ((E-V)/(1+2S))			8.80	5.83	6.86	9.24
M	=	EXP((D-60)/10)			16.44	16.44	16.44	16.44
F	=	303*X2			2665	1766	2079	2799
Td	=	1+(0.5/(1+M))			1.03	1.03	1.03	1.03
Fc	=	0.21*Td(1+0.2*X2)			0.60	0.47	0.51	0.62
Qe	=	K(F-Fc*Qc)		AM	1880	1216	1371	2824
				PM	1904	1176	1252	2779
DFC	=	Design flow/Capacity = Q/Qe		AM	0.32	0.61	0.32	0.45
				PM	0.46	0.55	0.42	0.42

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Kam Tin Bypass / Kam Ho Road
Description: Ref (with improvement) Date: Aug 2023 Designed by: EF
Design Year: #REF! File: Checked by: RL

				Description:	Kam Tin Bypass SB	Kam Tin Rd WB	Kam Ho Rd NB	Kam Tin Rd EB
Input:								
V	=	Approach half width (m)			6.5	7.3	9.0	7.3
E	=	Entry width (m)			11.0	10.0	10.0	11.0
L	=	Effective length of flare (m)			15.0	12.0	1.0	13.0
R	=	Entry radius (m)			42.5	70.0	20.0	42.5
D	=	Inscribed circle diameter (m)			88.0	88.0	88.0	88.0
A	=	Entry angle (degree)			39	30	38	29
Q	=	Entry flow (pcus/hr)		AM	659	837	54	2,275
				PM	940	740	97	1,781
Qc	=	Circulating flow across entry (pcus/hr)		AM	2,318	2,019	1,913	97
				PM	1,889	1,812	1,871	173
Output:								
S	=	Sharpness of flare = 1.6(E-V)/L			0.48	0.36	1.60	0.46
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.99	1.03	0.97	1.03
X2	=	V + ((E-V)/(1+2S))			8.80	8.87	9.24	9.24
M	=	EXP((D-60)/10)			16.44	16.44	16.44	16.44
F	=	303*X2			2665	2688	2799	2799
Td	=	1+(0.5/(1+M))			1.03	1.03	1.03	1.03
Fc	=	0.21*Td(1+0.2*X2)			0.60	0.60	0.62	0.62
Qe	=	K(F-Fc*Qc)		AM	1277	1530	1580	2819
				PM	1531	1657	1605	2771
DFC	=	Design flow/Capacity = Q/Qe		AM	0.52	0.55	0.03	0.81
				PM	0.61	0.45	0.06	0.64

ROUNDABOUT CAPACITY CALCULATION

RL CONSULTANCY LTD.

Junction: Kam Tin Road / Kam Tin Bypass / Kam Ho Road
Description: Design (with improveme Date: Aug 2023 Designed by: EF
Design Year: #REF! File: Checked by: RL

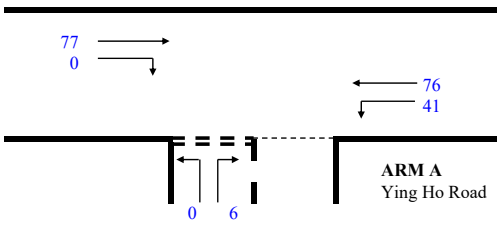
				Description:	Kam Tin Bypass SB	Kam Tin Rd WB	Kam Ho Rd NB	Kam Tin Rd EB
Input:								
V	=	Approach half width (m)			6.5	7.3	9.0	7.3
E	=	Entry width (m)			11.0	10.0	10.0	11.0
L	=	Effective length of flare (m)			15.0	12.0	1.0	13.0
R	=	Entry radius (m)			42.5	70.0	20.0	42.5
D	=	Inscribed circle diameter (m)			88.0	88.0	88.0	88.0
A	=	Entry angle (degree)			39	30	38	29
Q	=	Entry flow (pcus/hr)		AM	659	837	54	2,280
				PM	940	740	97	1,783
Qc	=	Circulating flow across entry (pcus/hr)		AM	2,323	2,023	1,918	97
				PM	1,891	1,814	1,873	173
Output:								
S	=	Sharpness of flare = 1.6(E-V)/L			0.48	0.36	1.60	0.46
K	=	1-0.00347(A-30)-0.978(1/R-0.05)			0.99	1.03	0.97	1.03
X2	=	V + ((E-V)/(1+2S))			8.80	8.87	9.24	9.24
M	=	EXP((D-60)/10)			16.44	16.44	16.44	16.44
F	=	303*X2			2665	2688	2799	2799
Td	=	1+(0.5/(1+M))			1.03	1.03	1.03	1.03
Fc	=	0.21*Td(1+0.2*X2)			0.60	0.60	0.62	0.62
Qe	=	K(F-Fc*Qc)		AM	1274	1527	1577	2819
				PM	1530	1656	1604	2771
DFC	=	Design flow/Capacity = Q/Qe		AM	0.52	0.55	0.03	0.81
				PM	0.61	0.45	0.06	0.64

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Ying Ho Road / Site Ingress & Egress
Description: Proposed Layout
Design Year: 2030 AM Reference

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	8.0 m
W cr	=	0.0 m
W b-a	=	4.0 m
W b-c	=	4.0 m
W c-b	=	0.0 m

Visibility

Vl b-a	=	85 m
Vr b-a	=	30 m
Vr b-c	=	85 m
Vr c-b	=	30 m

GEOMETRIC FACTORS :

D	=	0.9283
E	=	1.0004
F	=	0.6037
Y	=	0.7240

TRAFFIC FLOWS:

ARM A		
q a-b	=	41 pcus/hr
q a-c	=	76 pcus/hr
ARM B		
q b-a	=	6 pcus/hr
q b-c	=	0 pcus/hr
F for (Qb-ac)	=	0
ARM C		
q c-a	=	77 pcus/hr
q c-b	=	0 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	548
Q b-c	=	721
Q c-b	=	431
Q b-ac	=	548
Q b-c (O)	=	719

DESIGN FLOW/CAPACITY:

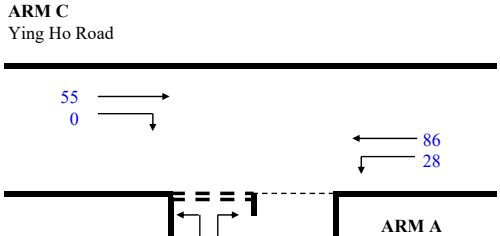
DFC b-a	=	0.0106
DFC b-c	=	0.0000
DFC c-b	=	0.0000
DFC b-c (share lane)	=	0.0081
CRITICAL DFC	=	**0.01**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Ying Ho Road / Site Ingress & Egress
Description: Proposed Layout
Design Year: 2030 PM Reference

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	8.0 m
W cr	=	0.0 m
W b-a	=	4.0 m
W b-c	=	4.0 m
W c-b	=	0.0 m

Visibility

Vl b-a	=	85 m
Vr b-a	=	30 m
Vr b-c	=	85 m
Vr c-b	=	30 m

GEOMETRIC FACTORS :

D	=	0.9283
E	=	1.0004
F	=	0.6037
Y	=	0.7240

TRAFFIC FLOWS:

ARM A		
q a-b	=	28 pcus/hr
q a-c	=	86 pcus/hr
ARM B		
q b-a	=	2 pcus/hr
q b-c	=	0 pcus/hr
F for (Qb-ac)	=	0
ARM C		
q c-a	=	55 pcus/hr
q c-b	=	0 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	550
Q b-c	=	720
Q c-b	=	432
Q b-ac	=	550
Q b-c (O)	=	719

DESIGN FLOW/CAPACITY:

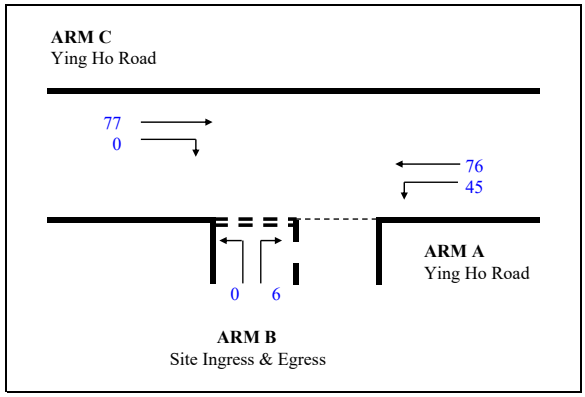
DFC b-a	=	0.0044
DFC b-c	=	0.0000
DFC c-b	=	0.0000
DFC b-c (share lane)	=	0.0033
CRITICAL DFC	=	**0.00**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Ying Ho Road / Site Ingress & Egress
Description: Proposed Layout
Design Year: 2030 AM Design

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	8.0 m
W cr	=	0.0 m
W b-a	=	4.0 m
W b-c	=	4.0 m
W c-b	=	0.0 m

Visibility

Vl b-a	=	85 m
Vr b-a	=	30 m
Vr b-c	=	85 m
Vr c-b	=	30 m

GEOMETRIC FACTORS :

D	=	0.9283
E	=	1.0004
F	=	0.6037
Y	=	0.7240

TRAFFIC FLOWS:

ARM A		
q a-b	=	45 pcus/hr
q a-c	=	76 pcus/hr
ARM B		
q b-a	=	6 pcus/hr
q b-c	=	0 pcus/hr
F for (Qb-ac)	=	0
ARM C		
q c-a	=	77 pcus/hr
q c-b	=	0 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	547
Q b-c	=	721
Q c-b	=	431
Q b-ac	=	547
Q b-c (O)	=	719

DESIGN FLOW/CAPACITY:

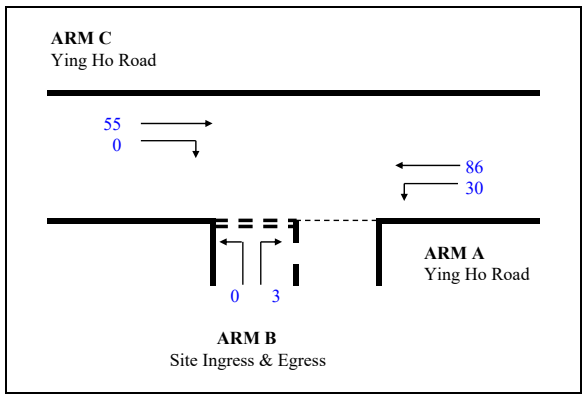
DFC b-a	=	0.0115
DFC b-c	=	0.0000
DFC c-b	=	0.0000
DFC b-c (share lane)	=	0.0088
CRITICAL DFC	=	**0.01**

PRIORITY JUNCTION CALCULATION

RL CONSULTANCY LTD.

Junction: Ying Ho Road / Site Ingress & Egress
Description: Proposed Layout
Design Year: 2030 PM Design

Designed by: NL
Checked by: RL



Notes:
- 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
- D = Stream-specific b-a
- E = Stream-specific b-c
- F = Stream-specific c-b
- Y = (1-0.0345W)

GEOMETRIC DETAILS:

Road Widths

W	=	8.0 m
W cr	=	0.0 m
W b-a	=	4.0 m
W b-c	=	4.0 m
W c-b	=	0.0 m

Visibility

Vl b-a	=	85 m
Vr b-a	=	30 m
Vr b-c	=	85 m
Vr c-b	=	30 m

GEOMETRIC FACTORS :

D	=	0.9283
E	=	1.0004
F	=	0.6037
Y	=	0.7240

TRAFFIC FLOWS:

ARM A		
q a-b	=	30 pcus/hr
q a-c	=	86 pcus/hr
ARM B		
q b-a	=	3 pcus/hr
q b-c	=	0 pcus/hr
F for (Qb-ac)	=	0
ARM C		
q c-a	=	55 pcus/hr
q c-b	=	0 pcus/hr

THE CAPACITY OF MOVEMENT :

Q b-a	=	550
Q b-c	=	719
Q c-b	=	431
Q b-ac	=	550
Q b-c (O)	=	718

DESIGN FLOW/CAPACITY:

DFC b-a	=	0.0047
DFC b-c	=	0.0000
DFC c-b	=	0.0000
DFC b-c (share lane)	=	0.0036
CRITICAL DFC	=	**0.00**

Annex B

Detailed GFA Calculations

TABLE SHOWING G.F.A. CALCULATION FOR RESIDENTIAL PARKING SPACE (T1)

LOCATION		G.F.A. OF EACH RESIDENTIAL UNIT (BEFORE EXEMPTION ON 10% OF THE MiC FLOOR AREA)	MiC FLOOR AREA OF EACH RESIDENTIAL UNIT	EXEMPTION ON 10% OF THE MiC FLOOR AREA	G.F.A. OF EACH RESIDENTIAL UNIT (AFTER EXEMPTION ON 10% OF THE MiC FLOOR AREA)	THE PRO-RATA G.F.A. OF THE RESIDENTIAL COMMON AREA		SIZE OF EACH RESIDENTIAL UNIT	UNIT	NOS. OF TOTAL RESIDENTIAL UNIT					
										<40s.m.	>40s.m. - <70s.m.	>70s.m. - <100s.m.	>100s.m. - <130s.m.	>130s.m. - <160s.m.	>160s.m.
2F	A	35.492	34.066	3.407	32.085	4216.687 / 19082.063	7.090	39.176	1	1					
	B	29.051	28.964	2.896	26.155		5.780	31.934	1	1					
	C	29.052	29.052	2.905	26.147		5.778	31.925	1	1					
	D	31.659	31.659	3.166	28.493		6.296	34.789	1	1					
	E	31.456	31.456	3.146	28.310		6.256	34.566	1	1					
	F	33.444	33.444	3.344	30.100		6.651	36.751	1	1					
	G	33.434	33.434	3.343	30.091		6.649	36.740	1	1					
	H	24.031	24.031	2.403	21.628		4.779	26.407	1	1					
	J	23.456	23.456	2.346	21.110		4.665	25.775	1	1					
	K	31.771	31.387	3.139	28.632		6.327	34.959	1	1					
	L	31.558	31.158	3.116	28.442		6.285	34.727	1	1					
	M	31.716	31.716	3.172	28.544		6.308	34.852	1	1					
	N	31.849	31.849	3.185	28.664		6.334	34.998	1	1					
	P	29.027	29.027	2.903	26.124		5.773	31.897	1	1					
	Q	49.627	49.627	4.963	44.664		9.870	54.534	1		1				
	R	42.259	41.990	4.199	38.060		8.410	46.470	1		1				
	S	35.329	33.617	3.362	31.967		7.064	39.031	1	1					
3F-19F (14 Storeys)	A	37.242	35.816	3.582	33.660		7.438	41.099	14		14				
	B	30.801	30.714	3.071	27.730		6.128	33.857	14	14					
	C	30.802	30.802	3.080	27.722		6.126	33.848	14	14					
	D	33.409	33.409	3.341	30.068		6.644	36.712	14	14					
	E	33.206	33.206	3.321	29.885		6.604	36.489	14	14					
	F	35.194	35.194	3.519	31.675		6.999	38.674	14	14					
	G	35.184	35.184	3.518	31.666		6.997	38.663	14	14					
	H	25.781	25.781	2.578	23.203		5.127	28.330	14	14					
	J	25.206	25.206	2.521	22.685		5.013	27.698	14	14					
	K	33.521	33.137	3.314	30.207		6.675	36.882	14	14					
	L	33.308	32.908	3.291	30.017		6.633	36.650	14	14					
	M	33.466	33.466	3.347	30.119		6.656	36.775	14	14					
	N	33.599	33.599	3.360	30.239		6.682	36.921	14	14					
	P	30.777	30.777	3.078	27.699		6.121	33.820	14	14					
	Q	51.377	51.377	5.138	46.239		10.218	56.457	14		14				
	R	44.009	43.740	4.374	39.635		8.758	48.393	14		14				
	S	37.079	35.367	3.537	33.542		7.412	40.954	14		14				
									255	197	58				

TABLE SHOWING G.F.A. CALCULATION FOR RESIDENTIAL PARKING SPACE (T2)

LOCATION		G.F.A. OF EACH RESIDENTIAL UNIT (BEFORE EXEMPTION ON 10% OF THE MiC FLOOR AREA)	MiC FLOOR AREA OF EACH RESIDENTIAL UNIT	EXEMPTION ON 10% OF THE MiC FLOOR AREA	G.F.A. OF EACH RESIDENTIAL UNIT (AFTER EXEMPTION ON 10% OF THE MiC FLOOR AREA)	THE PRO-RATA G.F.A. OF THE RESIDENTIAL COMMON AREA		SIZE OF EACH RESIDENTIAL UNIT	UNIT	NOS. OF TOTAL RESIDENTIAL UNIT					
										<40s.m.	>40s.m. - <70s.m.	>70s.m. - <100s.m.	>100s.m. - <130s.m.	>130s.m. - <160s.m.	>160s.m.
2F	A	35.465	34.040	3.404	32.061	4216.687 / 19082.063	7.085	39.146	1	1					
	B	31.227	31.227	3.123	28.104		6.210	34.315	1	1					
	C	23.728	23.685	2.369	21.360		4.720	26.079	1	1					
	D	33.546	33.588	3.359	30.187		6.671	36.858	1	1					
	E	33.649	33.509	3.351	30.298		6.695	36.993	1	1					
	F	31.772	31.382	3.138	28.634		6.327	34.961	1	1					
	G	31.759	31.257	3.126	28.633		6.327	34.961	1	1					
	H	32.739	32.739	3.274	29.465		6.511	35.976	1	1					
	J	29.049	29.049	2.905	26.144		5.777	31.921	1	1					
	K	48.557	48.557	4.856	43.701		9.657	53.358	1		1				
	L	42.108	40.801	4.080	38.028		8.403	46.431	1		1				
	M	35.353	33.640	3.364	31.989		7.069	39.058	1	1					
3F-19F (14 Storeys)	A	37.215	37.215	3.722	33.494		7.401	40.895	14		14				
	B	32.977	32.977	3.298	29.679		6.558	36.238	14	14					
	C	25.478	25.478	2.548	22.930		5.067	27.997	14	14					
	D	35.296	35.296	3.530	31.766		7.020	38.786	14	14					
	E	35.399	35.399	3.540	31.859		7.040	38.899	14	14					
	F	33.522	33.522	3.352	30.170		6.667	36.837	14	14					
	G	33.509	33.509	3.351	30.158		6.664	36.822	14	14					
	H	34.489	34.489	3.449	31.040		6.859	37.899	14	14					
	J	30.799	30.799	3.080	27.719		6.125	33.844	14	14					
	K	50.307	50.307	5.031	45.276		10.005	55.281	14		14				
	L	43.858	43.858	4.386	39.472		8.722	48.195	14		14				
	M	37.103	37.103	3.710	33.393		7.379	40.772	14		14				
									180	122	58				

TABLE SHOWING G.F.A. CALCULATION FOR RESIDENTIAL PARKING SPACE (T3)

LOCATION		G.F.A. OF EACH RESIDENTIAL UNIT (BEFORE EXEMPTION ON 10% OF THE MiC FLOOR AREA)	MiC FLOOR AREA OF EACH RESIDENTIAL UNIT	EXEMPTION ON 10% OF THE MiC FLOOR AREA	G.F.A. OF EACH RESIDENTIAL UNIT (AFTER EXEMPTION ON 10% OF THE MiC FLOOR AREA)	THE PRO-RATA G.F.A. OF THE RESIDENTIAL COMMON AREA		SIZE OF EACH RESIDENTIAL UNIT	UNIT	NOS. OF TOTAL RESIDENTIAL UNIT					
										<40s.m.	>40s.m. - <70s.m.	>70s.m. - <100s.m.	>100s.m. - <130s.m.	>130s.m. - <160s.m.	>160s.m.
2F	A	35.415	33.690	3.369	32.046	4216.687 / 19082.063	7.081	39.127	1	1					
	B	31.595	31.215	3.122	28.474		6.292	34.765	1	1					
	C	33.668	33.668	3.367	30.301		6.696	36.997	1	1					
	D	33.578	33.578	3.358	30.220		6.678	36.898	1	1					
	E	31.819	31.819	3.182	28.637		6.328	34.965	1	1					
	F	31.768	31.768	3.177	28.591		6.318	34.909	1	1					
	G	29.033	29.033	2.903	26.130		5.774	31.904	1	1					
	H	29.033	29.033	2.903	26.130		5.774	31.904	1	1					
	J	23.849	23.614	2.361	21.488		4.748	26.236	1	1					
	K	33.464	33.464	3.346	30.118		6.655	36.773	1	1					
	L	33.537	32.383	3.238	30.299		6.695	36.994	1	1					
	M	35.461	33.722	3.372	32.089		7.091	39.180	1	1					
3F-19F (14 Storeys)	A	37.165	35.440	3.544	33.621		7.429	41.050	14		14				
	B	33.345	32.965	3.297	30.049		6.640	36.689	14	14					
	C	35.418	35.418	3.542	31.876		7.044	38.920	14	14					
	D	35.328	35.328	3.533	31.795		7.026	38.821	14	14					
	E	33.569	33.569	3.357	30.212		6.676	36.888	14	14					
	F	33.518	33.518	3.352	30.166		6.666	36.832	14	14					
	G	30.783	30.783	3.078	27.705		6.122	33.827	14	14					
	H	30.783	30.783	3.078	27.705		6.122	33.827	14	14					
	J	25.599	25.364	2.536	23.063		5.096	28.159	14	14					
	K	35.214	35.214	3.521	31.693		7.003	38.696	14	14					
	L	35.287	33.881	3.388	31.899		7.049	38.948	14	14					
	M	37.211	35.347	3.535	33.676		7.442	41.118	14		14				
									180	152	28				

NOS. OF CARPARK REQUIRED

SIZE OF EACH RESIDENTIAL UNIT	NOS. OF UNITS	NO. OF THE RESIDENTIAL PARKING SPACES TO BE PROVIDED	NOS. OF CARPARK REQUIRED
LESS THAN 40 s.m.	197 + 122 + 152 471	ONE SPACE FOR EVERY 7.27 RESIDENTIAL FLATS OR PART THEREOF	65
NOT LESS THAN 40 s.m. BUT LESS THAN 70 s.m.	58 + 58 + 28 144	ONE SPACE FOR EVERY 3.03 RESIDENTIAL FLATS OR PART THEREOF	48
NOT LESS THAN 70 s.m. BUT LESS THAN 100 s.m.		ONE SPACE FOR EVERY 1.52 RESIDENTIAL FLATS OR PART THEREOF	
NOT LESS THAN 100 s.m. BUT LESS THAN 130 s.m.		ONE SPACE FOR EVERY 0.89 RESIDENTIAL FLATS OR PART THEREOF	
NOT LESS THAN 130 s.m. BUT LESS THAN 160 s.m.		ONE SPACE FOR EVERY 0.66 RESIDENTIAL FLATS OR PART THEREOF	
NOT LESS THAN 160 s.m.		ONE SPACE FOR EVERY 0.52 RESIDENTIAL FLATS OR PART THEREOF	
TOTAL	615	TOTAL	113