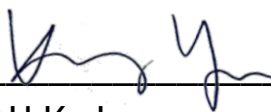




Traffic Impact of Existing Columbarium

TIA Report Issue 4

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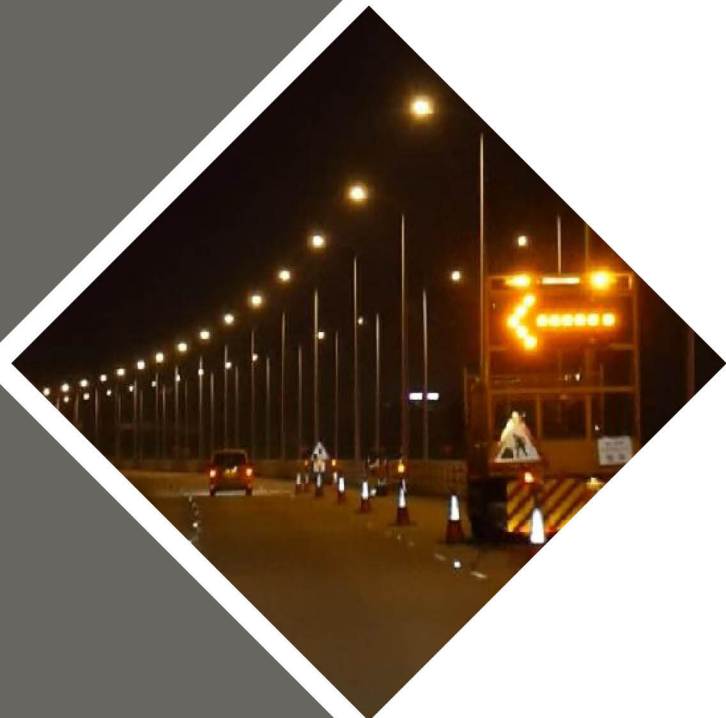


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1 INTRODUCTION

1.1 Background

- 1.1.1 The existing columbarium 自由福居, hereinafter referred to as “the columbarium”, lies at the northern side of Tong To Ping Tsuen. It is located at Lots 1422 S.B(Part) and 1423 S.B (Part) in D.D.41, Tong To.
- 1.1.2 The history of the columbarium can be traced back to 1988, it can accommodate a maximum of 864 niches and currently 60 niches of them have been occupied.
- 1.1.3 In order to facilitate the application for amendment of the approved Sha Tau Kok Outline Zoning Plan No. S/NE-STK/2 from “Village Type Development” and “Recreation” to “Other Specified Uses” annotated “Columbarium”, KAP Consultants Limited is commissioned by the operator of the columbarium to study the traffic impact induced by the existing columbarium.

1.2 Structure of this TIA Report

1.2.1 The structure of this report is as follows:

- Section 1 introduces the background and the purpose of this TIA Report;
- Section 2 describes the general information of the concerned columbarium;
- Section 3 describes the existing road network and public transport facilities;
- Section 4 evaluates the existing traffic condition;
- Section 5 forecasts the future traffic condition;
- Section 6 summarizes and concludes the findings of this TIA Report.

2 THE COLUMBARIUM

2.1 General

- 2.1.1 The opening hour of the columbarium is 0900 - 1600 daily. During Ching Ming Festival, Chung Yeung Festival and their shadow periods (two weekends before and two weekends after Ching Ming Festival and Chung Yeung Festival), the opening hour will be revised to 0800 - 1800.
- 2.1.2 The vehicular access of the columbarium (Tong To Ping Tsuen Access Road) adjoins Tong To Shan Private Road, which branches out from Sha Tau Kok Road – Shek Chung Au. The location of the columbarium and the road network in the vicinity is shown in **Figure 2.1 of Appendix A**.
- 2.1.3 There are no public parking facilities along Tong To Ping Tsuen Access Road and Tong To Shan Private Road. All visitors need to access the subject site by shuttle bus at Sha Tau Kok Road – Shek Chung Au near L/P EA1809 provided by the columbarium or walk to the Columbarium from Sha Tau Kok Road – Shek Chung Au.
- 2.1.4 The location of the shuttle bus pick-up and drop-off points are shown in **Figure 2.2 of Appendix A**. The Area of Influence, which covers the critical road junctions and road networks affected by the columbarium, is also illustrated in the same figure for reference.
- 2.1.5 For effective control of vehicular and pedestrian traffic of the columbarium and compliance to the Code of Practice for Fire Safety in Buildings, a crowd control measures will be implemented during Ching Ming Festival, Chung Yeung Festival and their shadow periods. The measures will be stated in the House Rules and the niche purchasers must accept the House Rules at the time of purchase. The House Rules include:
- (a) Visitors can only visit the columbarium in the registered time slot;
 - (b) The registration must be completed at least 7 days before the visiting date;
 - (c) The time slot duration is 20 minutes. Each time slot allows a maximum of 5 families (number of visitors of each family is limited to 4);
 - (d) No parking nor pick-up/drop-off activities is allowed at Tong To Ping Tsuen Access Road and Tong To Shan Private Road. The contract of the respective niche will be terminated if the family violate the rule;
 - (e) Visitors can access the columbarium by shuttle bus (during Ching Ming Festival, Chung Yeung Festival and shadow period only), or walk to the columbarium from Sha Tau Kok Road – Shek Chung Au by taking franchised bus / green minibus or taxi services.

3 EXISTING STREET INVENTORY

3.1 Road Network

- 3.1.1 The columbarium is located at the unnamed local access road (Named as Tong To Ping Tsuen Access Road in this report for better distinction). It is a 3.5m wide two-way single track local access road connecting Tong To Ping Tsuen with another unnamed local access road (Named as Tong To Shan Private Road in this report for better distinction). Tong To Ping Tsuen Access Road and Tong To Shan Private Road is connected by a simple priority junction.
- 3.1.2 Tong To Shan Private Road is a 3.5m wide two-way single track local access road branched out from Sha Tau Kok Road - Shek Chung Au. Passing bays are provided along Tong To San Private Road. Tong To Shan Private Road and Sha Tau Kok Road - Shek Chung Au is connected by a simple priority junction.
- 3.1.3 Sha Tau Kok Road - Shek Chung Au is a 7.3m wide single two-lane rural road connecting Wo Hang with Sha Tau Kok. Based on the Annual Traffic Census 2019, the A.A.D.T. of Sha Tau Kok Road (section between Ping Che Road and Shun Lung St) is 6,570 vehicles. Extract of the Annual Traffic Census 2019 is shown in **Appendix C** of this report.

3.2 Public Transport Facilities

- 3.2.1 There are 3 franchised bus routes and 1 GMB route running along Sha Tau Kok Road - Shek Chung Au. The franchised bus stop and GMB stop are located near its junction with Tong To Shan Private Road, which is approximately 500m (about 7-minute walk) away from the columbarium.
- 3.2.2 The details of the franchised bus routes and GMB route are tabulated in Table 3.1.

Table 3.1 Public Transport Service

Route	Destination	Headways on Public Holiday
GMB 55K (N.T.)	Sheung Shui Station – Sha Tau Kok (Shun Lung Street)	4 – 20 min
KMB 78	Sha Tau Kok – Fanling Station (Fuk Ying Seen Koon)	Service during weekdays only
KMB 78K	Sheung Shui (Tai Ping)/ Sheung Shui – Sha Tau Kok	15-30 min
KMB 277A	Sha Tau Kok – Lam Tin Station	60 min (5 AM trips from Sha Tau Kok; 5 PM trips from Lam Tin Station)

4 EXISTING TRAFFIC CONDITION

4.1 Classified Vehicular Count Survey

4.1.1 Based on the Classified Vehicular Count Survey conducted by FEHD in 2018 (FEHD project “*Service for a counting survey of road junctions (vehicular traffic) and access points (pedestrian traffic) to be conducted around 2018 Ching Ming Festival in respect of a Designated List of Private Columbarium*”), two priority junctions as mentioned in Section 3.1 are selected to assess the traffic impact brought by the columbarium.

4.1.2 The classified vehicular count survey was taken on Sunday during the period of Ching Ming Festival from 08:30 to 16:30, the peak hours of respective priority junctions are tabulated in Table 4.1.

Table 4.1 Details of priority junction

Junction No.	Junction Ref in FEHD report	Intersection of	Peak Hour
J1	JCT21.1	Tong To Ping Tsuen Access Road / Tong To Shan Private Road	08:45 – 09:45
J2	JCT21.2	Tong To Shan Private Road / Sha Tau Kok Road - Shek Chung Au	09:45 – 10:45

4.1.3 In parallel, we also conducted a Classified Vehicular Count Survey at the same locations in Chung Yeung Festival 2020 to validate FEHD’s surveyed data. The data is in line with the FEHD one and finally the data collected by FEHD was adopted in this TIA report as it gave a more conservative result.

4.1.4 The location of the Classified Vehicular Count Survey and its survey data extracted from FEHD’s website are attached in **Appendix C** of this report.

4.2 Operational Assessment

Junction Performance Analysis

4.2.1 In order to assess the traffic impact brought by the columbarium, the junction performances of the two concerned junctions during peak hour are calculated.

4.2.2 The Design Flow/Capacity Ratio (DFC) used to evaluate the junction performance is based on the calculations shown in Appendix of Chapter 4 of “Transport Planning and Design Manual (TPDM) 2020 Volume 2”.

4.2.3 The flow net and the detailed calculation are attached in **Figure 4.1** of **Appendix A** and **Appendix B** respectively. The results of the DFCs are summarized in Table 4.2.

Table 4.2 Junction Performance – DFC (existing condition)

Junction No.	Arm	DFC _{B-AC}	DFC _{C-B}
J1	Arm A – Tong To Shan Private Road Arm B – Tong To Ping Tsuen Access Road Arm C – Tong To Shan Private Road	0.01	0.00
Junction No.	Arm	DFC _{B-AC}	DFC _{C-B}
J2	Arm A – Sha Tau Kok Road - Shek Chung Au Arm B – Tong To Shan Private Road Arm C – Sha Tau Kok Road - Shek Chung Au	0.02	0.00

4.2.4 The values of DFC_{B-AC} (represent the flow turning out from minor road) are only 1% (J1) and 2% (J2) and the values of DFC_{C-B} (represent the right-turning flow turning from major road to minor road) of both junctions are 0%, the result indicated that both junctions operated satisfactorily where the traffic giving way at the junction will not adversely impede the mainstream traffic.

Road Links Performance Analysis

4.2.5 In order to assess the traffic impact brought by the columbarium, the road link performances of Sha Tau Kok Road – Shek Chung Au and Tong To Shan Private Road during peak hour of existing traffic condition are calculated.

4.2.6 The Peak Hourly Flows/Design Flow Ration (P/Df) used to evaluate the road link performance is based on the calculations shown in Chapter 2 of “Transport Planning and Design Manual (TPDM) 2020 Volume 2”.

4.2.7 The P/Df values of the abovementioned road section are tabulated in Table 4.3.

Table 4.3 Road Link Performance – P/Df (existing condition)

	Tong To Shan Private Road	Sha Tau Kok Road – Shek Chung Au	
	Both Bound	E/B	W/B
Design Flow (veh/hr)	100	850	850
Reduction Factor due to heavy vehicles (veh/hr)	10%	10%	7%
Adjusted Design Flow (veh/hr)	90	765	791
Peak Hourly Flow (veh/hr)	10	166	161
P/Df Ratio	0.11	0.22	0.20

4.2.8 Since all the P/Df ratio are less than 0.3, the assessed road sections are all in free flow conditions, implicating the travel speeds at the free-flow speed generally prevail and the ability to manoeuvre with traffic stream are almost unimpeded.

Public Transport Occupancy Analysis

4.2.9 Based on the peak hour recorded in 2020 Chung Yeung Festival, Public Transport Occupancy Survey was conducted again in 2023 Ching Ming Festival (5 April 2023) at the following GMB stops and franchised bus stops.

Route	Survey Location	Survey Time
GMB 55K (East bound)	Sheung Shui Station (Terminus)	09:45-10:45
KMB 78K (East bound)	On-board passenger count	10:00, 10:20 and 10:40
GMB 55K (West bound)	Tong To GMB stop at Sha Tau Kok Rd – Shek Chung Au	08:30-13:00
KMB 78K (West bound)	Tong To bus stop at Sha Tau Kok Rd – Shek Chung Au	08:30-13:00
KMB 277A (West bound)	Tong To bus stop at Sha Tau Kok Rd – Shek Chung Au	08:30-13:00

4.2.10 Table 4.3 and 4.4 tabulated the public transport occupancy of each bound in 2023 during the peak hour recorded in 2020 Chung Yeung Festival.

Table 4.3 Public Transport Occupancy (East bound in existing condition)

Route	Number of Trips Observed	Observed Passenger Flow (pax/hr)	Maximum Capacity* (pax/hr)	Available Capacity (pax/hr)	Public Transport Occupancy
GMB 55K (East bound)	15	198	285	87	69.5%
KMB 78K (East bound)	3	160 [#]	405	245	39.5%
Total:		258	690	432	37.4%

* The adopted passenger capacity of GMB and KMB are 19 pax/veh and 135 pax/veh respectively. Maximum capacity is the product of passenger capacity and no. of vehicle **observed** in an hour (i.e. 19 pax/veh *15 veh/hr in GMB)

[#] Observed passenger flow of 78K is the summation of max no.of passenger on board during whole trip of the three runs 10:00, 10:20 and 10:40

Table 4.4 Public Transport Occupancy (West bound in existing condition)

Route	Number of Trips Observed	Observed Passenger Flow (pax/hr)	Maximum Capacity* (pax/hr)	Available Capacity (pax/hr)	Public Transport Occupancy
GMB 55K (West bound)	15	126	285	159	44.2%
KMB 78K (West bound)	3	17	405	388	4.2%
KMB 277A (West bound)	1	1	135	134	0.7%
Total:		144	825	681	17.5%

*The adopted passenger capacity of GMB and KMB are 19 pax/veh and 135 pax/veh respectively

4.2.11 The survey result revealed that the public transport occupancies are 37.4% (east bound) and 17.5% (west bound) of its maximum capacity during the peak hour of Ching Ming Festival.

Level of Service of Shuttle Bus Pick-up and Drop-off Point

4.2.12 The shuttle bus pick-up and drop-off point is located at Sha Tau Kok Road – Shek Chung Au (near lamppost EA1809), which is the lay-by of ex-boundary control point.

4.2.13 With the approval of HKPF and TD, the lay-by was used as the pick-up and drop-off point of the point-to-point columbarium shuttle bus service during Ching Ming Festival and its shadow period in Year 2020. The service was operated efficiently without causing adverse impact to both pedestrian and vehicular traffic.

4.2.14 In order to evaluate the queuing condition of the shuttle bus pick-up and drop-off point, Level of Service of the queuing area during peak hour of Chung Yeung Festival and Ching Ming Festival are calculated.

4.2.15 Level of Service (LOS) of the pick-up and drop-off point, which the calculations are based on Highway Capacity Manual, is tabulated in Table 4.5.

Table 4.5 Level of Service

Waiting Area* (m ²)	Passenger*	Average Passenger Area Occupancy (m ² /pax)	Level of Service
143	60	2.38	A

* 1.5m wide footpath have been excluded in the calculation.

**Assumed all visitors of 3 consecutives visiting time slot arrived at the same time.

4.2.16 The average passenger area occupancy of the pick-up and drop off point is 2.38 m²/pax, which is far above the crush capacity (0.288 m²/pax) as stipulated in the TPDM. According



to Highway Capacity Manual, area with LOS A allows standing and free circulation through the queuing area without disturbing others within the queue.

5 FORECASTED TRAFFIC CONDITION

5.1 Full operation of columbarium

- 5.1.1 Since the traffic data taken in Year 2018 can only reflect the traffic impact brought by the 60 occupied niches, the traffic impact when all the niches (864 numbers) are occupied will be considered in this section.
- 5.1.2 In accordance with the House Rules as specified in paragraph 2.1.5, all visitors can only visit the columbarium in the registered time slot and travel to the subject site by shuttle bus provided by the operator of columbarium. Therefore, the headway of the shuttle bus service governs the traffic flow accessing the columbarium.
- 5.1.3 The point-to-point shuttle bus service, provided during Ching Ming Festival and its shadow period in Year 2020, was operated from 0800 to 1800 with the headway at 20 minutes. Shuttle bus service with similar scheduled will continued to be provided in the future.

5.2 Generated / Attracted Traffic Flow

- 5.2.1 Trip generated / attracted by a particular site depends largely on its geographic location, traffic network in the vicinity and coverage of public transport, a travel mode survey was therefore conducted to help identifying the choice of transport mode of current visitors, and to form a basis to forecast the mode choice of visitors in future.
- 5.2.2 According to replies of the survey, visitors used either GMB or franchised bus to the columbarium, depending on the availability of these public transports. Therefore, the modal split is governed by the headway of existing GMB route and franchised bus routes.
- 5.2.3 Due to good coverage of existing GMB/KMB routes and the remoteness of the columbarium from city centre, taxi was a rare mode choice for the visitors. However, a 5% of modal split is re-allocated to taxi in the forecast traffic condition in order to give a more conservative result.
- 5.2.4 In view of no physical parking space for the visitors and the enactment of House Rules as specified in paragraph 2.1.5, no private car should be generated / attracted by the columbarium. However, a 5% of modal split is re-allocated to private car in the forecast traffic condition to simulate an abnormal condition that 5% of visitors accidentally drive their private cars to the columbarium.

5.2.5 The modal split to be adopted in this section is summarised as follows:

Mode of Transport	Percentage (Surveyed)	Percentage (Forecast)	Visitors/peak hour (Forecast)
GMB	89%	79%	47.4
Franchised Bus	11%	11%	6.6
Taxi	0%	5%	3
Private Car	0%	5%	3

5.2.6 Assuming the passenger occupancy of GMB, taxi and private car are 19, 2 and 2, the additional traffic to be generated/attracted by the columbarium are therefore 3 GMB/hour (4.5 pcu/hr), 2 taxis/hour (2 pcu/hr), 1 private car/hour (1 pcu/hr) as well as 3 shuttle bus/hour (4.5 pcu/hr).

5.3 Future Background Traffic Flow

5.3.1 Year 2025 will be used as the assessment year.

5.3.2 Having reviewed the planning development, there are no major changes in the local development and road network in the vicinity of the subject site. The traffic forecast is therefore derived based on the historical traffic data from the Annual Traffic Census (ATC) published by Transport Department. The Annual Average Daily Traffic (AADT) of the related station from ATC 2014 to ATC 2019 were tabulated as follows:

Year	AADT of Sha Tau Kok Road (Section btw Ping Che Rd & Shun Lung St)	Percentage Change (compared with previous year)
2014	6370	N/A
2015	6320	-0.8%
2016	6550	+3.7%
2017	6460	-1.4%
2018	6620	+2.5%
2019	6570	-0.7%

* ATC on 2020 and 2021 are ignored in the forecast due to the effect of COVID

5.3.3 The annual average traffic growth from is approximate +0.62%. For the purpose of a conservative assessment, an annual traffic growth of 1% will be applied on the background traffic.

5.4 Operational Assessment

Junction Performance Analysis

5.4.1 The flow net and the detailed calculation are attached in **Figure 5.1** of **Appendix A** and **Appendix B** respectively. With the incorporation of generated/attracted traffic as well as the

1% annual traffic growth, the results of Design Flow/Capacity Ratio are summarized in Table 5.1.

Table 5.1 Junction Performance – DFC in Year 2025

Junction No.	Arm	DFC _{B-AC}	DFC _{C-B}
J1	Arm A – Tong To Shan Private Road Arm B – Tong To Ping Tsuen Access Road Arm C – Tong To Shan Private Road	0.02	0.00
J2	Arm A – Sha Tau Kok Road - Shek Chung Au Arm B – Tong To Shan Private Road Arm C – Sha Tau Kok Road - Shek Chung Au	0.03	0.00

5.4.2 Comparing with the DFC values in existing traffic condition, the values of DFC_{B-AC} (represent the flow turning out from minor road) in Year 2025 are increased by 1%, the DFC_{B-AC} values are still very low (i.e. 2% in J1 and 3% in J2) that the change in traffic condition are unnoticeable.

Road Links Performance Analysis

5.4.3 In order to assess the traffic impact brought by the columbarium, the road link performances of Sha Tau Kok Road – Shek Chung Au and Tong To Shan Private Road during peak hour in Year 2025 are calculated.

5.4.4 The Peak Hourly Flows/Design Flow Ration (P/Df) used to evaluate the road link performance is based on the calculations shown in Chapter 2 of “Transport Planning and Design Manual (TPDM) 2020 Volume 2”.

5.4.5 The P/Df values of the abovementioned road section are tabulated in Table 5.2

Table 5.2 Road Link Performance – P/Df in Year 2025

	Tong To Shan Private Road	Sha Tau Kok Road – Shek Chung Au	
	N/B	E/B	W/B
Design Flow (veh/hr)	100	850	850
Reduction Factor due to heavy vehicles (veh/hr)	10%	10%	7%
Adjusted Design Flow (veh/hr)	90	765	791
Peak Hourly Flow (veh/hr)	16	183	178
P/Df Ratio	0.18	0.24	0.23

5.4.6 Since all the P/Df ratio are less than 0.3, the assessed road sections are all in free flow conditions, implicating the travel speeds at the free-flow speed generally prevail and the ability to manoeuvre with traffic stream are almost unimpeded.

Public Transport Occupancy Analysis

5.4.7 Table 5.3 and 5.4 tabulated the Forecast Public Transport Occupancy of each bound during the peak hour of Ching Ming Festival, Chung Yeung Festival and their shadow periods in Year 2025. The forecast passenger flow is the sum of the Observed Passenger Flow in Table 4.3 /Table 4.4 and forecasted visitors/peak hour in Para 5.2.5.

Table 5.3 Forecast Public Transport Occupancy (East bound in Year 2025)

Route	Forecast Passenger Flow (pax/hr)	Maximum Capacity* (pax/hr)	Available Capacity (pax/hr)	Forecast Public Transport Occupancy
GMB 55K (East bound)	245	285	40	86%
KMB 78K (East bound)	167	405	238	41.2%
Total:	412	690	278	59.7%

*The adopted passenger capacity of GMB and KMB are 19 pax/veh and 135 pax/veh respectively

Table 5.4 Forecast Public Transport Occupancy (West bound in Year 2025)

Route	Forecast Passenger Flow (pax/hr)	Maximum Capacity* (pax/hr)	Available Capacity (pax/hr)	Forecast Public Transport Occupancy
GMB 55K (West bound)	173	285	112	60.7%
KMB 78K (West bound)	24	405	381	5.9%
KMB 277A (West bound)	1	135	134	0.7%
Total:	198	825	627	24%

*The adopted passenger capacity of GMB and KMB are 19 pax/veh and 135 pax/veh respectively

5.4.8 The assessment revealed that the public transport occupancies are 59.7% (east bound) and 24% (west bound) of its maximum capacity during the peak hour of Ching Ming Festival, Chung Yeung Festival and their shadow periods in Year 2025.

6 SUMMARY

6.1 Summary

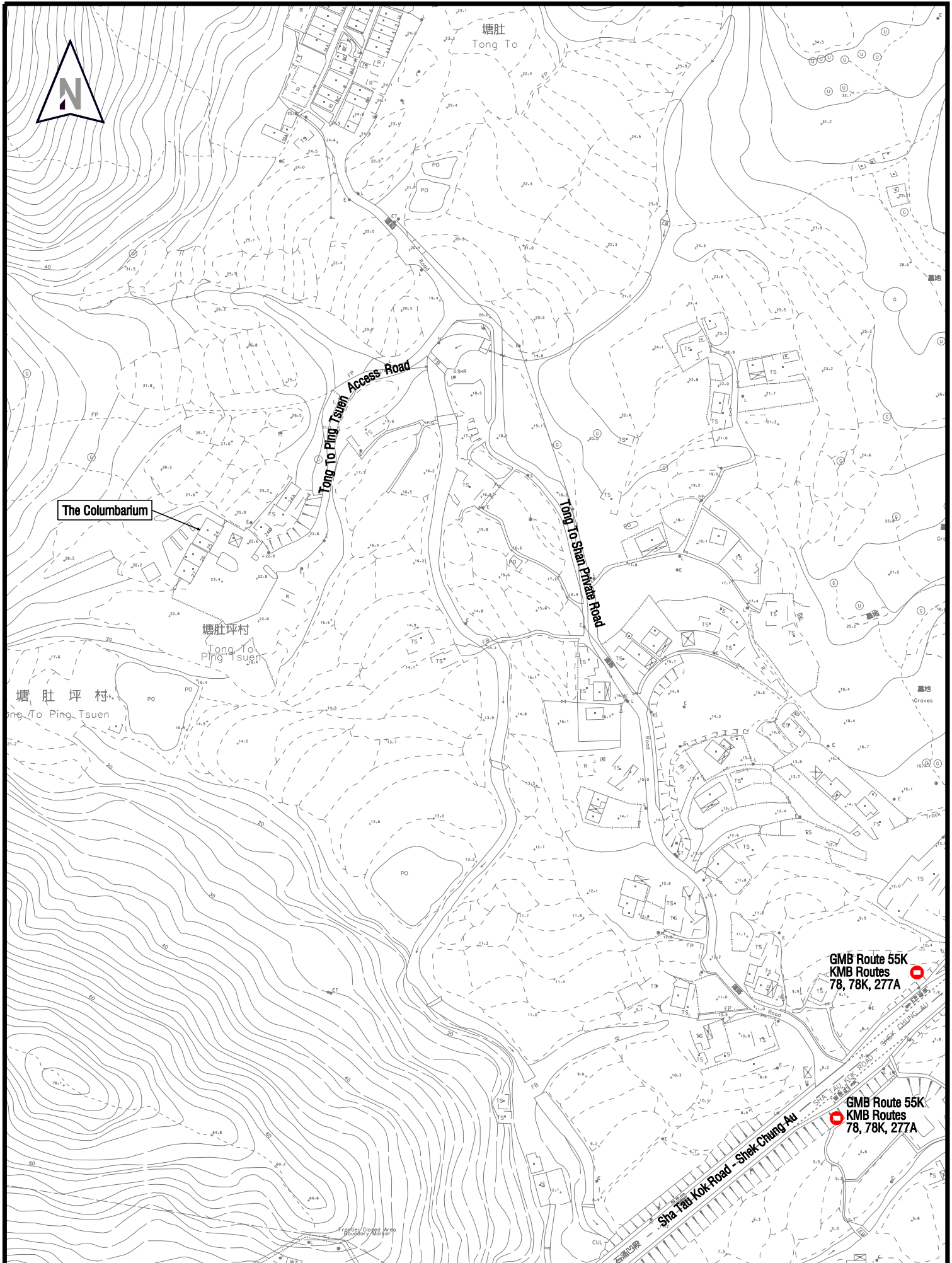
- 6.1.1 The existing columbarium 自由福居, which the history of the columbarium can be traced back to 1988, can accommodate a maximum of 864 niches and currently 60 niches of them have been occupied.
- 6.1.2 In order to facilitate the application for amendment of the approved Sha Tau Kok Outline Zoning Plan No. S/NE-STK/2 from “Village Type Development” and “Recreation” to “Other Specified Uses” annotated “Columbarium”, KAP Consultants Limited is commissioned by the operator of the columbarium to study the traffic impact induced by the existing columbarium.
- 6.1.3 There are no public parking facilities along the route to the columbarium. All visitors need to access the subject site by shuttle bus provided by the columbarium. The operator of columbarium will strictly follow the house rules to control vehicular and pedestrian flow.
- 6.1.4 In order to assess the traffic impact brought by the columbarium, the Design Flow / Capacity Ratio (DFC) of the following critical junctions in existing condition and forecast condition (Year 2025) are calculated: (Please refer to Section 4.2.1 - 4.2.4 and Section 5.4.1 - 5.4.2 for details)
- Tong To Ping Tsuen Access Road / Tong To Shan Private Road (J1)
 - Tong To Shan Private Road / Sha Tau Kok Road - Shek Chung Au (J2)
- 6.1.5 Furthermore, the Peak Hourly Flows/Design Flow Ratio (P/Df) of the following road links in existing condition and forecast condition (Year 2025) are calculated: (Please refer to Section 4.2.5 - 4.2.8 and Section 5.4.3 - 5.4.6 for details)
- Tong To Shan Private Road
 - Sha Tau Kok Road - Shek Chung Au
- 6.1.6 Since the traffic flow are low, both junctions and road links can be operated satisfactorily in both existing condition and forecast condition.
- 6.1.7 In order to assess the utilization rate of public transport, Public Transport Occupancy of the GMB NT route 55K, KMB routes 78K and 277A in existing condition and forecast condition (Year 2025) are calculated. (Please refer to Section 4.2.9 - 4.2.11 and Section 5.4.7 - 5.4.8 for details)
- 6.1.8 Based on the finding of this TIA Report, the columbarium will not induce adverse traffic impact on the nearby road network and will not burden on public transport.



APPENDIX A

FIGURES





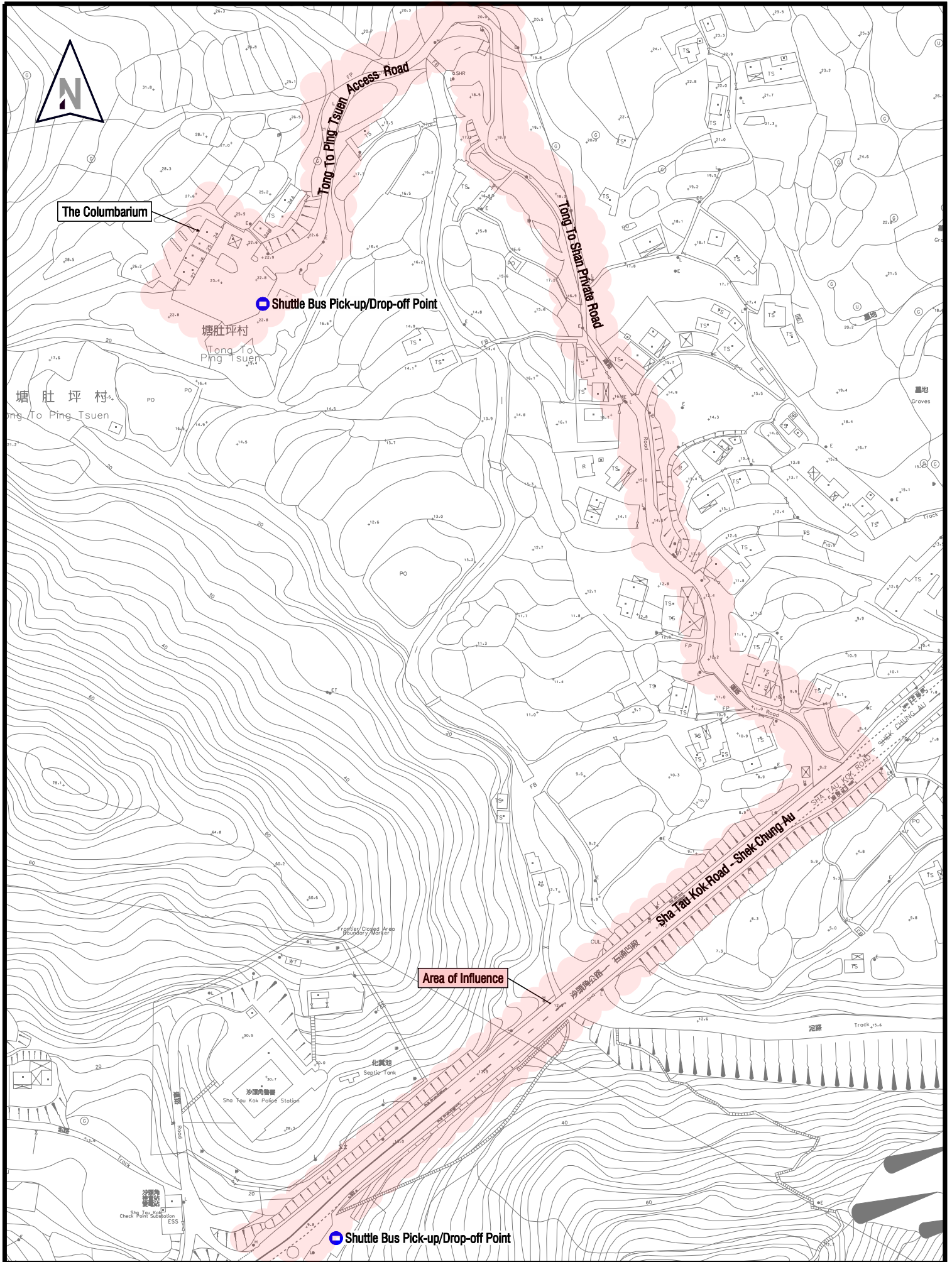
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KAP
 CONSULTANTS

PROJECT TITLE
Traffic Impact of Existing Columbarium

DRAWING TITLE
Location of Existing Columbarium

SCALE
1:2000

FIGURE NO.
2.1



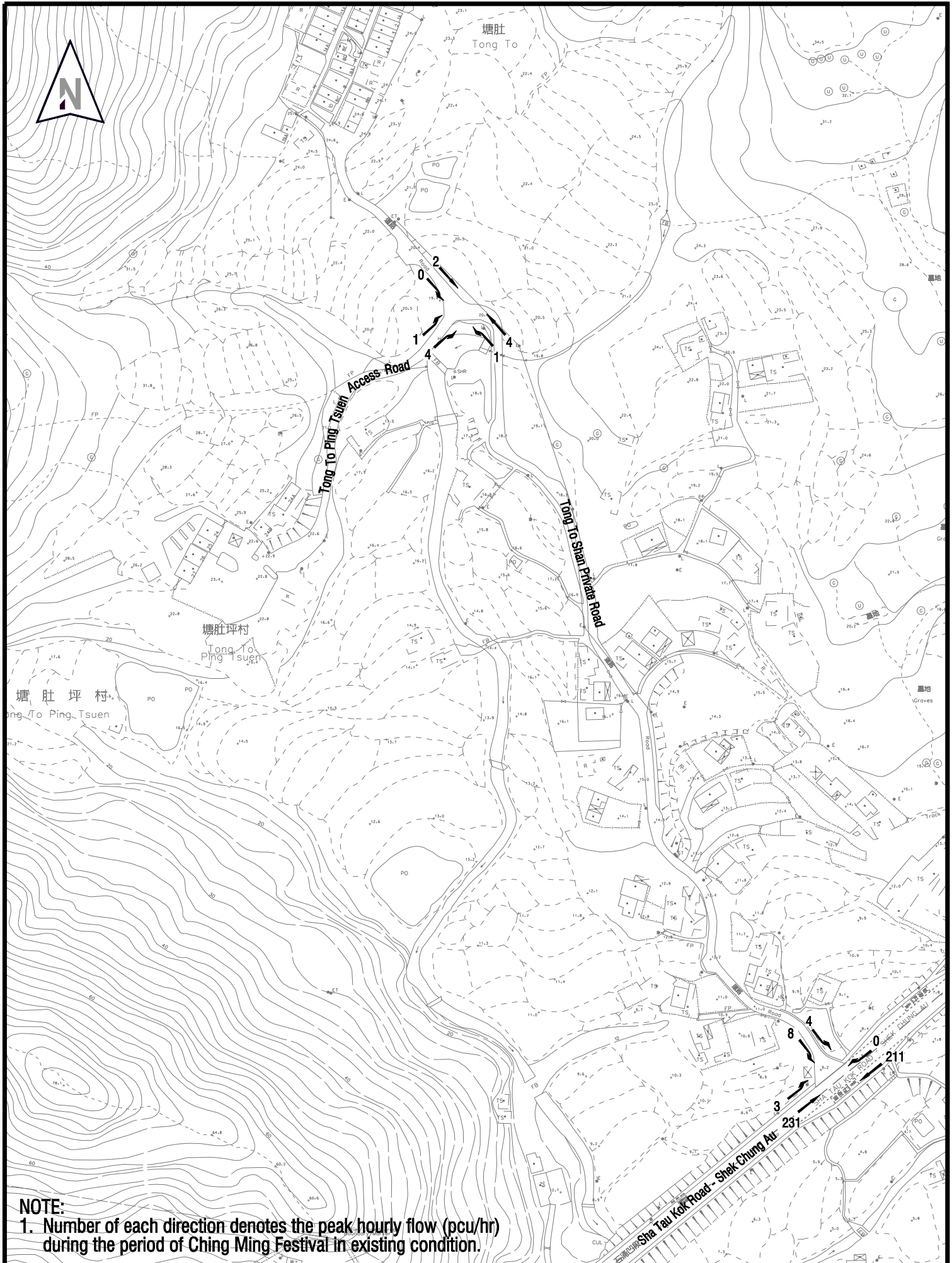
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KAP
 CONSULTANTS

PROJECT TITLE
Traffic Impact of Existing Columbarium

DRAWING TITLE
Area of Influence & Shuttle bus pick-up/drop-off pts

SCALE
1:2000

FIGURE NO.
2.2



NOTE:
 1. Number of each direction denotes the peak hourly flow (pcu/hr) during the period of Ching Ming Festival in existing condition.

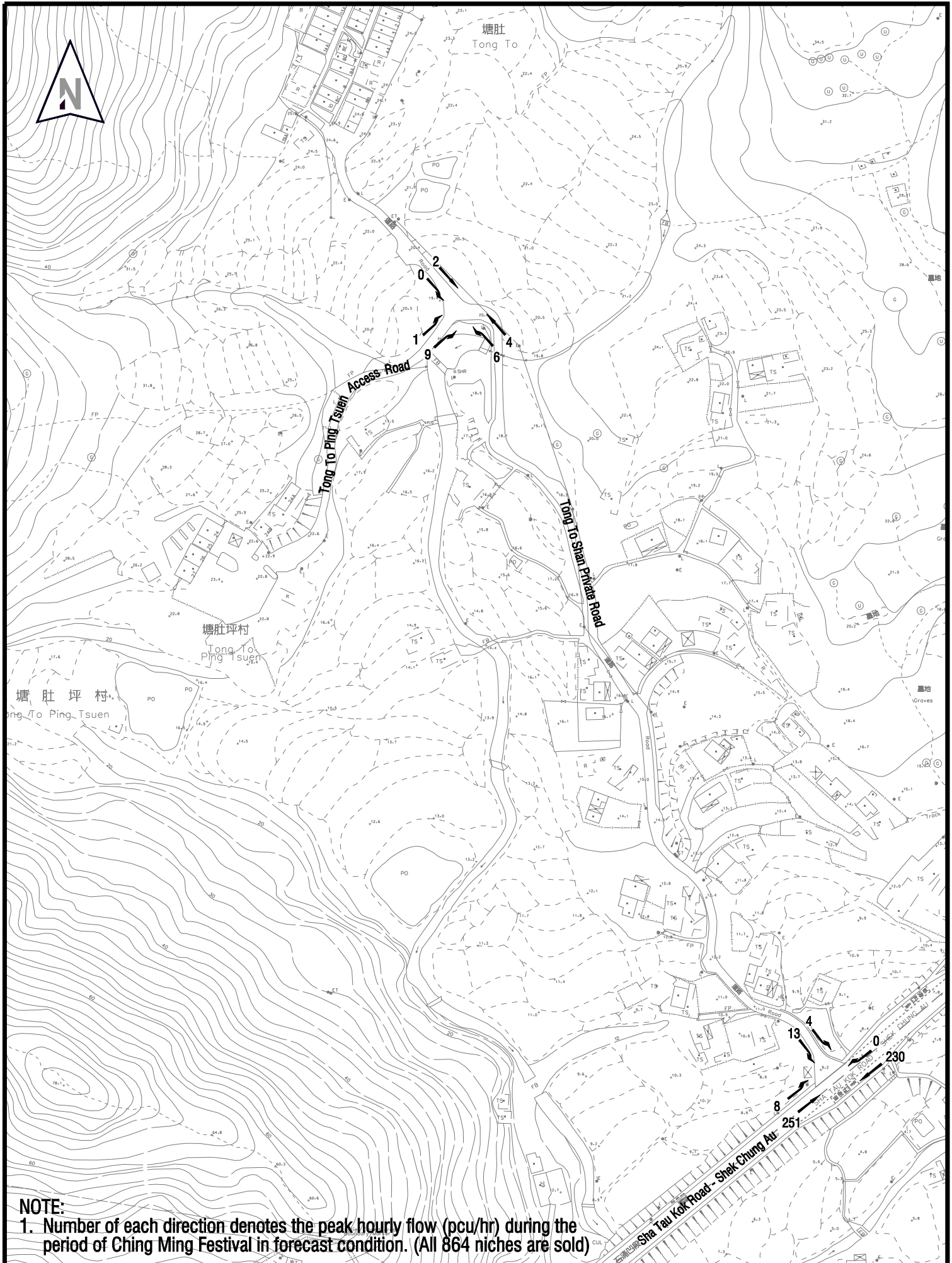
TRAFFIC CONSULTANT
KAP
 CONSULTANTS

PROJECT TITLE
Traffic Impact of Existing Columbarium

DRAWING TITLE
Flow Net (Existing)

SCALE
1: 2000

FIGURE NO.
4.1



NOTE:
 1. Number of each direction denotes the peak hourly flow (pcu/hr) during the period of Ching Ming Festival in forecast condition. (All 864 niches are sold)

TRAFFIC CONSULTANT



PROJECT TITLE

Traffic Impact of Existing Columbarium

DRAWING TITLE

Flow Net (Forecast)

SCALE

1: 2000

FIGURE NO.

5.1



APPENDIX B

TRAFFIC ANALYSIS



Location: Junction of Tong To Shan Private Road / Tong To Ping Tsuen Access Road (J1)

Calculation of Capacity at Priority Junction (Sun @ Ching Ming Period 08:45-09:45)

Existing / Forecast

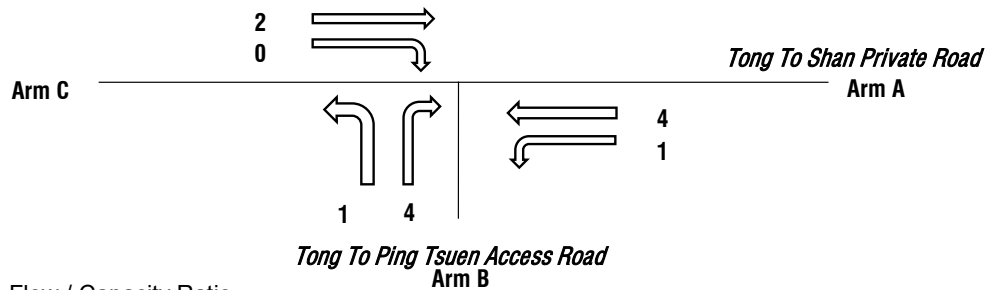
Geometric Parameters

W_{B-A}	=	2.05 m	lane width available to vehicle waiting in stream B-A
W_{B-C}	=	2.05 m	lane width available to vehicle waiting in stream B-C
W_{C-B}	=	3.25 m	lane width available to vehicle waiting in stream C-B
Vr_{B-A}	=	17 m	visibility to the right for vehicle waiting in stream B-A
Vr_{B-C}	=	17 m	visibility to the right for vehicle waiting in stream B-C
Vr_{C-B}	=	26 m	visibility to the right for vehicle waiting in stream C-B
Vl_{B-A}	=	22 m	visibility to the left for vehicle waiting in stream B-A

Capacity of each flow

Q_{B-A}	=	445
Q_{B-C}	=	573
Q_{B-AC}	=	554
Q_{C-B}	=	655

Actual Flow in p.c.u/hr



Design Flow / Capacity Ratio

DFC_{B-AC}	=	0.01
DFC_{C-B}	=	0.00

Location: Junction of Tong To Shan Private Road / Sha Tau Kok Road - Shek Chung Au (J2)

Calculation of Capacity at Priority Junction (Sun @ Ching Ming Period 09:45-10:45)

Existing / Forecast

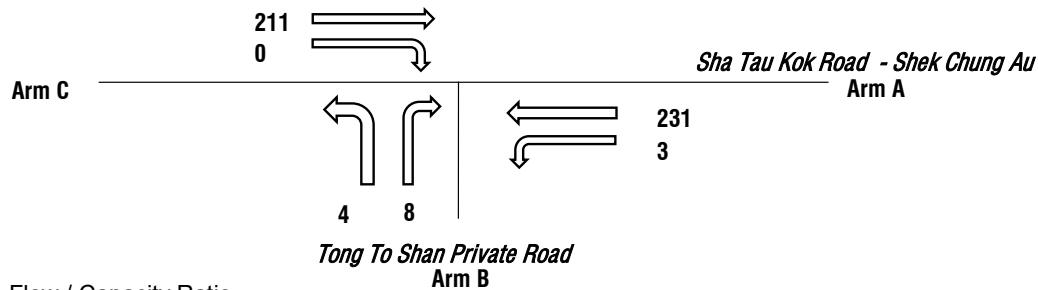
Geometric Parameters

W_{B-A}	=	2.05 m	<i>lane width available to vehicle waiting in stream B-A</i>
W_{B-C}	=	2.05 m	<i>lane width available to vehicle waiting in stream B-C</i>
W_{C-B}	=	3.60 m	<i>lane width available to vehicle waiting in stream C-B</i>
Vr_{B-A}	=	17 m	<i>visibility to the right for vehicle waiting in stream B-A</i>
Vr_{B-C}	=	17 m	<i>visibility to the right for vehicle waiting in stream B-C</i>
Vr_{C-B}	=	250 m	<i>visibility to the right for vehicle waiting in stream C-B</i>
Vl_{B-A}	=	74 m	<i>visibility to the left for vehicle waiting in stream B-A</i>

Capacity of each flow

Q_{B-A}	=	388
Q_{B-C}	=	525
Q_{B-AC}	=	547
Q_{C-B}	=	757

Actual Flow in p.c.u/hr



Design Flow / Capacity Ratio

DFC_{B-AC}	=	0.02
DFC_{C-B}	=	0.00

Location: Junction of Tong To Shan Private Road / Tong To Ping Tsuen Access Road (J1)

Calculation of Capacity at Priority Junction (Sun @ Ching Ming Period 08:45-09:45)

Existing / Forecast

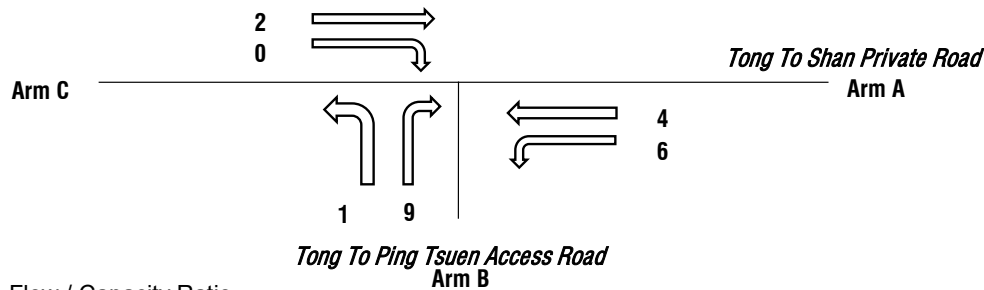
Geometric Parameters

W_{B-A}	=	2.05 m	lane width available to vehicle waiting in stream B-A
W_{B-C}	=	2.05 m	lane width available to vehicle waiting in stream B-C
W_{C-B}	=	3.25 m	lane width available to vehicle waiting in stream C-B
Vr_{B-A}	=	17 m	visibility to the right for vehicle waiting in stream B-A
Vr_{B-C}	=	17 m	visibility to the right for vehicle waiting in stream B-C
Vr_{C-B}	=	26 m	visibility to the right for vehicle waiting in stream C-B
Vl_{B-A}	=	22 m	visibility to the left for vehicle waiting in stream B-A

Capacity of each flow

Q_{B-A}	=	445
Q_{B-C}	=	573
Q_{B-AC}	=	554
Q_{C-B}	=	654

Actual Flow in p.c.u/hr



Design Flow / Capacity Ratio

DFC_{B-AC}	=	0.02
DFC_{C-B}	=	0.00

Location: Junction of Tong To Shan Private Road / Sha Tau Kok Road - Shek Chung Au (J2)

Calculation of Capacity at Priority Junction (Sun @ Ching Ming Period 09:45-10:45)

Existing / Forecast

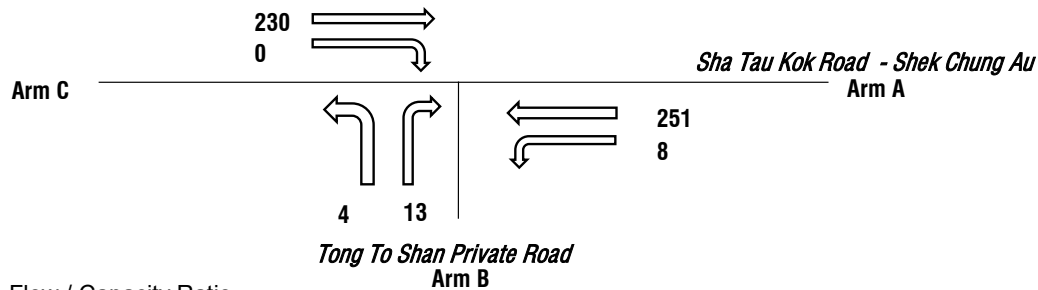
Geometric Parameters

W_{B-A}	=	2.05 m	lane width available to vehicle waiting in stream B-A
W_{B-C}	=	2.05 m	lane width available to vehicle waiting in stream B-C
W_{C-B}	=	3.60 m	lane width available to vehicle waiting in stream C-B
Vr_{B-A}	=	17 m	visibility to the right for vehicle waiting in stream B-A
Vr_{B-C}	=	17 m	visibility to the right for vehicle waiting in stream B-C
Vr_{C-B}	=	250 m	visibility to the right for vehicle waiting in stream C-B
Vl_{B-A}	=	74 m	visibility to the left for vehicle waiting in stream B-A

Capacity of each flow

Q_{B-A}	=	381
Q_{B-C}	=	521
Q_{B-AC}	=	543
Q_{C-B}	=	749

Actual Flow in p.c.u/hr



Design Flow / Capacity Ratio

DFC_{B-AC}	=	0.03
DFC_{C-B}	=	0.00



APPENDIX C

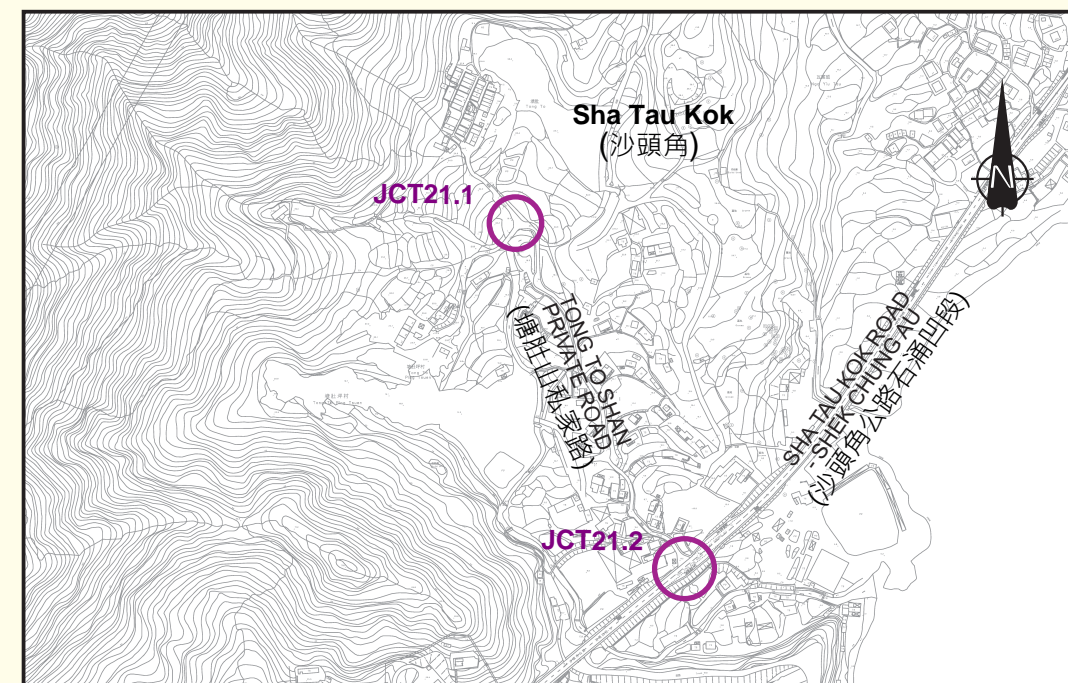
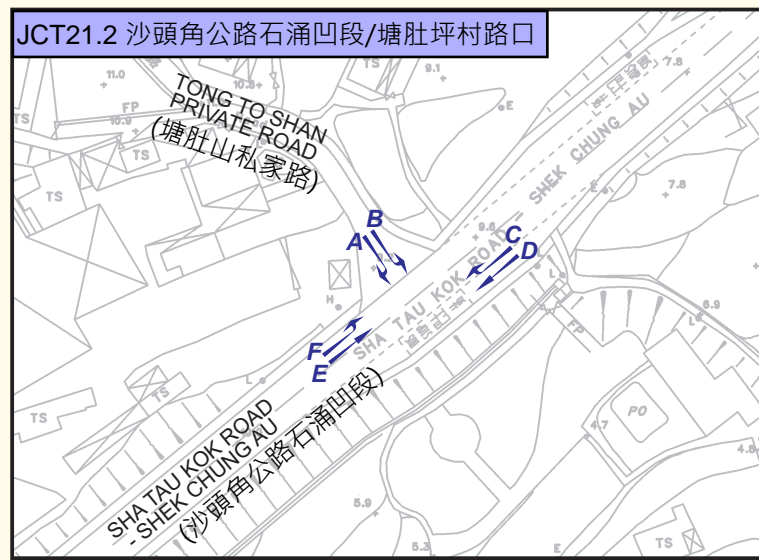
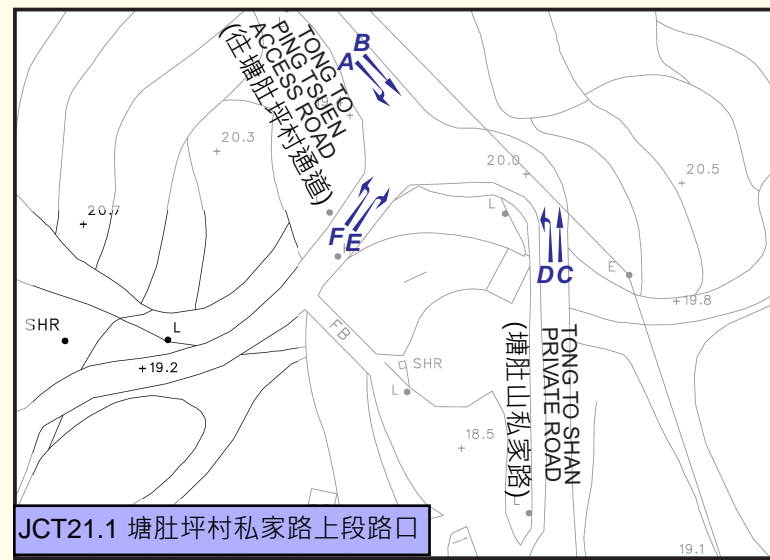
EXTRACT OF OTHER REPORTS



Appendix C - AADT of Counting Stations - ordered by Road Names

Road Name	From	To	Stn. No.	Road Type	Stn. Type	AADT		Change of 2019 as % of 2018
						2018	2019	
Sau Ming Rd	Sau Mau Path	Hiu Kwong St	3866	DD	C	8,760 *	8,820 *	+0.7
Sau Ming Rd	Sau Mau Ping Rd	Sau Mau Path	4066	DD	C	6,030	6,070 *	+0.7
Science Park Rd	Chak Cheung St	Chong San Rd	5714	DD	C	16,580	16,470 *	-0.7
Second St	Water St	Eastern St	2634	LD	C	850	800	-6.7
Seymour Rd	Bonham Rd	Castle Rd	1638	LD	C	3,400 *	3,370 *	-0.9
Seymour Rd	Castle Rd	Robinson Rd	2046	LD	C	4,150	4,120 *	-0.9
Sha Kok St	Tai Chung Kiu Rd	Sha Tin Wai Rd	5242	DD	C	12,700	12,850	+1.2
Sha Lek Highway FO <UR T5>	Slip rd from Sha Tin Wai Rd	Tate's Cairn Highway INT	5290	UT	C	36,050	39,160	+8.6
Sha Lek Highway FO <UR T5>	Slip rds to & from Sha Tin Rd	Slip rd to Sha Tin Wai Rd	5498	RT	C	26,850 *	29,430	+9.6
Sha Lek Highway FO <UR T5> N-B slip rd C	Sha Lek Highway FO <UR T5> N-B slip rd C	Tate's Cairn Highway slip rd A	6075	PD	C	5,330	5,320 *	-0.1
Sha Lek Highway FO <UR T5> N-B slip rd N	Sha Lek Highway FO <UR T5> N-B slip rd N	Tate's Cairn Highway slip rd M	5681	PD	C	7,920 *	7,910 *	-0.1
Sha Tau Kok Rd	Jockey Club Rd	Lok Yip Rd	5824	PD	C	28,050 *	29,170 *	+4.0
Sha Tau Kok Rd	Jockey Club Rd	San Wan Rd	5453	DD	C	19,700 *	20,320	+3.2
Sha Tau Kok Rd	On Kui St	Ping Che Rd	5660	RR	C	33,870 *	33,630 *	-0.7
Sha Tau Kok Rd	Ping Che Rd	Shun Lung St	5860	RR	C	6,620 *	6,570 *	-0.7
Sha Tau Kok Rd - Lung Yeuk Tau	Lok Yip Rd	Luen Shing St	5622	PD	C	22,070 *	22,950 *	+4.0
Sha Tau Kok Rd - Lung Yeuk Tau	Luen Shing St	On Kui St	5623	PD	C	21,350 *	22,200 *	+4.0
Sha Tin Rd	Lion Rock Tunnel Rd	Sha Tin Wai Rd	5002	EX	A	76,290	75,050	-1.6
Sha Tin Rd	Ramps to & from Tai Chung Kiu Rd	Yuen Wo Rd	5606	EX	C	41,840 *	41,800 *	-0.1
Sha Tin Rd	Sha Tin Wai Rd	Ramps to & from Tai Chung Kiu Rd	5605	EX	C	56,940 *	56,880 *	-0.1
Sha Tin Rd	Yuen Wo Rd	Tai Po Rd-Shatin	5806	EX	C	53,090 *	53,030 *	-0.1
Sha Tin Rd ramps	Tai Chung Kiu Rd	Sha Tin Rd	5618	PD	C	15,090 *	15,080 *	-0.1
Sha Tin Rural Committee Rd	Tai Chung Kiu Rd	Yuen Wo Rd	5619	PD	C	38,000 *	37,960 *	-0.1
Sha Tin Rural Committee Rd	Tai Po Rd - Shatin	Yuen Wo Rd	5818	PD	C	38,090 *	38,050 *	-0.1
Sha Tin Wai Rd	Sha Kok St	Sha Tin Rd	5213	PD	C	29,800	26,680	-10.5
Sha Tin Wai Rd	Sha Kok St	Tai Chung Kiu Rd	5418	PD	C	27,240 *	26,320	-3.4
Sha Tin Wai Rd	Sha Tin Rd	Ngan Shing St	6013	PD	C	26,810	26,780 *	-0.1
Sha Tin Wai Rd	Siu Lek Yuen Rd	Ngan Shing St	5817	PD	C	18,430 *	18,410 *	-0.1
Sha Tsui Rd	Castle Peak Rd - Tsuen Wan	Pun Shan St	5433	DD	C	2,200 *	2,380	+8.0
Sha Tsui Rd	Chung On St	Kwu Hang Rd	5631	DD	C	15,740 *	15,680 *	-0.3
Sha Tsui Rd	Kwu Hang Rd	Texaco Rd	5432	DD	C	16,840 *	12,400	-26.3

* AADT estimated by Growth Factor



LEGEND :

圖例 :

- A ↔ B** PEDESTRIAN ACCESS POINTS REQUIRED (TWO-WAY PEDESTRIAN FLOW)
統計人流點(雙向人流)
- JUNCTION/ ROAD SECTIONS REQUIRED (VEHICULAR FLOW)
統計車流路口(車流)
- A →** TRAFFIC MOVEMENT
車流方向
- SURVEY CARRIED OUT NEAR CHING MING DAY
近清明節數據統計

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

Project Title

SERVICE FOR A COUNTING SURVEY OF ROAD JUNCTIONS (VEHICULAR TRAFFIC) AND ACCESS POINTS (PEDESTRIAN TRAFFIC) TO BE CONDUCTED AROUND 2018 CHING MING FESTIVAL IN RESPECT OF A DESIGNATED LIST OF PRIVATE COLUMBARIA

Drawing Title			
NEW TERRITORIES EAST (新界東) - NORTH DISTRICT (北區)			
Designed	Checked	Scale	Date
CHH	LNC	NTS	JUL 2018
Drawing No.		Rev.	
21		-	



Agreement No. COL 01/2018 - Service for a Counting Survey of Road Junctions (Vehicular Traffic) and Access Points (Pedestrian Traffic) to be Conducted Around the 2018 Ching Ming Festival in respect of a Designated List of Private Columbaria

Junctions Hourly Flows Summary (PCU/hr):

Survey carried out on Ching Ming Day

Survey carried out near Ching Ming Day

Drawing No.	Junction Ref.	Survey Date	Movement	Time																															
				8.30	8.45	9.00	9.15	9.30	9.45	10.00	10.15	10.30	10.45	11.00	11.15	11.30	11.45	12.00	12.15	12.30	12.45	13.00	13.15	13.30	13.45	14.00	14.15	14.30	14.45	15.00	15.15	15.30			
				9.30	9.45	10.00	10.15	10.30	10.45	11.00	11.15	11.30	11.45	12.00	12.15	12.30	12.45	13.00	13.15	13.30	13.45	14.00	14.15	14.30	14.45	15.00	15.15	15.30	15.45	16.00	16.15	16.30			
21	JCT21.1	15-Apr	JCT21.1A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
			JCT21.1B	1	2	2	2	2	1	2	2	2	1	0	0	0	0	0	2	2	2	2	0	0	1	1	1	1	0	0	1	1			
			JCT21.1C	2	4	4	4	3	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	1	1	1	1	0	0	0	0			
			JCT21.1D	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
			JCT21.1E	4	4	4	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
			JCT21.1F	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	JCT21.2	15-Apr	JCT21.2A	7	7	8	8	7	8	4	4	3	1	1	2	2	1	1	0	0	4	4	5	10	10	11	9	4	4	3	9	11			
			JCT21.2B	6	8	8	8	7	4	6	6	3	6	4	6	5	2	4	2	2	2	0	2	2	3	3	1	1	1	1	1				
			JCT21.2C	5	6	5	3	3	0	0	1	1	1	2	2	2	3	2	1	2	3	3	3	2	2	2	2	2	0	0	0	0			
			JCT21.2D	127	140	160	192	190	211	207	188	186	152	144	149	141	153	172	165	166	183	177	190	189	160	170	166	165	186	186	191	193			
			JCT21.2E	154	163	190	212	247	231	217	194	168	195	177	178	173	160	158	165	163	155	171	153	165	177	163	202	195	181	183	151	145			
			JCT21.2F	5	5	4	3	3	3	3	2	4	4	4	5	4	4	3	2	0	5	5	5	5	0	0	1	1	1	1	1	0	0		

Agreement No. COL 01/2018 - Service for a Counting Survey of Road Junctions (Vehicular Traffic) and Access Points (Pedestrian Traffic) to be Conducted Around the 2018 Ching Ming Festival in respect of a Designated List of Private Columbaria

Pedestrian Access 15-minute Flows (ppl/15 mins): Survey carried out on Ching Ming Day Survey carried out Near Ching Ming Day

Drawing No.	Pedestrian Access Ref.	Survey Date	Movement	Time (per 15 minutes)																															
				8.30	8.45	9.00	9.15	9.30	9.45	10.00	10.15	10.30	10.45	11.00	11.15	11.30	11.45	12.00	12.15	12.30	12.45	13.00	13.15	13.30	13.45	14.00	14.15	14.30	14.45	15.00	15.15	15.30	15.45	16.00	16.15
				8.45	9.00	9.15	9.30	9.45	10.00	10.15	10.30	10.45	11.00	11.15	11.30	11.45	12.00	12.15	12.30	12.45	13.00	13.15	13.30	13.45	14.00	14.15	14.30	14.45	15.00	15.15	15.30	15.45	16.00	16.15	16.30
21	PED21.1	15-Apr	PED21.1A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			PED21.1B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	